Title: Mindfulness-based stress reduction (MBSR) in perceived stress and quality of life: an open, uncontrolled study in a Brazilian healthy sample.

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RESEARCH LETTER

Title: Mindfulness-based stress reduction (MBSR) in perceived stress and quality of life: an open, uncontrolled study in a Brazilian healthy sample.

Running title: MBSR in a Brazilian healthy sample.

Keywords: Mindfulness-based stress reduction; Perceived stress; Quality of life; Health promotion.

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Mindfulness-based interventions (MBI) are effective therapies for a variety of psychological problems, especially for improving anxiety, mood disorders and other stress-related conditions, and so may have potential application in and impact on national health systems on a cost-effective basis\textsuperscript{1-6}. In Brazil, meditative practices, along with many other complementary and integrative therapies, have been encouraged and supported by the Ministry of Health, which established the National Policy on Integrative and Complementary Practices (PNPIC) inside the Brazilian National Health System in 2006\textsuperscript{7}. According to PNPIC, these actions should ideally be carried out by Primary Care (PC) teams, whose practitioners, including community health trainers, could be trained to implement MBI with the potential to impact on more than 100 million people. Despite this fact and the existing literature on meditation and health\textsuperscript{7,9}, there is still a lack of studies on MBI in the Brazilian population. Culture specific studies on MBI are in great need, and so our aim was to explore the impact of an MBI program on perceived stress (PS) and quality of life (QoL) in a healthy sample in Brazil.

A one-group pre/post-test design was used to measure the impact of the Mindfulness-based stress reduction (MBSR) program (8-week; 2.5h/wk; retreat-day) using the Brazilian validated version of the Perceived Stress Scale (PSS)\textsuperscript{10} and the WHOQOL-BREF questionnaire\textsuperscript{11}. Eligibility criteria included: (1) 18 years of age or older; (2) lack of any clinical problems or conditions; and (3) able to understand, read, and write in Portuguese. Subjects (n=23) were students at a major public university who completed the evaluated scales prior to and at the end of the program (protocol period from September through December, 2009).

All scores were transformed to a one-hundred point scale (ranging from 0 to 100 points, with 100 meaning the lowest PS and highest QoL). Paired t-tests were used to compare the final and baseline mean scores of those scales. Pearson correlations were also calculated between the changes from baseline. The Ethical Committee of the Federal University of São Carlos (UFSCar) approved the study protocol.

The participants were all single and with ages ranging between 18 and 27 years (mean=20.7, SD=2.5), 78.3% were female (n=18), 77% were self-rated as white and 13% as black. All participants completed at least 6 weeks of the program (17.4%, 52.1%, 30.5% attended, respectively, 6, 7 and 8 weeks). Improvements from baseline in PS (p=0.001) and in all dimensions of WHOQOL-BREF (p\textless0.003) were observed at
the end of the intervention program. Stronger correlations were found between final changes from baseline in PS and QoL (overall and psychological domains of WHOQOL-BREF), and between changes in physical and psychological or environment domains of WHOQOL-BREF. Tables 1 and 2 summarize the main results.

Table 1. Effect of MBSR intervention on PSS and WHOQOL-BREF scores.

<table>
<thead>
<tr>
<th></th>
<th>Baseline</th>
<th>After intervention</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>Mean</td>
<td>SD</td>
</tr>
<tr>
<td>PS Perceived stress</td>
<td>23</td>
<td>54.19</td>
<td>2.18</td>
</tr>
<tr>
<td>WHOQOL-BREF Overall quality of life</td>
<td>22</td>
<td>68.75</td>
<td>3.05</td>
</tr>
<tr>
<td>WHOQOL-BREF Physical domain</td>
<td>22</td>
<td>66.72</td>
<td>2.71</td>
</tr>
<tr>
<td>WHOQOL-BREF Psychological Domain</td>
<td>22</td>
<td>67.23</td>
<td>3.02</td>
</tr>
<tr>
<td>WHOQOL-BREF Social activity domain</td>
<td>22</td>
<td>72.73</td>
<td>2.91</td>
</tr>
<tr>
<td>WHOQOL-BREF Environment domain</td>
<td>22</td>
<td>64.91</td>
<td>2.24</td>
</tr>
</tbody>
</table>

Abbreviations: MBSR, mindfulness-based stress reduction; PS, perceived stress total score; WHOQOL-BREF, WHO quality of life questionnaire; n, number of respondents; SD, standard deviation; CI, confidence interval.

*All scores are presented in a hundred bases (0-100; 100 points meaning the lowest perceived stress and highest quality of life).

Paired t-test.

*One student did not complete the WHOQOL-BREF questionnaire.
Table 2. Pearson correlations between final changes from baseline after a MBSR intervention in PS and WHOQOL-BREF mean scores.

<table>
<thead>
<tr>
<th>Correlations between changes from baseline</th>
<th>PS Perceived stress</th>
<th>WHOQOL-BREF Overall quality of life</th>
<th>WHOQOL-BREF Physical domain</th>
<th>WHOQOL-BREF Psychological domain</th>
<th>WHOQOL-BREF Social activity domain</th>
<th>WHOQOL-BREF Environment domain</th>
</tr>
</thead>
<tbody>
<tr>
<td>PS Perceived stress</td>
<td>1</td>
<td>0.483*</td>
<td>0.138</td>
<td>0.710*</td>
<td>0.325</td>
<td>0.417</td>
</tr>
<tr>
<td>WHOQOL-BREF Overall quality of life</td>
<td></td>
<td>1</td>
<td>0.247</td>
<td>0.379</td>
<td>0.388</td>
<td>0.355</td>
</tr>
<tr>
<td>WHOQOL-BREF Physical domain</td>
<td></td>
<td></td>
<td>1</td>
<td>0.459*</td>
<td>0.412</td>
<td>0.438*</td>
</tr>
<tr>
<td>WHOQOL-BREF Psychological domain</td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td>0.285</td>
<td>0.337</td>
</tr>
<tr>
<td>WHOQOL-BREF Social activity domain</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td>0.400</td>
</tr>
<tr>
<td>WHOQOL-BREF Environment domain</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
</tbody>
</table>

Abbreviations: MBSR, mindfulness-based stress reduction; PS, perceived stress total score; WHOQOL-BREF, WHO quality of life questionnaire.

* Correlation is significant at the 0.05 level (2-tailed).

We observed high levels of adherence to the MBSR program and demonstrated promising pre-post session intervention effects on PS and QoL in a Brazilian healthy sample. These preliminary results are similar to previous studies and reviews²,⁵,⁶,¹²,¹³ and support the feasibility of implementing MBI in Brazil. As expected, changes in PS are correlated but probably do not explain all changes in the QoL domains and vice-versa, and others variables such as those related to improvements in anxiety and mood symptoms, self-awareness, self-regulation and transcendence may be involved²,⁵,⁶,¹⁴. It is interesting to notice this study was carried out during final examinations period, a well-know source of distress¹⁵, which may make results more significant. On the other hand, results should be interpreted with caution because of the lack of a control group and the small sample size.

To the best of our knowledge, this is the first study conducted in Brazil exploring MBSR effects on a healthy sample of individuals, and demonstrated its potential health promotion benefits with overall improvement in PS and QoL. Mindfulness-based interventions may be suitable for the general population in Brazil, and future research should be directed at determining intervention effects, cost effectiveness, contribution of different programs and individual components, long-term outcomes, attitudes towards mindfulness, and impacts on clinical and non-clinical populations to foster and support an effective implementation of MBI in the Brazilian National Health System.
References


