Preventive Care in Nursing and Midwifery Journal
2018; 8(2): 42-49

Effects of Meditation on Depression among Patients Undergoing Hemodialysis

Amini K[1*], Dehghani S[2], Niroomand S[3], Hassanloo M[4], Amini D[5], Faghihzadeh S[6]

[1]Department of Mental Health Nursing, Associate Professor, School of Nursing and Midwifery, Zanjan University of Medical Sciences, Zanjan, Iran
[2]Department of Critical Care Nursing, School of Nursing and Midwifery, Zanjan University of Medical Sciences, Zanjan, Iran
[3]Department of Midwifery, School of Nursing and Midwifery, Zanjan University of Medical Sciences, Zanjan, Iran
[4]Department of Operating Room and Anesthesiology Technology, School of Nursing and Midwifery, Zanjan University of Medical Sciences, Zanjan, Iran
[5]Department of Psychology, Assistant Professor, University of Farhangian, Hamedan, Iran
[6]Professor of Biostatistics, Zanjan Social Dept. of Health Research Center, Zanjan University of Medical Sciences, Zanjan, Iran

Corresponding Author: Department of Mental Health Nursing, Associate Professor, School of Nursing and Midwifery, Zanjan University of Medical Sciences, Zanjan, Iran

Email: korosh@zums.ac.ir

Received: 13 Jule 2019 **Accepted**: 4 Dec 2019

Abstract

Background: Considering the increasing prevalence of psychological problems, complications, and consequences of depression in patients undergoing hemodialysis (HD), the application of complementary therapies such as meditation counseling is highly important.
Objectives: Therefore, this study aimed to investigate the effect of meditation on depression in patients undergoing HD.
Methods: This clinical trial was conducted on 57 patients who met the inclusion criteria by the convenience sampling method. The participants were randomly allocated to intervention and control groups. Those in the intervention group attended three 15-20 minute educational practice sessions weekly offered over an eight weeks while the control group received no intervention. A validated questionnaire assessed depressive symptoms at baseline and after 4 and 8 weeks. In addition, the CONSORT statement was adhered to where possible. Finally, t-test, repeated-measures ANOVA, Fisher's exact test, and Chi-square tests were used to analyze data using SPSS 16.
***Results*:** The mean depression score among the patients of the intervention group decreased from 85±1.56 at baseline to 70±1.27 at 8-week follow-up (P=0.003). Further, the mean score of depressive symptoms significantly decreased during eight weeks after the intervention (P<0.001).
Conclusion: Simple and non-expensive meditation exercises could fruitfully decrease depression symptoms in patients undergoing HD. The prevalence of depressive symptoms is high among the patients, therefore, the implementation of meditation exercises should help minimize a major problem in these groups of patients.

Keywords: hemodialysis, depression, end-stage renal disease, meditation

Introduction

The chronic renal failure is considered as a pathologic condition with numerous causes which leads to the irreversible loss of nephron number and a decline in kidney function. chronic kidney disease may develop and lead to End-Stage Renal Disease (ESRD) in many cases [1]. A recent study showed that the prevalence of global maintenance dialysis due to ESRD has increased 1.7 and 2.1 times from 1990 to 2010, respectively [2]. Hemodialysis (HD) is the most common method used to treat this disease which plays a major role in increasing the patient's life expectancy [1]. According to the latest published statistics in Iran, the number of patients with ESRD is approximately 32,686 individuals (4,835 per million), of which approximately 50% are under HD [3].

Based on some evidence, patients also tend to have a high symptom burden and experience a variety of symptoms such as anxiety, depression, anorexia, nausea, insomnia, fatigue, and pain often in combination [4,5]. According to available studies, this unpleasant mental state is associated with an increase in mortality rate, hospitalization, poor quality of life, as well as malnutrition and anemia in these patients [6,7]. Therefore, the symptoms of depression should be relieved in these patients in order to promote their health outcomes. In addition, the scientific evidence with respect to the benefits of meditation for health recovery encourages a change in the interactive forms of treatment and suggests that therapeutic interventions that incorporate meditation must be used more frequently [8].

Further, meditation is a spiritual and healing practice with a long history that is divided into concentrative and mindfulness types [9]. In the concentrative type, an object is used for focusing and the subject of concentration can be even a mantra (spiritual expression), breathing, a picture, or physical experience. Furthermore, individuals learn to focus their attention solely on one object and stop usual and mental processes. According to Sedlmeier et al. (as cited in Feuerstein, 2001 and Kabat-Zinn, 1994), mindfulness meditation is rooted in Buddhist beliefs. In this type of meditation, a person tries to focus on the present and be aware of the present thoughts and actions in a nonjudgmental way. In this case, the person learns to stop past events, future imagination, or relevant issues and this leads to positive physical and psychological changes in that person [10].

The meditation used in this study was the simplest type called "Twin Hearts". This type of meditation requires no special skills. Moreover, it is a combination of concentrative and mindfulness and connects the main features of both types of concentrative and mindfulness meditations. The twin heart meditation has spiritual content and emphasizes the development of love and affection. The right time to practice this type of meditation relies on the rest and free times of the person. Therefore, early in the morning or the evening may be better in this regard. The entire practice takes 15 to 20 minutes [11].

A review of the conducted studies suggested the positive effects of meditation on certain medical conditions such as cardiovascular disease [12], chronic pain [13], and cancer [14]. However, the effect of this complementary therapy method should be discussed regarding decreasing the symptoms of depression. Based on previous evidence, meditation is effective in relieving the symptoms of depression [15]. However, some studies suggested that mediation is not effective in relieving the symptoms of depression [16,17]. For this purpose, further research is needed to gain a better understanding of the antidepressant effects of meditation [8] since extensive search failed to reveal information concerning the effect of meditation on depression in patients undergoing HD. Accordingly, this study aimed to evaluate the effect of meditation on depression in patients undergoing HD at Zanjan University of Medical Sciences **(**Emdadi and BooaliSina Hospitals in Abhar and Khorramdare, respectively), Iran.

Methods

Study Design

This randomized clinical trial was conducted with a pretest-posttest design and a control group on patients who underwent hemodialysis (HD). This article is derived from an approved research project (No. UMS.REC.1392.49) and was financially supported by the Deputy of Research and Technology of Zanjan University of Medical Sciences.

Sampling

A total of 57 out of 67 patients undergoing HD hospitalized in two hospitals affiliated to Zanjan University of Medical Sciences (Emdadi and Booali Sina Hospitals in Abhar and Khorramdarah, respectively) met the inclusion criteria and were selected using the convenience sampling method. The inclusion criteria were suffering from chronic kidney disease, undergoing HD treatment at least for three months, having the least reading and writing literacy or being literate, having the ability to perform meditation exercises, attending fixed weekly HD sessions, and showing satisfaction and willingness for participation and practice during the study. The other criteria included the lack of previous experience in meditation exercises, the lack of specific inability or disabilities, and medical precautions for exercises such as deafness, blindness, advanced heart failure, brain damage, uncontrolled hypertension, and acute glaucoma. Before the intervention, the patients were randomly divided

into two control and treatment groups using the random number table.

Research Instruments

To perform the intervention, the researchers observed moral obligations, introduced themselves, and explained the aims of the study as well as providing necessary information about meditation to the studied units. Then, informed consent was obtained from the patients or their legal guardians. The demographic information form was completed by the researcher and the severity of depression was assessed in both groups before the intervention by Depression Anxiety Stress Scale -21 (DASS-21).

In the treatment group, meditation exercises were performed three times a week for eight weeks depending on the patient's dialysis shift in the morning, evening, or night (totally, 24 sessions). A specialist meditation instructor did the process and then the researcher collected the information. For exercise, patients present in the restroom were those undergoing HD with adequate facilities (chairs) and space located in the dialysis sector half an hour before the dialysis. Throughout the study, all patients in the treatment group received exercises of twin heart meditation (the meditation of love and affection for the whole earth) with the help of the trained instructor. The meditation exercises lasted for 15 to 20 minutes.

It should be noted that nine patients were excluded from the study for refusing regular exercises (n=8) and hospitalization due to other medical problems (n=1).

At the end of the fourth and eighth weeks of intervention, researchers in both groups completed the questionnaires again.

The instrument of this study was a questionnaire consisting of two parts. The first part included demographic information such as gender, age, marital status, the number of children, the level of education, employment status, economic status, as well as the duration of illness and HD and a disease other than renal failure and the underlying condition that led to the ESRD. The second part of the questionnaire encompassed DASS-21. This questionnaire, developed by Lovibond in 1995, contains 21 questions, 7 of which were designed to determine the symptoms and severity of depression. The questions were answered on a 4-point Likert-type scale ranging from 0 to 3. Thus, the highest score indicated the severity of depression. According to the guidance of the questionnaire, it was necessary to multiply the obtained scores of each person by two for grading. The rating scale of the instrument for depression included 0-9, 10-13, 14-20, 21-27, and 28≤ for normal, mild, moderate, severe, and extremely severe depression, respectively [18]. The English version of this instrument with acceptable credibility was used in many studies. Sahebi et al. standardized and validated the Persian version of this questionnaire for use in Iranian society [19].

Statistical Analysis

After collecting the required data, descriptive statistical tests (i.e., frequency distribution tables, dispersion, and central indicators), parametric, and non-parametric statistical tests (i.e., t-test, independent-sample t-test, repeated-measures ANOVA, Fisher's exact test, and Chi-square test) were used to analyze and interpret the data by SPSS 16.

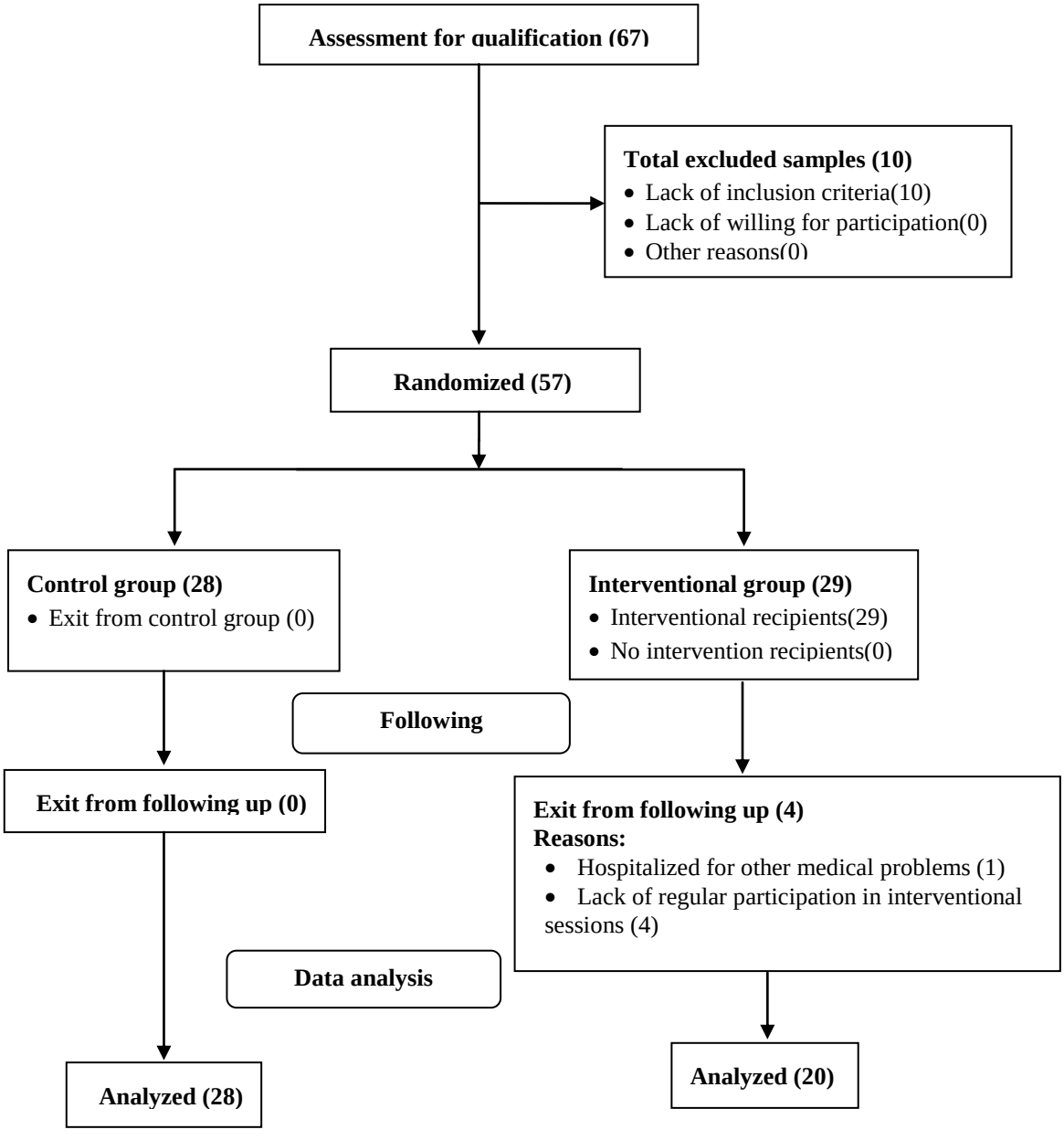

Figure 1: consort flew chart

Results

According to the independence-sample t-test, there was no significant difference between the two groups regarding the severity of depression symptoms before the intervention (P=0.600), the details of which are provided in Table 1.

Table 1: Comparison of Research Units in the Control and Treatment Groups Based on the Underlying Variables

Variable	Treatment no (%)	Control no (%)	P value
Gender			
Male	6(30)	14(50)	0.166
Female	14(70)	14(50)	
Job			
Yes	6(30)	14(50)	0.530
No	14(70)	14(50)	
Education			
No	8(40)	11(39.3)	
Primary and less	5(25)	12(42.9)	0.380
Under diploma	7(35)	4(14.3)	
Diploma	0(0)	1(3.6)	
Marriage status			
Married	17(85)	25(92.9)	0.368
Widow	3(15)	2(7.1)	
Age(SD±Mean)	64.25±10.14	61.61±15.40	0.500
Depression (SD±Mean)	22.64±12.32	24.50±12.31	0.600

Based on the results of the data analysis, no significant difference was observed in terms of the severity of depression (P=0.230) in the control and treatment groups after four weeks of intervention. However, a significant difference was found respecting the severity of depression in the treatment group (P=0.003) after eight weeks of intervention (Table 2).

Table 2: Comparison of Depression Scores in Two Groups of Treatment and Control 4 and 8 Weeks after Investigation

Time	Treatment Mean ± SD	Control Mean ±SD	P value
After 4 weeks	17.70±10.40	21.86±12.69	0.235
After 8 weeks	10.10±7.93	22.07±13.50	0.003

According to repeated-measures ANOVA, the mean depression score significantly decreased during the intervention in the treatment group (4 and 8 weeks after the intervention) compared to pre-intervention testing (P=0.001). However, there was no significant reduction in the severity of the symptoms of depression in the control group at this interval (P=0.130). The related data are presented in Tables 2 and 3

Table 3: Comparison of Depression Scores in Two Groups of Treatment and Control Before, 4 and 8 weeks After Investigation Based on Variance Analysis with Repeated Measurements

Time	Before	After 4 weeks	After 8 weeks	variance analysis with repeated measurements P value
Treatment Mean ± SD	10.10±7.93	17.70±10.40	24.50±12.31	>0.001
Control Mean ±SD	21.86±12.69	22.07±13.50	22.64±12.32	0.130

Discussion

This study aimed to determine the effect of meditation on depression in patients undergoing hemodialysis (HD). The mean and standard deviation of depression score in the present study were 24.51±12.31 and 22.64±12.32 in the two

treatment and control groups suggesting severe depression in these patients according to the used scale, which is in line with the results of previous studies in Iran [20] and the world [4] indicating a high prevalence of depression symptoms in patients with ESRD who underwent HD. Accordingly, some scholars introduced depression as the most common psychological disorder in patients undergoing HD [21]. This disorder is not usually diagnosed in these patients and thus it is not treated. One of the challenges to diagnose and treat this disorder is the similarity between the signs and symptoms of depression such as sleep disorders, anorexia, dizziness, sexual dysfunction, and gastrointestinal disorders with uremic symptoms [22]. Based on the findings of another study, depression can lead to an exacerbation in chronic medical diseases such as cancer, diabetes, chronic renal failure [7], and consequently, poor quality of life.

Although the results of some studies in this field suggested the ineffectiveness of meditation on the symptoms of depression [16,17], a significant reduction was observed in the mean score of the symptoms of depression in the samples of the treatment group compared to the control group according to DASS-21 in this study. This reveals the effectiveness of meditation exercises for eight weeks on the reduction of this unpleasant mental status in patients undergoing HD. The inconsistency between the reported results in the present study and other studies may be due to different mediation exercises or the uncertain number of samples. Therefore, further studies are needed to clarify this inconsistency.

However, the positive effect of meditation on the symptoms of depression in patients undergoing HD or any other underlying chronic illness is not strange and far-fetched.

Meditation has cognitive and cognitive-behavioral aspects and is very similar to cognitive-behavioral psychotherapy. For example, meditation like cognitive-behavioral psychotherapy techniques involve the patients in focusing on emotions and thoughts rather than catastrophic thoughts, turn a stressful position into an incentive to change the behavior [17], and finally, stop repetitive and persistent thinking [23]. Thus, cognitive-behavioral therapy techniques are emphasized as a complementary treatment for reducing the symptoms of depression [8].

Another important finding in this study is the effect of medication on lowering the rate of depression experienced by the patients undergoing HD after eight weeks of intervention and the lack of significant effect on the symptoms during four weeks after the intervention. According to Lee et al., this method for relieving the symptoms of depression has a kind of delayed effect [24].

Like any other study, the present study had some constraints. First, this study was limited to a group of patients hospitalized in two hospitals affiliated to Zanjan University of Medical Sciences, Iran. Therefore, there is low generalizability in this study. In addition, several samples were excluded during the study, which could be a threat to its validity.

As mentioned earlier, the results of the present study were consistent with those of some other studies regarding determining the effect of meditation on the symptoms of depression in patients with chronic disorders such as cancer, fibromyalgia, and the like. This indicates the validity of the results in this study. Further, the researchers were present twice a week for half an hour in meditation exercise meetings and a meeting for control group patients. Similarly, they held a training session on dialysis and complaints of dialysis and chronic kidney disease patients for half an hour in the control group. However, holding meetings to perform meditation exercises was a problem that could affect the outcomes of the study. Furthermore, the researchers had no plan to follow the long-term effects of meditation on the symptoms of depression due to resource constraints. Finally, the lack of follow-up was another limitation of the study.

According to the results of this study, meditation as a low-cost and simple exercise is associated with decreased depression in patients undergoing hemodialysis. The prevalence of this psychological disorder is high in this group of patients thus these exercises can be used to solve one of the major problems of these patients. However, the low volume of the sample and the lack of the generalizability of findings are considered as the most important constraints of the present study. Therefore, it is suggested to conduct future studies with a larger sample size in the future.

Acknowledgments
This study was approved by the Research Ethics Committee of Zanjan University of Medical Sciences (No.UMS.REC.1392.49).

Conflict of interest
The author declares that there is no conflict of interest.

References
1. Kasper DL, Fauci AS, Hauser SL, Longo DL, Jameson JL, Loscalzo J. Harrison's Principles of Internal Medicine. 1 st, 2 nd ed. United States: McGraw Hill Professional; 2018.
2. Trillini M, Perico N, Remuzzi G. Epidemiology of end-stage renal failure: the burden of kidney diseases to global health. Kidney Transplantation, Bioengineering and Regeneration: Elsevier; 2017. p. 5-11.
3. Germain MJ, Davison SN, Moss AH. When Enough Is Enough: The Nephrologist's Responsibility in Ordering Dialysis Treatments. Am J Kidney Dis. 2011; 58(1): 135-43.
4. Schell JO, Arnold RM. NephroTalk: communication tools to enhance patient-centered care. Semin Dial. 2012; 25(6): 611-16.
5. Kashinath G, Hemant B, Praerna C, Nagarathna R, Nagendra H. Role of yoga in chronic kidney disease: A hypothetical review. J Nephrol Ther. 2014; 4(3).
6. Jha V, Garcia-Garcia G, Iseki K, et al. Chronic kidney disease: global dimension and perspectives. Lancet. 2013; 382(9888): 260-72.
7. Goyal M, Singh S, Sibinga EMS, et al. Meditation Programs for Psychological Stress and Well-being: A Systematic Review and Meta-analysisMeditation for Psychological Stress and Well-beingMeditation for Psychological Stress and Well-being. JAMA Intern Med. 2014; 174(3): 357-68.
8. Kristeller JL, Rikhye K. Meditative Traditions and Contemporary Psychology. In: Rao KR, Paranjpe A, Dalal AK, editors. Handbook of Indian Psychology. Foundation Books; 2008: 506–38.
9. Sedlmeier P, Eberth J, Schwarz M, et al. The psychological effects of meditation: a meta-analysis. Psychol Bull. 2012; 138(6): 1139-71.
10. Hashemi J. Two heart meditation. Tehran: Culture and Art of Creative Visualization Institute; 2012.
11. Koike MK, Cardoso R. Meditation can produce beneficial effects to prevent cardiovascular disease. Horm Mol Biol Clin Investig. 2014; 18(3): 137-43.
12. Panta P. The possible role of meditation in myofascial pain syndrome: a new hypothesis. Indian J Palliat Care. 2017;23(2):180-87.
13. Boxleitner G, Jolie S, Shaffer D, Pasacreta N, Bai M, McCorkle R. Comparison of Two Types of Meditation on Patients' Psychosocial Responses During Radiation Therapy for Head and Neck Cancer. J Altern Complement Med. 2017; 23(5): 355-61.
14. Khusid MA, Vythilingam M. The emerging role of mindfulness meditation as effective self-management strategy, part 1: clinical implications for depression, post-traumatic stress disorder, and anxiety. Mil Med. 2016; 181(9):961-68.
15. Park K, Jun J, Jung S. The effects of Korean mindfulness based stress reduction program on the psychological symptoms, sleep and quality of life. Korea breast cancer patients. Korean J Str Res. 2013; 21(3): 249-62.
16. Kim YH, Kim HJ, Do Ahn S, Seo YJ, Kim SH. Effects of meditation on anxiety, depression, fatigue, and quality of life of women undergoing radiation therapy for breast cancer. Complement Ther Med. 2013; 21(4): 379-87.
17. Henry JD, Crawford JR. The short-form version of the Depression Anxiety Stress Scales (DASS-21): Construct validity and normative data in a large non-clinical sample. Br J Clin psychol. 2005; 44(2):227-39.
18. Sahebi A, Asghari MJ, Salari RS. Validation of depression anxiety and stress scale (DASS-21) for an Iranian population. Iran Psychol. 2005; 4(1): 299-313. [In Persian]
19. Ahmadzadeh GH, Mehdi M. The Prevalence of Depression, Anxiety and Psychosis among Hemodialysis patients in Nour and Ali Asghar Hospitals in Isfahan. Isfahan Med School. 2012; 29(162). [In Persian]
20. Cukor D, Ver Halen N, Asher DR, et al. Psychosocial intervention improves depression, quality of life, and fluid adherence in hemodialysis. J Am Soc Nephrol. 2014; 25(1): 196-206.
21. Writers group. Nurse and dialysis. 2 nd ed. Tehran: Soha; 2009: 5-6. [In Persian]
22. Goh ZS, Griva K. Anxiety and depression in patients with end-stage renal disease: impact and

management challenges–a narrative review. Int J Nephrol Renovasc Dis. 2018;11:93-102.
23. Hölzel BK, Lazar SW, Gard T, Schuman-Olivier Z, Vago DR, Ott U. How does mindfulness meditation work? Proposing mechanisms of action from a conceptual and neural perspective. Perspect Psychol Sci. 2011; 6(6):537-59.
24. Lee SH, Ahn SC, Lee YJ, Choi TK, Yook KH, Suh SY. Effectiveness of a meditation-based stress management program as an adjunct to pharmacotherapy in patients with anxiety disorder. J Psychosom Res. 2007; 62(2): 189-95.