ORIGINAL ARTICLE

The Effectiveness of a Brief Mind-Body Intervention for Treating Depression in Community Health Center Patients

采用短期身心合一干预措施对社区健康中心的患者进行治疗的效果

Efectividad de una intervención mente-cuerpo breve para tratar la depresión en pacientes de centros de salud comunitarios

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ABSTRACT

Objective: The objective of this pilot study was to examine the effects of a brief, 6-week, 1.5-hour mind-body intervention for depression (MBID) in patients being treated for depression in 2 community health centers.

Design: The MBID taught techniques such as meditation that elicit the relaxation response (RR) in combination with additional resiliency-enhancing components. Clinical outcomes of 24 depressed patients were measured pre-MBID, at completion of MBID, and 3 months post-MBID, using the Center for Epidemiological Studies Depression Scale (CES-D 10), Quality of Life Scale (QoL5), SF-12 Health Survey (SF-12), and Health-Promoting Lifestyle Profile-II (HPLP-II).

Results: Significant post-treatment improvements were shown in depressive symptoms, spiritual growth, mental health, and quality of life, with a median CES-D 10 change from 17.5 (interquartile ratio [IQR] 13.3-22) to 12 (IQR 10-17.5; *P*<.001); a median HPLP-II Spiritual Growth subscale change from 2.0 (IQR 1.8-2.3) to 2.3 (IQR 2.0-3.0; *P*=.002) and a median HPLP-II Stress Management subscale change from 2.0 (IQR 1.8-2.4) to 2.4 (IQR 2.0-2.9; *P*=.027); significant improvement in median score on the QoL-5 from 53.3 (IQR 47.5-62.5) at baseline to 63.3 at endpoint (IQR 50-70; *P*=.008). Three-month follow-up data suggest that the improvement in outcomes were sustained 3 months after the intervention.

Conclusions: Participation in a 6-week RR-based MBID is associated with an improvement in depression, spiritual growth, and mental health among depressed community health center patients.

摘要

目的：此试点研究的目的是：评估使用短期（为期 6 周）的 1.5 小时身心合一干预措施（MBID）来治疗两个社区健康中心的抑郁症患者的效果。

设计：MBID 教授技巧（例如冥思）可以诱发放松的反应（RR），以及其他加强意志力。使用了流行病学研究中心抑郁量表（CES-D 10）、生活质量评价表（QoL5）、SF-12 健康调查（SF-12）和有利健康的生活方式概况-II（HPLP-II），对 24 名抑郁病患者在 MBID 之前、完成 MBID 时以及 MBID 之后三个月分别进行测量以取得临床结果。

结果：抑郁症状、心灵成长、精神健康和生活质量方面在治疗后表现出极大的改善，CES-D 10 中位数从17.5（四分位比例 [IQR] 13.3–22）变成 12（IQR 10–17.5；P<.001）；HPLP-II 中的心灵成长中位数从2.0（IQR 1.8–2.3）变成 2.3（IQR 2.0–3.0；P=.002）；HPLP-II 中的压力管理中位数从 2.0 （IQR 1.8–2.4）变成了 2.4 （IQR 2.0–2.9；P=.027）；QoL-5 的中位数也有很大提高，从基线的 53.3（IQR 47.5–62.5）提高到终点的 63.3 （IQR 50–70；P=.008

）。随后三个月的追踪数据显示，这些改善在执行干预措施后三个月仍旧保持。

结论：社区健康中心抑郁症患者在参与了为期 6 周的以放松为基础的 MBID 后，在抑郁、心灵成长和精神健康方面都有所改善。

SINOPSIS

Objetivo: el objetivo de este estudio piloto era examinar los efectos de una intervención de cuerpo y mente breve para tratar la depresión (Mind-Body Intervention for Depression, MBID) de 6 semanas en sesiones de 1 hora y media de duración en pacientes tratados por depresión en dos centros de salud comunitarios.

Diseño: las técnicas MBID enseñadas, como la meditación, que suscitan la respuesta de relajación (RR), en combinación con componentes adicionales de aumento de la resiliencia. Se midieron los resultados clínicos de 24 pacientes deprimidos antes de la MBID, una vez completada la MBID y 3 meses después de la MBID, utilizando la escala de depresión del Centro para estudios epidemiológicos (Center for Epidemiological Studies Depression Scale, CES-D 10), la escala de calidad de vida (CDV5), la encuesta de salud SF-12 (SF-12) y el perfil II de estilo vital de promoción de salud (Health-Promoting Lifestyle Profile II, HPLP-II).

Resultados: se demostraron mejoras postratamiento significativas en los síntomas depresivos, crecimien-

to espiritual, salud mental y calidad de vida, con un cambio medio en el CES-D 10 de 17,5 (razón intercuartil [interquartile ratio, IQR] 13,3-22) a 12 (IQR 10-17,5; p<0,001); un cambio medio en la subescala HPLP-II de crecimiento espiritual de 2,0 (IQR 1,8-2,3) a 2,3 (IQR 2,0-3,0; p=0,002) y un cambio medio en la subescala HPLP-II de gestión del estrés de 2,0 (IQR 1,8-2,4) a 2,4 (IQR 2,0-2,9; p=0,027); mejora significativa en la puntuación media en la CdV-5 desde un valor inicial de 53,3 (IQR 47,5-62,5) a 63,3 en el momento de la valoración (IQR 50-70; p=0,008). Los datos del seguimiento de tres meses sugieren que la mejora de los resultados se mantuvo 3 meses después de la intervención. **Conclusiones:** la participación en una MBID de 6 semanas basada en RR se asocia con una mejora en la depresión, el crecimiento espiritual y la salud mental entre los pacientes deprimidos de centros de salud comunitarios.

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INTRODUCTION
Depression and Primary Care

The adverse effects of depression and chronic medical conditions on functioning are additive[1] and are associated with increased healthcare costs.[2] It is well established that depression adversely affects outcomes and increases costs from chronic medical conditions. Depression increases chronic pain associated with chronic diseases, disease comorbidity, and decreases compliance rate and lifespan.[3,4] The use of health care services and healthcare costs for outpatients with depression range from 50% to 100% higher than for those who do not have this disorder.[5]

Disparities in Mental Health

Community health centers are frequently utilized as a safety net to underserved patients with state subsidized insurance or those with no insurance coverage. According to the Health Resources and Services Administration Primary Care Demographic Trends (2009), 71% of patients served through community health centers are at or below 100% the Federal Poverty guidelines.[6] Lower-income populations are at higher risk for mental health problems including depression[7-9] and often face complex, multifaceted, psychosocial issues that extend beyond the patient's immediate medical needs.

Prior mind-body interventions provided by the Benson-Henry Institute (BHI) were primarily done with college-educated, white, insured, middle-to-upper socioeconomic class populations with an average of 17.4 years of education. This pilot was aimed at developing a mind-body intervention for health center patients being treated for depression who were low-middle socioeconomic status, less educated and more diverse than the prior populations served by the BHI.

This pilot study examined the effects of a low-cost, 6-week brief mind-body intervention for depression (MBID) in patients being treated for depression in 2 community health centers affiliated with the Massachusetts General Hospital (MGH), Boston. Objectives were to (1) measure the effects of the program on the severity of depression and mental health in community health center patients and (2) evaluate adherence to the MBID's clinical protocol in a community health center setting.

MATERIALS AND METHODS
Health Center Setting

MGH Revere and Charlestown Health Centers each provide low-income, culturally diverse populations a full range of primary care services and outreach including adult medicine, med-peds, pediatrics, gynecology and obstetrics, medical specialties, mental health, nutrition, physical therapy, social services, laboratory services, and radiology. Additionally, each center has in-house medical translators and multilingual patient liaisons.

Participants

All participants were being treated for depression with medications or psychotherapy at the MGH-Revere or MGH-Charlestown Health Centers. Referrals came from health center primary care providers (PCPs), mental health providers, or directly from patients themselves through postcards in the waiting areas. All patients received clearance from their PCPs to participate in the study. The study received approval from the MGH Institutional Review Board. Licensed independent clinical social worker (LICSW) Group Facilitators who were trained by MGH-BHI in the MBID met with the referred patients to conduct an intake for obtaining basic demographic and clinical information, determined if they were appropriate for the group based on the inclusion and exclusion criteria, and reviewed their goals for group participation. Patients were then referred to the study staff for informed consent and for administration of the pre-intervention assessments.

Inclusion Criteria
- Patients 21 years of age or older
- Currently being treated for depression with medications and/or psychological counseling through MGH Revere or Charlestown community health centers

- Planning to continue using the health center as their main source of general medical services for the coming year

Exclusion Criteria
- History of bipolar disorder
- Active substance abuse
- History of psychosis
- Severe cognitive dysfunction (Mini-Mental State Examination [MMSE] score ≤24. MMSE was performed if the potential patient was suspected to have significant cognitive dysfunction during intake assessment)
- Inability to speak English

BRIEF MIND-BODY INTERVENTION FOR TREATING DEPRESSION

The MBID is a low-cost, easily replicable, 6-session mind-body intervention that was derived from the medical symptom reduction program (MSRP), a 12-session outpatient group program offered by the BHI for more than 25 years. The MSRP is designed to promote resiliency by reducing the harmful effects of stress through elicitation of the relaxation response (RR), as well as skill training in support of resiliency, in order to enhance positive attitudes and beliefs, nutrition, exercise, recuperative sleep, social support, and coping (Table 1).

Table 1 Six-Week MSRP Curriculum for Health Centers (Version 1)

Six-Week MSRP Curriculum for Health Centers (1.5 hrs each session)

Session 1	Stress & the Relaxation Response
Session 2	Appreciation, Mindfulness
Session 3	Yoga, Exercise, and Movement
Session 4	Emotion and Imagery; Coping
Session 5	Beliefs and Emotions; Nutrition
Session 6	Positive Qualities; Integration

Abbreviation: MSRP: medical symptom reduction program.

Using feedback from providers and patient survey results, the MSRP was modified for use in the MGH community health centers by reducing the number of sessions from 12 to 6; reducing the length of the sessions from 2.5 hours to 1.5 hours; and reformatting and rewriting the patient manual to reach patients with lower literacy levels. The resulting MBID program has been manualized for use by group facilitators and health center patients.

Mind-Body Intervention for Depression Program Components

The MBID included (1) teaching elicitation of the RR using a variety of methods, such as breath focus, single-pointed focus, imagery, contemplation, yoga, and mindful awareness; (2) promoting adaptive cognitive coping strategies, such as optimism and acceptance; (3) promoting healthy lifestyle behaviors, such as recommendations for nutrition, exercise, and restorative sleep; and (4) building social support. The theory underlying the MBID is described by Park et al.[10] Throughout the course of treatment, participants were asked to elicit the RR at home each day for at least 20 minutes, using either a guided meditation on CD or another method of their choosing. Materials used for this MBID were written at a sixth-grade reading level and delivered in English.

Assessments

Measurement tools were selected to be self-administered, well validated in diverse populations, clinically relevant, and to take no more than 30 to 45 minutes to complete.

The instruments were administered at the beginning of group meeting 1 (end of control period/start of intervention period; this set of numbers was used for pre-median in the analysis) and at the end of group meeting 6 (end of intervention period; this set of numbers was used for post-median in the analysis). Follow-up assessments were performed using the same measurement tools 3 months post-intervention.

Depression Severity: The Center for Epidemiologic Studies Depression Scale (CES-D 10) was used to assess depression severity pre-and post-intervention. This is the shorter 10-item, modified version of the 20-item CES-D. The total score is the sum of the 10-item weights, with the lowest possible score being 0 and the highest possible score being 30. Developed from other well-validated depression scales, this instrument measures the experience of depressive symptoms over the past week. This instrument is shown to be better than the CES-D 20 in combining data from different ethnic and cultural groups and is available in both English and Spanish. The CES-D provides cutoff scores (eg, 16 or greater) that aid in identifying individuals at risk for clinical depression, with good sensitivity and specificity, high internal consistency, and validity.[11]

Health Status: The Short-Form 12 version 1 (SF-12v1) was used to assess health status. It is a 12-item instrument that was the shortened version of the well-validated SF-36 measuring physical and mental health quality of life by the physical component scale (PCS) and mental component scale (MCS), respectively. It is available in both English and Spanish. Scores ranging from 0 to 49 signify negative health status and scores of 50 to 100 indicate positive health status. Scoring algorithms involve weighted-item responses.[12,13]

Health-promoting Behaviors: The Health Promoting Lifestyle Profile II (HPLP-II) was used to assess health-promoting behaviors. Based on the Health Promoting Model (Pender, 1982), this 52-item instrument measures self-initiated health behaviors that serve to maintain or enhance the level of self-actualization and wellness. Included are subscales for physical activity, spiritual growth, health responsibility, interpersonal relations, nutrition, and stress management. It is self-administered and uses a 4-point response format. Both English and Spanish versions are available.[14,15]

Quality of Life: The Quality of Life-5 (QOL-5) is a

5-item, global questionnaire used to compare various population groups using generic factors common to people everywhere irrespective of age, sex, culture, and state of health.[16]

DATA ANALYSIS

A combination of descriptive and inferential statistics was used to analyze study data. Unless otherwise noted, an alpha level of 0.05 was used for all statistical tests. The primary dependent measures were scores on the CES-D 10, QOL-5, SF-12, and the HPLP-II. For a pair-wise comparison of the pre, post, and 3-month follow-up data, we made an a priori decision to use the Wilcoxon signed ranks test due to the small sample size involved and unevenly distributed data set.[17] Since this test is nonparametric and the scores are unevenly distributed, we report the median and interquartile range (IQR) in our results.

While not all participants completed pre, post and follow-up assessments, given the pilot nature of this study, we did not do an intent-to-treat analysis and instead included only participants who completed measurements at either 2 or 3 time points.

RESULTS
Study Outcomes

Between the fall of 2007 and spring of 2008, 3 MBID groups were offered and 28 depressed patients were enrolled from the MGH-Charlestown and the MGH-Revere Community Health Centers. Out of the total 28 enrolled participants, the number of attendees for sessions 1 to 6, respectively, was 25, 24, 22, 19, 20, and 18. Of a maximum of 6 total sessions, 1 participant attended no sessions, 1 attended one, 1 attended two, 2 attended three, 7 attended four, 6 attended five, and 10 attended all six. Twenty-four patients met completer status, defined as patients who attended at least one session and completed the pre and post assessment tools. Nineteen participants completed pre, post and follow-up assessments. The five who did not complete the post assessments either missed the last group (week 6) and/or were not able to come in for the scheduled 3-month follow-up assessment. Participants who missed session 6 were contacted by phone and invited back to take the post-assessments.

The completer group was composed primarily of white women (89%). The age range was 25 to 71 years, with a mean age of 50.2 years. All but one spoke English as his/her primary language, and the majority were of low or moderately low socioeconomic status. Educational attainment was high school/GED (or less) for 42.9%, some college/vocational technical school for 28.6%, and college graduation for 28.6%.

Even with the small sample size, the data indicate that patients who completed the program showed a significant decrease in their depressive symptoms with a median CES-D 10 change from 17.5 to 12 (Table 2). As 16 is the threshold for clinical depression, with higher numbers reflecting increased severity of depressive symptoms, a CES-D score from ≥16 to <16 is a significant clinical change.[11]

There was significant improvement found in the SF-12v1 global mental composite score from baseline to endpoint; however, no significant improvement was found in the global physical component score. Participants also scored significantly higher in the SF-12v1 Vitality and Social Functioning subscales (Table 2). Patients showed significant improvement in median score on the QoL-5, from 53.3 at baseline to 63.3 at endpoint (Table 2; score categories for the QoL-5 are as follows: 90=very good, 70=good, 50=neither, 30=bad, and 10=very bad).[17] In addition, there were significant improvements in scores on 2 of the Life Profile II subscales: the Spiritual Growth subscale and the Stress Management subscale.

Three-month follow-up data showed sustained improvements in depression (slightly higher median score of 13 for CES-D), sustained mental health scores (unchanged median score of 50), sustained quality of life scores (slightly higher median score of 65), and sustained spiritual growth scores (slightly higher median score of 2.5). Pre-Post and 3-month follow-up study results are summarized in Table 2.

DISCUSSION

Results from this small pilot study support the effectiveness of the MBID intervention in underserved populations with lower socioeconomic status and education levels, although this study needs to be replicated in larger populations. Positive results rely partially on adherence to the MBID program. The majority of study participants completed most of the sessions. The high adherence rate for this study suggests that a mind-body program in this population is in fact feasible and desirable. We have since incorporated the MBID into clinical practice at the health centers, as a low-cost, billable behavioral health intervention provided by licensed clinical social workers trained in the MBID. A retrospective review of patient medical records showed an improvement in symptoms of depression and anxiety as well as decreases in perceived stress among the community health center patients who participated.[18]

Additionally, as a way to offer this intervention to monolingual immigrant populations, we have translated the patient manual and companion "relaxation CDs" into Spanish and Mandarin and have begun offering the program as a pilot in these languages. Efforts such as these help to make mind-body interventions more affordable and accessible to health center patients and help to address disparities in the use of mental health services by ethnic minorities, and in populations with lower socioeconomic status.[19-21]

The program is now delivered over 8 weeks (1.5 h/wk) and has been renamed "Stress Management and Resiliency Training" (SMART) in an effort to broaden the base of patients served to include those with medical diagnoses such as chronic pain, in addition to depression and anxiety.

Table 2 Participants in a 6-week Mind-Body Intervention for Depression: Symptom Changes From Pre, Post, and 3-month Follow-up Program Completion With Medians and Interquartile Ranges (IQR)

Variable	Pre-intervention Median (IQR)	Post-intervention Median (IQR)	Pre/Post P	3-mo Follow-up Median (IQR)	Pre/Follow-up P
CESD-10[a]	17.5 (13.3-22)	12 (10-17.5)	<.001[b]	13 (8.75-15.75)	.005[b]
QoL-5[c]	53.3 (47.5-62.5)	63.3 (50-70)	.008[b]	65 (59.17-71.67)	.015[d]
SF-12[e]					
General health	60 (25-60)	60 (25-60)	.906	60 (60-60)	.497
Physical functioning	50 (25-100)	50 (25-87.5)	.889	75 (75-100)	1
Role physical	100 (0-100)	66.7 (0-100)	.476	100 (33.33-100)	.282
Role emotional	0 (0-0)	0 (0-100)	.059	0 (0-100)	.096
Bodily pain	75 (25-100)	50 (25-87.5)	.458	75 (75-100)	.21
Mental health	30 (20-50)	50 (40-65)	.001[b]	50 (40-60)	.011[d]
Vitality	40 (20-40)	40 (20-60)	.049[d]	40 (40-60)	.013[d]
Social functioning	40 (20-60)	60 (40-80)	.049[d]	80 (60-100)	.052
HPLP II[f]					
Spiritual growth	2 (1.8-2.3)	2.3 (2-3)	.002[b]	2.5 (2-2.75)	.014[d]
Health responsibility	2.4 (2.3-3)	2.8 (2.4-3)	.91	2.6 (2.4-2.8)	.152
Physical activity	1.9 (2-3)	2 (1.6-3)	.075	2.13 (1.75-2.75)	.025[d]
Nutrition	2.4 (2-3)	2.7 (2-3)	.884	2.5 (2.4-3)	.961
Interpersonal relationships	2.6 (2.3-3.1)	2.7 2.5-3.2)	.115	2.8 (2.8-3.2)	.106
Stress management	2 (1.8-2.4)	2.4 (2-2.9)	.027[d]	2.5 (2.25-3)	.004[b]

[a] Center for Epidemiologic Studies Short Depression Scale-10: A score of 10 or greater is considered depressed.
[b] Results based on Wilcoxon signed rank 2-tailed data analysis; statistically significant when $P<.01$.
[c] Quality of Life-5 research scale: Scored from 10 to 90, higher scores denote a better quality of life.
[d] Results based on Wilcoxon signed rank 2-tailed data analysis; statistically significant when $P<.05$.
[e] Short-Form-12: On a scale of 0-100, higher scores denote higher functioning within the subscale.
[f] Health Promoting Lifestyle Profile II: On a scale of 1-4, higher scores denote a higher functioning within the subscale.

LIMITATIONS

This pilot study has several limitations, including (1) small sample size; (2) generalizability to other community health center populations; (3) lack of an intent-to-treat analysis; (4) no control group; (5) short follow-up period; and (6) time of group program. The sample size, though small, was sufficient to demonstrate adherence to the MBID's clinical protocol in a community health setting. However, in order to answer questions of clinical effectiveness, these results need to be replicated in future studies that are appropriately designed and powered. The study participants are also not representative of the general population of patients in minority area community health centers. Most of the participants (89%) in the pilot were white women. Further studies should enroll a more diverse sample in order to better determine if the MBID is effective for ethnic minorities. We have already prepared the necessary steps for holding Spanish-speaking groups by translating the MBID manual into a completed Spanish version.

The study was also limited by analyzing only the subsample of completers. It is possible that the 24 completers had a higher degree of motivation and commitment, which enhanced the effectiveness of the MBID intervention.[22] While our pilot study indicated that the MBID intervention was effective in improving depression severity, mental health scores, spiritual growth, and quality of life scores, the lack of a control group limits our ability to attribute these improvements to the MBID alone. Further, the follow up period of 3 months was relatively short. Other studies in the literature suggest the need for booster sessions for sustained outcomes.[23-25] Sessions were held during the daytime, which limited the population to those who were available midday, including patients who were on disability, retired, unemployed, or working other shifts. To reach a more representative population, future studies should offer sessions in the evening and to accommodate work schedules.

CONCLUSION

This pilot study provides initial data about the effectiveness of a community health program on a low-income patient population. The study also suggests that this program can give patients the sustainable tools to engage in self-care and manage chronic disease. While previous research showed the use of complementary and integrative medicine in highly educated populations, this study offers evidence for not only the acceptance but also the effectiveness of these modalities

in low-income diverse populations. Future randomized controlled trials that are adequately powered are warranted to determine clinical effectiveness.

In summary, participation in a 6-week RR-based MBID is associated with an improvement in assessments for depression, spiritual growth, mental health, and quality of life among community health center patients diagnosed with depression.

Acknowledgments

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