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Measurement of quality of life and participant experience with the mindfulness-based stress reduction program☆

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A B S T R A C T

Clinical studies of MBSR have reported efficacy in treating pain, mood disorders, arthritis, sleep disturbances, and stress. Several academic medical institutions in the United States offer MBSR to their patients, but it has never been offered at Mayo Clinic. The objective of this study was to collect quality-of-life data from subjects who participated in the first MBSR program offered at Mayo Clinic. The class was taught as a collaborative effort with the University of Minnesota that had an established MBSR program. Sixteen participants completed a validated, 12-question, linear analogue self-assessment instrument, administered at the beginning and end of the program. Comparison of assessment scores using paired *t*-tests showed statistically significant improvement in overall quality of life ($P = 0.04$), mental well-being ($P = 0.005$), physical well-being ($P < 0.001$), emotional well-being ($P < 0.001$), level of social activity ($P = .02$), and spiritual well-being ($P = 0.006$). Although positive changes also were observed for frequency of pain, severity of pain, level of fatigue, level of support from friends and family, and financial and legal concerns, they were not statistically significant. A short intervention in the education of mindfulness significantly improved quality of life for participants.

1. Introduction

By 2010, 141 million Americans are predicted to have a chronic disease.[1] Chronic disease accounts for more than 75% of total medical expenditures in the United States—$1.4 trillion annually.[2] With the rising cost of pharmaceutical therapies, medical interventions, and health care visits, additional treatments that promote health and well-being clearly are needed. One such intervention is mindfulness-based stress reduction (MBSR). The MBSR program educates participants on the concepts of mindfulness: participants attend didactic lectures, perform self-exploration, and take part in activities such as breathing, yoga, body scanning, and slow walking, all of which are geared to bring awareness of the present moment and cultivate mindfulness.

More than 15,000 people have participated in the MBSR program founded by Dr Jon Kabat-Zinn. During the past 20 years, studies have shown benefits of MBSR, with clinically relevant reductions in medical and psychological symptoms across a wide range of diagnoses such as stress, anxiety, and depression.[3–6] MBSR also has benefitted patients with chronic pain unresponsive to traditional therapies,[7] improved immune functions after immunization,[8] decreased psoriasis,[9] and decreased symptoms related to fibromyalgia.[10] The aim of this study was to collect quality-of-life (QOL) data from subjects who participated in the first MBSR program offered at our institution.

2. Methods

This study was approved by our the Mayo Clinic Institutional Review Board. Classes were taught as a collaborative effort with

Abbreviations: LASA, linear analogue self-assessment; MBSR, mindfulness-based stress reduction; QOL, quality of life.

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Table 1
Participant characteristics ($N = 16$).

Characteristic	Value
Age, y	
Mean (SD)	46.7 (9.4)
Median	48
Range	27–64
Women, No. (%)	14 (87.5)
Medical conditions, No. (%)	
None	5 (31.3)
Pain	3 (18.8)
Cancer	3 (18.8)
Raynaud disease	1 (6.2)
Gastroesophageal reflux disease, Raynaud disease	1 (6.2)
Anxiety and panic disorder	1 (6.2)
Mild asthma	1 (6.2)
Atrial fibrillation and elevated cholesterol	1 (6.2)

the University of Minnesota (Minneapolis, Minnesota), which had an established MBSR program. To recruit study participants, the MBSR program was advertised in the local newspaper, publicized through announcements Mayo Clinic (Rochester, Minnesota), and posted on the University of Minnesota Web site. The program was open to all who wanted to participate, regardless of health status, and enrollment in the research study was not mandatory for participation in the MBSR program. Participants who expressed interest in the study were asked to provide information (e.g., age, sex, address, and medical conditions) and QOL data at the start of the program and at the end of the program.

2.1. Intervention

The intervention was modeled after the MBSR program, developed at the University of Massachusetts Medical Center by Dr Jon Kabat-Zinn.[7] The 8-week course consisted of once-weekly evening classes and a day-long retreat. It included guided instruction in mindfulness meditation practices, body-scan techniques, gentle stretching, and yoga. Inquiry exercises were provided to enhance self-awareness in everyday life. Group discussion was facilitated, and individually tailored instruction was provided. Participants had daily homework assignments and were provided 2 audio cassette tapes and a workbook for practice purposes.

2.2. Data instrument

A reliable and validated linear analogue self-assessment (LASA) scale was used to measure 12 domains of well-being: intellectual, physical, emotional, social, spiritual, pain frequency, pain severity, fatigue, support of family and friends, financial concerns, legal concerns, and overall QOL.[11–17] The LASA is shown in the Appendix. A Likert-type selection for each question was provided, and respondents were asked to rate their perceived level of well-being on a scale of 0 (as bad as it can be) to 10 (as good as it can be).

2.3. Statistical methods

Paired student *t*-tests were used to compare the mean difference of scores before and after the intervention and to compare the relative change in scores. Missing data were analyzed according to intent to treat. *P* values less than 0.05 were considered statistically significant.

3. Results

Seventeen participants were enrolled in the study; however, one left the study citing scheduling conflicts. Baseline characteristics of the 16 participants are listed in Table 1.

LASA scores (Table 2 and Fig. 1) were significantly improved after the intervention for physical well-being ($P < 0.001$), emotional well-being ($P < 0.001$), overall QOL ($P = 0.04$), mental well-being ($P = 0.005$), spiritual well-being ($P = 0.006$), and social well-being ($P = 0.02$). Participants also reported positive changes (improvement) in frequency of pain, severity of pain, level of fatigue, level of support, and financial and legal concerns, but these changes were not statistically significant.

4. Discussion

The goal of MBSR is to increase awareness of the present moment. By its very nature, MBSR activates a novel, personal method of coping with stress. External stressors are a part of life and cannot be changed, but the methods of coping with stress and how individuals respond to stress can be changed.

The aim of this study was to measure QOL before and after completing the MBSR program. QOL is determined by personal perceptions and thus is a subjective matter. Testa and Simonson[18] defined health-related QOL in broad terms: "physical,

Table 2
Effect of MBSR intervention on LASA scores.

Question	LASA score, Mean (SD)		Difference		*P* Value[b]
	Baseline	After intervention	Absolute difference	Relative change, %[a]	
Overall QOL	6.56 (1.79)	7.47 (1.36)	0.91	25.90	0.04
Mental	6.44 (1.67)	7.59 (1.38)	1.15	23.00	0.005
Physical	6.69 (1.40)	7.84 (1.69)	1.15	17.70	<0.001
Emotional	5.81 (1.90)	7.34 (1.33)	1.53	41.20	<0.001
Social activity	6.50 (1.97)	7.47 (1.73)	0.97	20.50	0.02
Spiritual	6.56 (1.63)	7.56 (1.75)	1.00	17.80	0.006
Pain frequency	7.00 (3.22)	7.75 (2.79)	0.75	24.40	0.22
Pain severity	7.81 (2.26)	8.63 (1.54)	0.82	19.80	0.10
Fatigue	5.44 (2.47)	6.19 (2.25)	0.75	22.00	0.08
Support	7.44 (2.12)	7.94 (1.84)	0.50	9.90	0.12
Financial concerns	5.63 (3.03)	7.00 (2.28)	1.37	79.00	0.05
Legal concerns	6.88 (2.98)	7.13 (3.20)	0.25	7.70	0.61

Abbreviations: LASA, linear analogue self-assessment; MBSR, mindfulness-based stress reduction; QOL, quality of life.

[a] Relative change for each person was calculated with this formula: (postintervention score–baseline score)/baseline score × 100%. The relative change for each question was calculated by summing the percent relative change from each person and dividing by the total number of persons.

[b] Paired *t*-test.