

## Mindfulness-Based Stress Reduction for Urban Youth

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### Abstract

**Objectives:** The objectives of this study were to assess the general acceptability and to assess domains of potential effect of a mindfulness-based stress reduction (MBSR) program for human immunodeficiency virus (HIV)-infected and at-risk urban youth.

**Methods:** Thirteen-to twenty-one-year-old youth were recruited from the pediatric primary care clinic of an urban tertiary care hospital to participate in 4 MBSR groups. Each MBSR group consisted of nine weekly sessions of MBSR instruction. This mixed-methods evaluation consisted of quantitative data—attendance, psychologic symptoms (Symptom Checklist 90-Revised), and quality of life (Child Health and Illness Profile–Adolescent Edition)—and qualitative data—in-depth individual interviews conducted in a convenience sample of participants until interview themes were saturated. Analysis involved comparison of pre- and postintervention surveys and content analysis of interviews.

**Results:** Thirty-three (33) youth attended at least one MBSR session. Of the 33 who attended any sessions, 26 youth (79%) attended the majority of the MBSR sessions and were considered “program completers.” Among program completers, 11 were HIV-infected, 77% were female, all were African American, and the average age was 16.8 years. Quantitative data show that following the MBSR program, participants had a significant reduction in hostility ( $p = 0.02$ ), general discomfort ( $p = 0.01$ ), and emotional discomfort ( $p = 0.02$ ). Qualitative data ( $n = 10$ ) show perceived improvements in interpersonal relationships (including less conflict), school achievement, physical health, and reduced stress.

**Conclusions:** The data suggest that MBSR instruction for urban youth may have a positive effect in domains related to hostility, interpersonal relationships, school achievement, and physical health. However, because of the small sample size and lack of control group, it cannot be distinguished whether the changes observed are due to MBSR or to nonspecific group effects. Further controlled trials should include assessment of the MBSR program’s efficacy in these domains.

### Introduction

**M**ANY URBAN YOUTH IN THE UNITED STATES experience inevitable and unremitting stresses, including poverty, failing educational systems, and exposure to community and interpersonal violence. In light of negative physical and psychologic effects of prolonged exposure to stress, such as hypertension, obesity, anxiety, aggression, and depression,<sup>1–6</sup> we are interested in identifying effective approaches to reduce stress and/or ameliorate the effects of stress for urban youth.

Studies of mindfulness-based stress reduction (MBSR) programs in adult populations have shown decreased stress, as well as improvements in psychologic and physical outcomes.<sup>7,8</sup> MBSR is a structured 8-week program of instruction, designed to enhance participants’ mindfulness, or present-focused awareness. Research in adult patients with chronic pain,<sup>9</sup> cancer,<sup>10–13</sup> anxiety and depression,<sup>14</sup> and in heterogeneous clinical populations<sup>15–19</sup> have shown benefit in health-related quality of life, alleviation of physical symptoms, and decreased psychologic distress. Roth’s research describes benefits of MBSR for low-income urban

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populations, with improvements in medical and psychologic outcomes, as well as decreased health care utilization.<sup>18–20</sup> Additionally, MBSR programs for healthy adults have shown enhanced immune response and decreased mood disturbance.<sup>21,22</sup>

Despite decades of research in adults, the literature of MBSR for children and youth is now beginning to emerge. A few small and multimodal studies in children and youth describe benefits of mindfulness instruction, including increased well-being, decreased anxiety and worry, and decreased reactivity.<sup>23–29</sup> Work by Bogels<sup>30</sup> in schools and Biegel<sup>31</sup> with psychiatric outpatients have also shown acceptability and suggest improvements in mental health, somatization, and general well-being. We have previously published results of a pilot study in which we demonstrated the acceptability of MBSR for human immunodeficiency virus (HIV)–infected urban youth, defined as session attendance, perceived positive impact, and enthusiasm for participation in the group. Five (5) of 7 (71%) session attendees completed the MBSR program and reported benefits related to improved attitude, decreased reactivity, improved behavior, importance of self-care, and importance of involvement in the MBSR group.<sup>32</sup> The goal of the study reported here was to investigate further the potential domains of effect of the existing MBSR program,<sup>33</sup> for underserved urban youth, using both qualitative and quantitative measures to enrich our understanding of the program's effect in this population.

## Patients and Methods

Eligible patients of the pediatric and adolescent outpatient clinic of a large, urban tertiary care academic hospital were recruited to participate in the study between January 2006 and February 2007. The clinic serves as the medical home to approximately 8000 children and adolescents, 90% of whom are African American, some of whom are infected with HIV. The majority of patients (80%–90%) live in poverty and face significant financial hardship, with 51% of parents unemployed and 20% at risk for becoming homeless.<sup>34</sup> Approximately 85% of clinic patients are enrolled in a Medicaid managed care organization (MCO) and 15% have private insurance. Most clinic patients reside in the surrounding neighborhood, with a very high estimated HIV prevalence of approximately 2.5%.

Patients aged 13–21 years were eligible if they received their medical care at the clinic; were available during the MBSR sessions; did not have significant cognitive, behavioral, or psychiatric disorders, as determined by their medical providers; and were not substance abusers. For confidentiality reasons, we conducted the 2 groups for HIV-infected participants separately. To be certain that HIV infection was not associated with significantly different health status in our sample, and thereby represent a significant additional stressor, we compared participants by HIV status on baseline levels of physical discomfort, limitation of activity, and overall satisfaction with health and did not find significant differences.

During three separate 2-month recruitment periods from January 2006 to January 2007, 59 patients consented to study participation. A total of 4 MBSR groups were conducted, 2 of which were for HIV-infected subjects only. We have included the initial pilot MBSR group for HIV-infected youth

( $n = 7$ ) in the participation and demographic data only, as they had completed HIV-specific surveys (which are not combinable), and their qualitative results have been published elsewhere.<sup>32</sup> Assistance with transportation, in the form of public transportation tokens and cab vouchers, was available to participants. Gift-certificate incentives were provided following MBSR sessions and following survey and interview completion, up to a total of \$160. The study was approved by the Institutional Review Board of The Johns Hopkins University School of Medicine.

## MBSR program

MBSR is a structured 8-week program of instruction in the cultivation of mindfulness, a practice of purposeful non-judgmental attention to the happenings of the present moment. MBSR programs consist of three components: (1) didactic material related to mindfulness, meditation, yoga, and the mind–body connection; (2) experiential practice of various mindfulness meditations, mindful yoga, and the “body scan” during group meetings and encouragement of home practice; and (3) group discussion focused on the application of mindfulness to everyday situations and problem-solving related to barriers to effective practice.<sup>8,9,33</sup> The MBSR program includes a number of formal and informal techniques, all of which share the goal of enhancing non-judgmental present-focused awareness, in turn reducing dysregulated focus on the past (rumination)<sup>35</sup> and worries about the future (anxiety).

Starting with the established MBSR program for adults<sup>33</sup> and taught by an experienced MBSR instructor (co-author TM), the nine-session program for urban youth was adapted using an iterative process. Adaptations were made during the first and second MBSR groups, without the need for significant changes in the third and fourth MBSR groups. Adaptations focused on two aspects of the MBSR program—logistics and language. Logistical changes related to class scheduling, facilitating transportation to class, reminder phone calls, providing snacks, and class duration. Alterations in language centered on simplifying and concretizing the language used to describe class content and activities. The content, course structure, sequence of content presentation, and activities were relatively unchanged. The adapted MBSR program remained consistent with typical MBSR programs for adults and with MBSR core content, as delineated in Grossman's 2004 meta-analysis.<sup>8</sup>

## Measures

Child Health and Illness Profile—Adolescent Edition (CHIP-AE). The CHIP-AE is a self-administered health-related quality-of-life questionnaire. It has been evaluated in large, culturally, and socioeconomically diverse samples of adolescents, including two predominantly African-American urban Baltimore samples, comparable to our sample. The CHIP-AE contains 153 items, comprising 6 domains—satisfaction, discomfort, disorders, risks, resilience, and achievement—and 20 subdomains. Domain Cronbach's  $\alpha$  range from 0.53 to 0.93.<sup>36</sup>

Symptom Checklist-90 (Revised)—SCL-90R. The SCL-90R is a 90-item self-report inventory that measures a broad range of psychologic problems and symptoms of

psychopathology. Nine (9) primary symptom dimensions are assessed: somatization, obsessive-compulsive, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation, and psychoticism. Strong 1-week test-retest reliability ( $r = 0.77-0.90$ ) and internal consistency ( $r = 0.77-0.90$ ) have been demonstrated.<sup>37-40</sup>

**Individual in-depth interviews.** A convenience sample of individuals participating in the MBSR program was recruited to participate in in-depth interviews lasting approximately 1 hour. Recruitment for and completion of individual interviews continued until interview themes were saturated. Each participant was interviewed using a semistructured interview guide, which sought to examine the following areas in an open-ended, exploratory manner: daily stressors and coping mechanisms, motivations for participation in the MBSR program, perceptions of and experiences with the program, and changes in thinking, experience, and behavior related to MBSR participation.

**Analysis**

Given the apparent similarity in baseline health status between HIV-infected and noninfected groups (see above) and the pilot nature of this study, it was thought to be appropriate to combine data from these groups.

**Quantitative data analysis.** Descriptive statistics were used to track study enrollment and session attendance, and to characterize participants. To control for the lack of independence, paired *t* tests were used to assess differences in participants' survey responses before and after the MBSR program. Two-tailed *α*s of less than 0.05 were interpreted as statistically significant.

**Qualitative data analysis.** All in-depth interviews were audiotaped with the participants' informed consent. Each audiotaped interview was transcribed into text in its entirety. Texts were coded for key domains of interest based on the original field guide questions (developed by DK and KJ) as well as novel topics of interest identified using a constant comparative method<sup>41</sup> after several readings of the transcripts. Content analysis was utilized to document and develop salient themes related to acceptability and effects of participation in the MBSR program.

**Results**

Thirty-three (33) youth attended at least one MBSR session. As shown in Table 1, 26 youth attended at least the

majority (five) of the MBSR sessions, and were considered "program completers." All program completers were African American; 20 (77%) were female; 11 were HIV positive. The mean age was 16.8 years (median 17 years; range 13-21 years). Program completers attended an average of 6.9 (77%) of the 9 MBSR sessions. There were no differences by HIV status in age or session attendance. Reported barriers to group participation included transportation difficulties and schedule conflicts, such as employment, after-school sports, and other activities.

**Quantitative findings.** Comparable pre- and post-MBSR program survey data exist for 19 of the 26 completers. Reasons for lack of data are as follows: only HIV-specific data available ( $n = 5$ ), unable to contact for postgroup data collection ( $n = 1$ ), and participant deceased ( $n = 1$ ). As shown in Table 2, MBSR program participation was associated with statistically significant reductions in hostility ( $p = 0.02$ ), general discomfort ( $p = 0.01$ ), and emotional discomfort ( $p = 0.02$ ). Additionally, improvements of borderline statistical significance were seen in the domains of somatization and paranoid ideation. Other psychologic and quality-of-life survey domains were not found to be significantly different following the MBSR program.

**Qualitative findings.** Ten (10) MBSR program participants were interviewed within 4 weeks of the final MBSR session. Five (5) interviewees were HIV positive. Comparable to the gender distribution of program completers, 8 (80%) of the individuals interviewed were female.

**Daily Stressors and Coping Prior to Participation in MBSR**

Most participants discussed stress related to school achievement, interpersonal dynamics (in particular, frequent verbal and physical arguments), and violence in their environment. Prior to the MBSR program, participants reported using coping mechanisms characterized by avoidance or distraction, which were not felt to be entirely successful. Many participants described frequent arguments and/or fights at home and school prior to the MBSR program, often including throwing things and hitting people.

**Perceptions of and Experiences with MBSR Techniques**

Key findings were that all participants had something positive to say about their overall experience in the MBSR program and that all participants continued to practice some form of MBSR following program completion. For

TABLE 1. PARTICIPANTS BY NUMBER OF MINDFULNESS-BASED STRESS REDUCTION SESSIONS ATTENDED

	Never attended	Attended 1-5 sessions	Attended ≥5 sessions ("program completers")	Total
Participants	26 (44%)	7 (12%)	26 (44% enrolled; 79% of attenders)	59
Female, <i>n</i> (%)	11 (48%)	5 (71%)	20 (77%)	36 (61%)
African American, <i>n</i> (%)	24 (92%)	6 (86%)	26 (100%)	56 (95%)
Age (years) (range)	16.9 (13-21)	18.3 (15-21)	16.8 (13-21)	17.0 (13-21)
HIV positive, <i>n</i> (%)	11 (42%)	3 (43%)	11 (42%)	25 (42%)

HIV, human immunodeficiency virus.

TABLE 2. PSYCHOLOGIC AND QUALITY OF LIFE CHANGES POST-MINDFULNESS-BASED STRESS REDUCTION PROGRAM

<i>Psychologic symptomatology (SCL-90R); n = 18<sup>a</sup></i>	<i>Pre</i>	<i>Post</i>	<i>p-value</i>
Somatization	52.0	47.2	0.06
Obsessive-compulsive	50.3	47.6	0.33
Interpersonal sensitivity	50.0	47.8	0.49
Depression	52.3	51.3	0.73
Anxiety	50.3	47.8	0.30
Hostility	52.7	45.6	0.02
Phobic anxiety	54.6	52.7	0.25
Paranoid ideation	51.8	47.9	0.09
Psychoticism	52.0	49.3	0.26
Global Severity Index	51.8	48.0	0.15
Positive symptom total (T score)	49.2	46.0	0.18
<i>Quality of life (CHIP-AE); n = 19</i>			
Satisfaction	18.1	19.2	0.26
Discomfort	19.4	21.6	0.01
Physical	18.8	19.9	0.29
Emotional	16.6	20.0	0.02
Limitation of activity	22.4	22.9	0.45
Resilience	18.3	18.3	0.96
Risks	20.8	19.7	0.09
Achievement	21.0	21.3	0.55
Disorders	15.5	18.4	0.12

<sup>a</sup>Missing Symptom Checklist 90-Revised (SCL-90R) data ( $n = 1$ ). CHIP-AE, Child Health and Illness Profile—Adolescent Edition.

most participants, the ideas and practices of meditation and yoga were quite new, and many came into the course thinking that such methods were “strange” or “weird” or that the methods presented would simply be “boring.” While several participants found it difficult to get comfortable practicing certain methods presented in the course, all participants found that there was at least one method that they really “enjoyed” and continued to practice after the course was over.

### Effects of Participation in the MBSR Program

The general feeling among participants was that using the methods taught in the MBSR course helped them to feel more “calm” and “relaxed,” as well as more able to manage their anger and conflicts. For those who struggled with feeling anxious, the techniques were often used to feel “less stressed,” while those who struggled with sadness found the techniques to be helpful in terms of putting them in a more “cheerful mood,” or to “feel happier” and “less down.” These effects appeared to have implications in terms of participants’ interpersonal relationships, school achievement, and physical health.

#### Interpersonal relationships

Many participants reported using MBSR techniques that were useful in dealing with specific situations and/or feelings in the course of everyday interactions. For example, a practice termed the “three breaths break” in the group (stopping to take three breaths when you notice you are tense or stressed) was used by many to reduce the intensity of interpersonal conflicts. The quote below narrates this common theme.

I: Which of the methods did you enjoy most?

P: I’d say the breathing meditations. I think it was one, two, three. Like say if you was in a heated argument or an argument was about to start off, you breathe like take three breaths and then take it from there because I’m a big arguer. I like arguing. I don’t like starting them, but hey, if they start, I must finish. So with that I have to do like a one, two, three, pause, breathe-type thing.

I: How do you do that?

P: For me, I’ve actually practiced it the other day. I was about to get in an argument. I just sat there and I took three breaths and did my own little counting in my head and took three more breaths. And I was actually calm and left the argument—just let it be.

With regard to interpersonal relationships, most participants reported being able to get along better with family and friends by being more aware of their stress and in turn reducing their reactivity and hostility toward others. For example, the quote below relays how 1 participant saw the relationship with their mother shift significantly after completing the MBSR program.

I: Has it affected your relationship with any of your family members?

P: Yeah, like with me and my mom. We used to argue all of the time, but now we don’t. Now we just talk it out.

I: What changed as far as that situation?

P: Me and my mom got a better relationship.

I: Why do you think that changed?

P: Because I just—when I’m stressed, I get real angry over the littlest things. Now that I’m not stressed anymore, I can talk to my mom better.

#### School achievement

Doing better in school appeared to be connected to reduced stress, increased concentration, and greater confidence. Several participants explicitly mentioned meditating or doing breathing exercises right before doing their homework or taking a test in order to reduce their stress. Others discussed how being more “present” as a result of MBSR techniques helped them to concentrate on their work, rather than “zoning out.”

#### Physical health

Several participants commented on the positive effects that the MBSR course had on their physical health. A few participants associated the health benefits of MBSR with the physical activities that are part of the MBSR program such as walking meditations or yoga. Such participants reported feeling “more refreshed” and/or “more energetic” as a result of these methods, and 1 participant even reported losing weight as a result of regular practice. However, others perceived that it was through the reduction of and/or management of stress related to MBSR participation that previously existing stress-related physical complaints were alleviated, such as headaches, jaw tightness, and nervous leg movements. In addition, participants described getting more sleep and/or using MBSR techniques to go to sleep more easily.



### HIV-Specific Issues and MBSR

While HIV was not necessarily described as the primary stressor in the lives of those study participants living with HIV, it was mentioned as an important concern upon probing this issue. The MBSR methods seem to have a positive effect in terms of ameliorating HIV-specific stressors such as taking medicines, fearing illness and death, experiencing stigma and discrimination, and disclosing HIV status. Additionally, several of the HIV-positive participants suggested that their ability to take their antiretroviral medicines increased as a result of their participation in the MBSR program. One (1) participant reported that her viral load had become undetectable as a result of her increased adherence.

### Discussion

Our mixed-method exploration of the MBSR program for urban youth allowed us to identify specific domains that might have been affected by MBSR participation. The quantitative survey data show significant reductions from baseline in hostility, general discomfort, and emotional discomfort. The qualitative data show perceived improvements in interpersonal relationships (including less engagement in conflict), school achievement, physical health, and reduced stress. We believe these different types of data are both consistent and complementary, as the reductions in psychologic symptoms and improved well-being could both contribute to and result from the improvements articulated in the qualitative data.

The reduction in hostility seen in our MBSR participants is consistent with reports of decreased anger in a small number of adult studies.<sup>12,18</sup> We did not find statistically significant decreases in other psychologic domains often described with MBSR for adults, such as depression. This may be related to the adolescent-specific expression of anger and hostility as a predominant feature of depressive symptomatology, as opposed to melancholic symptoms commonly associated with adult depression.<sup>42</sup> Additionally, our data suggest that MBSR may have beneficial effects on health-related behaviors, with participants describing a variety of healthier behaviors, such as increased physical activity, healthier eating, improved sleep hygiene, and improved HIV medication adherence.

The study inferences are limited by the fact that the study does not have a comparison active control group; therefore, we cannot say whether or not the beneficial effects of this MBSR program are due to the positive effects of the adult-led, peer-group activity, and its social support in general or elements of the MBSR program in particular. However, the qualitative data support the positive effects of the techniques themselves, as many participants gave in-depth descriptions of how and when they use the MBSR techniques and the resultant effect. Future MBSR efficacy research should include an active control program to assess the specific effect of MBSR beyond that of a positive group program, evaluation of the duration of any identified effect, and additional objective measures of the outcomes of interest.

The study has two other limitations that should be mentioned. First, it has a small sample size. Nevertheless, the consistency of the quantitative and qualitative data supports the validity of the findings. Second, interview data are inherently self-report, and therefore may be subject to social

acceptability bias, particularly related to descriptions of getting in fewer arguments and physical conflicts.

These data suggest that MBSR may be beneficial for urban youth in a number of salient domains, including hostility, general and emotional discomfort, as well as interpersonal relationships, school achievement, and physical health. Future randomized controlled studies of MBSR to test its efficacy should explore outcomes related to these domains.

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No competing financial interests exist.

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