Self-reported Parenting Stress and Salivary Cortisol Following Mindfulness-Based Stress Reduction

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Purpose

To examine the correlation of self-reported stress and salivary cortisol, a stress biomarker.

Background

• Parents of children with developmental delays (DD) experience higher levels of stress
• Approximately 66% of parents of children with DD experience clinical levels of stress
• Children with DD have significantly more behavior problems and emotional difficulties
• Parenting stress and child behavior problems are interdependent, exhibiting a reciprocal relationship
• This relationship is responsible for risks associated with DD rather than the delay itself
• Risks include:
  • Multiple comorbidities
  • Parental depression
  • More marital conflict
  • Poorer parent physical health
  • Higher child anxiety
  • Poorer child social competence
  • Poorer child emotional regulation
  • Increased likelihood of child ADHD and Oppositional Defiance Disorder

Intervention:

• Mindfulness-based stress reduction (MBSR) with parents of children with DD
  • Empirically based, manualized 8-week long training:
    • Standardized meditation practice
    • Found feasible for parents of children with DD
    • Proven effective across multiple outcome measures
  • After MBSR intervention parents of children with DD report:
    • Significantly less stress
    • Greater practice and experience of mindfulness
    • Increased parenting and life satisfaction
    • Greater self-compassion and well-being
    • More social interactions with their children
    • Better sleep
    • Lower levels of depression and anxiety
• Children do not receive direct intervention yet experience significantly reduced behavior problems and increased social skills after parents’ completion of MBSR training.

While self-report and observational improvements are promising, we sought to further validate results with a biologic measure.
• Morning cortisol levels are sensitive to anticipated demands of the day
• Normal rise is 50 – 100%
• Physiologic response is altered by chronic stress
• Salivary cortisol provides a biological measurement of stress

Few studies have examined cortisol in conjunction with MBSR interventions. We therefore set out to explore the association of self-report findings and cortisol response biomarkers to determine the physiological impact of the MBSR intervention on parenting stress.

Methods

• Randomized, wait-list controlled design
• Baseline, pre-posttests, and 6-month follow-up assessments
• Participants voluntarily chose to participate in salivary cortisol sample collections (N=53)
• Involved parents of children with DD between the ages of 2.5 to 5 years

Measures:

• Basic demographics
• Perceived stress scale (PSS) at baseline
• Parenting Daily Hassles, Life Stressors subscale (PDH-LS) at pre-post and follow-up
• Self-rated stress at the time of saliva collection
• Salivary cortisol

Results

Participants:

• 90.6% were mothers, 79.2% married, 69.8% had > high school education, 50.9% had a family income of less than $50,000/year
• At baseline the mean PSS score was 23.74 (SD 4.53)

Repeated measures ANOVA using mixed model procedure (N = 53)

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Baseline</th>
<th>Posttest</th>
<th>Follow-up</th>
<th>p-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Child and Family Hassles</td>
<td>M (CI)</td>
<td>M (CI)</td>
<td>M (CI)</td>
<td>.112</td>
</tr>
<tr>
<td>Frequency of Child and Family Hassles</td>
<td>62.16 (58.32, 66.00)</td>
<td>63.49 (59.56, 67.43)</td>
<td>56.35 (51.46, 61.24)</td>
<td>.012</td>
</tr>
<tr>
<td>Systolic Blood Pressure</td>
<td>104.50 (100.56, 108.43)</td>
<td>103.71 (99.59, 107.83)</td>
<td>105.29 (101.12, 109.46)</td>
<td>.645</td>
</tr>
<tr>
<td>Diastolic Blood Pressure</td>
<td>66.56 (63.82, 69.30)</td>
<td>65.87 (62.98, 68.77)</td>
<td>66.24 (63.40, 69.18)</td>
<td>.866</td>
</tr>
<tr>
<td>Respiratory Rate/minute</td>
<td>16.70 (15.80, 17.60)</td>
<td>15.71 (14.73, 16.70)</td>
<td>15.03 (14.92, 16.94)</td>
<td>.327</td>
</tr>
<tr>
<td>Self-rated stress level during saliva collection</td>
<td>2.22 (1.93, 2.56)</td>
<td>2.00 (1.73, 2.32)</td>
<td>2.00 (1.71, 2.33)</td>
<td>.306</td>
</tr>
<tr>
<td>Cortisol (AUC ground)</td>
<td>39.54 (34.66, 44.42)</td>
<td>38.21 (31.43, 44.99)</td>
<td>28.56 (24.23, 32.88)</td>
<td>&lt;.001</td>
</tr>
</tbody>
</table>

Conclusion

• At baseline participants’ mean PSS score indicates a high perception of stress
• After completion of the MBSR intervention, parents of children with DD reported:
  • Significantly less parenting stress (frequency of child and family hassles)
  • Reduced intensity of these hassles
  • Reduced general stress
  • Parents’ perceptions of reduced stress was validated physiologically by significantly reduced cortisol (AUC ground).
  • Biologic stress response reduction found at immediate post treatment, with sustained results and even greater reduction at follow-up

Results indicate that MBSR is effective for reducing parenting and general stress among parents of children with DD, reinforced by objective biopsychologic data. Of note, biologic markers were even stronger than self-report which are susceptible to recall bias and mood changes. The reduction in parenting and general stress through MBSR is promising for this group of highly stressed parents of children with DD, decreasing the likelihood of child behavior complications as well as a myriad of parental comorbidities and poor mental health sequelae.

Acknowledgements and Contact

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