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Comparison of the effectiveness of mindfulness and homeopathy on sleep and chronic pain in patients with diabetes mellitus

Khadijeh Rabbani[1], Shahrbanoo Ghahari[2], Leila Behnam[3], Hoda Ahmadi-Alashti[1], Zeinab Fazli[1]

1 Department of Psychology, School of psychology, Tonekabon Branch, Islamic Azad University, Tonekabon, Iran
2 Department of Mental Health, School of Behavioral Sciences and Mental Health (Tehran Institute of Psychiatry), Iran University of Medical Sciences, Tehran, Iran
3 Department of Psycholoy, School of Psychology, Payame Noor University of Tehran, Tehran, Iran

Original Article

Abstract

BACKGROUND: Diabetes mellitus (DM) can affect many aspects of life. Numerous psychological interventions have been applied to control this disease. The aim of this study is to examine the effectiveness of mindfulness and homeopathy on sleep and chronic pain in patients with DM in Tehran, Iran.

METHODS: The method of study was quasi-experimental with a control group with pretest and posttest stages. The statistical population of the study consisted of all patients with DM referred to the Iranian Diabetes Society (IDS) in Tehran in 2016. Patients with DM with sleep and chronic pain disorders were selected for this study. Among the individuals, 45 people were randomly selected and placed in 3 groups (homeopathy n = 15), mindfulness (n = 15), and control group (n = 15). The two experimental groups (homeopathy and mindfulness) underwent the interventions of homeopathy and mindfulness, respectively, while the control group was in the wait list. All three groups filled out the Pittsburgh Sleep Quality Index (PSQI) and McGill Pain Questionnaire (MPQ) at the baseline and follow-up steps. The data were analyzed using analysis of covariance (ANCOVA) in SPSS software (version 22, IBM Corporation, Armonk, NY, USA).

RESULTS: The results showed that mindfulness-based stress reduction (MBRS) and homeopathy could improve chronic pain and sleep disorders in the experimental groups ($P < 0.05$), however the mindfulness-based treatment was better than homeopathy for reduction of chronic pain and improvement of sleep disorders ($P < 0.05$).

CONCLUSION: Mindfulness and homeopathy are effective in the reduction of chronic pain and sleep disorders in patients with DM, with mindfulness being more effective than homeopathy. This alternative medicine could improve pain and sleep effectively in patients with DM.

KEYWORDS: Mindfulness; Homeopathy; Sleep; Chronic Pain; Diabetes

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Introduction

Diabetes mellitus (DM) is a chronic metabolic health problem and a common cause of death and disability worldwide. It has significant effects not only on the body, but also on the psychological wellbeing and social functioning. Patients with DM include 25.8 million people in the United States as approximately 8.3% of the population, according to the National Diabetes Information Clearinghouse (NDIC). Patients' quality of life (QOL), wellbeing, and social relationship are

Corresponding Author:
Shahrbanoo Ghahari; Department of Mental Health, School of Behavioral Sciences and Mental Health (Tehran Institute of Psychiatry), Iran University of Medical Sciences, Tehran, Iran
Email: ghahhari.sh@iums.ac.ir

influenced by DM and its side effects.[1] This disease is estimated to increase by 69% in developing countries and 20% in developed countries during 2010-2030.[2]

DM is a disease with chronic nature that is called a silent epidemic and is an increasing health problem including somatic problems, psychological disorders, and sleep problems in patients. Several studies have shown that psychological problems such as depression and anxiety, as well as chronic pain and sleep problems are prevalent in individuals with DM.[2-4]

The mindfulness-based stress reduction (MBSR) program is a wave of cognitive-behavioral therapies developed by Jon Kabat-Zinn.[12] This approach is utilized to treat chronic somatic and psychological disorders such as anxiety, depression, pain, cancer, skin diseases, immune disorders, and DM.[4-5] The concept of the "mindfulness theory" provides insight into how thoughts and emotions impact our emotional wellbeing.[7] The strategies of this approach include breathing meditation, yoga, body scan, and mindful breathing.[4] The results showed that MBSR could improve chronic pain and sleep disorders in patients with DM.[6]

The study of Rosenzweig et al. showed the efficacy of MBSR on chronic pain in patients with DM.[18]

Homeopathy is the alternative intervention for treatment of many diseases and is a method in which herbal supplements are used and can be significantly effective for the treatment of DM and the negative consequences of this disease such as insomnia and sleep disorders.[8,9] Several studies have shown that homeopathy is an effective alternative approach for reduction of chronic pain, improvement of sleep, and other physical problems in people with DM.[9-11]

As evident, patients with DM are affected by stress, thus it is necessary to implement psychological interventions for control of this chronic disease. Hence, this study is performed aiming to compare the efficacy of MBSR and homeopathy on the improvement of sleep and reduction of pain in patients with DM in Tehran.

Methods

This was a quasi-experimental study conducted in IDS on the statistical population comprising of all patients with DM who had referred to the IDS. Among the patients, 45 subjects qualifying the inclusion criteria were selected using the convenience sampling method and assigned randomly to three groups of homeopathy (n = 15), mindfulness (n = 15), and control group (n = 15).

The study inclusion criteria were age range of 18-60 years old, literacy, suffering from sleep disorders and chronic pain [in accordance with the score of the Pittsburgh Sleep Quality Index (PSQI) and McGill Pain Questionnaire (MPQ)], suffering from type II DM (considering clinical records and patient's test form), and tendency to participate in the study. The exclusion criteria were the age younger than 18 and older than 60, suffering from acute physical problems, illiteracy, lack of sleep disorders and chronic pain, and lack of type II DM.

The experimental groups participated in the intervention for 8 sessions while the control group was in the waiting list. All subjects filled out the PSQI and MPQ scales at the baseline and post-intervention stages. The data were analyzed using analysis of covariance (ANCOVA) in SPSS software (version 22, IBM Corporation, Armonk, NY, USA).

Research Instruments

PSQI: This instrument was specifically designed for use in clinical populations to assess sleep. The PSQI has seven component scores and a global score. It consists of 19 self-rated questions that are scored in a 0-3 range over a period of one month. Acceptable measures of internal homogeneity, consistency (test-retest reliability), and validity have been

demonstrated. It has sensitivity in distinguishing good and poor sleepers. The Cronbach's alpha coefficient for this questionnaire has been obtained about 83%.[12] In a study conducted in Iran to provide Persian validity of the questionnaire, this coefficient was 89%.[112]

MPQ: The short form of the McGill Chronic Pain Questionnaire includes 15 items related to sensory and emotional components of pain, visual grading criteria of pain (point 0-10) and choosing one of the 5 pain criteria (no pain, mild, discomforting, distressing, horrible and excruciating). Maximum points obtainable from this scale are 60. The validity and reliability of the instrument has been obtained as (α = 75%) and (r = 89%) using Cronbach's alpha in previous studies. The validity and reliability of the instrument has been obtained as (α = 75%) and (r = 89%) using Cronbach's alpha in a study in Iran.[13]

Intervention Package

MBSR protocol: This protocol is based on the study by Kabat-Zinn for stress reduction. It is performed in eight 90-minute sessions.[12] The participants were trained about MBSR, then MBSR is introduced, in addition to introduction of the participants and rule of the class. The content of the sessions included sitting meditation, mindful breathing, body scan, mindful breathing and body scan, mindful walking, mindful yoga, and review of the total techniques and giving feedback.

Homeopathy protocol: This protocol is based on the study by Banerji.[3] It is performed in 8 sessions and the content of the package included a brief description about this alternative medicine, assessment of the symptoms and signs of sleep disorders and chronic pain, assessment of effects of the drugs used, assessing lifestyle, stressors, and introducing herbal medicines.

Results

The participants in this study were 45 people including 24 men and 21 women in 3 groups, with 8 men and 7 women in each group. The age range of the participants was 20-40 years old and the mean education level was diploma. In terms of employment, 80% were employed and 20% were unemployed.

In this study, the parametric multivariate analysis of covariance (MANCOVA) test was employed. Considering the Levin's test significance for the study variables, there was variance homogeneity.

According to the results of table 1, the Eta square value was obtained as 0.922, which is a share of variance related to the new combined variable. In general, if the Eta square value is above 0.14, there will be a high effect, indicating the high effectiveness of MBSR and homeopathy of the experimental group (P ≤ 0.0001).

Table 1. F ratio for size of hybrid variable of sleep disorder and chronic pain in patients with diabetes mellitus (DM)

Source	Statistical power	F (27.1)	P	Eta
Hybrid variable (group)	1.000	321.29	≤ 0.0001	0.922

Furthermore, the Eta^2 values of the variables (physical, emotional and cognitive pains, and sleep disorder) were obtained as 0.837, 0.710, 0.544, and 0.870, respectively in the experimental group of mindfulness, which were above 0.14. Moreover, the Eta^2 values of the variables in the homeopathy group were respectively 0.700, 0.710, 0.232, and 0.470, indicating effectiveness of the homeopathy therapy in reducing pain and sleep disorder in patients with DM (Eta > 0.14).

Additionally, there was a significant difference between the two experimental groups. The Eta^2 values in the mindfulness group were greater than those of the homeopathy group (Table 2). Hence, it could be stated that MBSR was more effective than homeopathy in reducing chronic pain and sleep problems (P < 0.0500).

Table 2. Multivariate analysis of covariance (MANCOVA) to test difference of variables between two groups at posttest step

Group	Variable	Sum of squares	Mean square	F	P	Eta	Statistical power
Homeopathy	Physical pain	576.35	576.35	58.30	≤ 0.0001	0.700	1.000
	Emotional pain	184.20	184.20	52.83	≤ 0.0001	0.679	1.000
	Cognitive pain	34.63	34.63	7.54	0.0110	0.232	0.752
Mindfulness	Sleep disorder	24.16	24.16	6.34	≤ 0.0001	0.470	0.134
	Physical pain	727.67	727.67	128.09	≤ 0.0001	0.837	1.000
	Emotional pain	267.09	167.09	61.32	≤ 0.0001	0.710	1.000
	Cognitive pain	114.28	114.28	29.88	0.0110	0.544	0.999
	Sleep disorder	26.34	26.34	6.59	≤ 0.0001	0.780	0.451

Discussion

The results of the current study suggested that the use of MBSR programs improves sleep disorders, while decreasing chronic pain of patients with type 2 DM. This finding is in line with the results of the study by Ebrahimi and Ghahari that approved the effect of MBSR on chronic pain reduction, increased attention, sleep improvement, and improvement of QOL among patients.[16] Other studies also showed the efficacy of MBSR on reduction of pain and improvement of sleep disorders in patients with DM.[17-18] MBSR is a structured group program that uses mindfulness meditation to improve well-being and alleviate suffering in patients with somatic and psychological problems.[18-19]

Moreover, other results of the current study indicated that the homeopathy as an alternative medicine could improve sleep among patients with DM. This result is in agreement with the findings of the study by 9. Gadde et al. that showed the effect of homeopathy could treat insomnia in patients with DM.[9] Some studies showed that homeopathy increases the quality of sleep in patients with DM[20,21] and this study also indicated that the efficacy of homeopathy could sustain for a long time. MBSR and homeopathy could increase wellbeing and mental health in patients through improving sleep and mood and decreasing pain and distress.[11-20] The limitation of this study was the loss of a follow-up period, which is suggested to be considered in future studies.

Conclusion

MBSR is a useful method to help patients with type 2 DM to diminish chronic pain and sleep problems. Moreover, homeopathy is effective for reducing chronic pain and sleep disorders in patients with DM, however MBSR is more effective than homeopathy for reduction of pain and improvement of sleep.

Conflict of Interests

Authors have no conflict of interests.

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