STUDY PROTOCOL:
Randomized controlled trial on the impact of a STRESS REDUCTION PROGRAM on psychological well-being in endometriosis

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Introduction

- **Endometriosis and Chronic Pelvic Pain (CPP)**
  Benign disease, estrogen dependent, endometrial implants outside the uterus.
  Asymptomatic, infertility, chronic pelvic pain (Giudice & Kao, 2004 Lancet; Kennedy et al., 2005 Hum Reprod)

- **Psychosocial aspects of endometriosis**
  Heavy load on the body physically and emotionally; long time until diagnosis (Ballard, 2006 Fert Steril)

- **Endometriosis x Chronic Stress**
  Anxiety and chronic stress can be associated with endometriosis and CPP (Abrão, 2000 Revinter; Almeida, 2001 Femina)
  Endometriosis and CPP represent psychological and physical stressors ➔ high incidence of depression (Lorençatto, 2002 Rev Assoc Med Bras)
  Symptoms of chronic stress:
  similar to cancer, HTN, cardiac rehab (Domar, 1993 PsychObG)
  Psychological changes = depression, anxiety, interpersonal problems, suppressed anger, frustration, feelings of inferiority and guilt (Cox, 2006 Fert Steril)

- **Mindfulness-Based Stress Reduction Program (MBSR)**
  Mind-Body Techniques to help dealing with stressors (Gordon, 2004 J Trauma Stress)
  Anti-Stress Program – ASP (Brazilian adaptation Mindfulness-Based Stress Reduction Program)

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Stress and Body Response

- **Fight or flight mechanism:** Sympathetic Nervous System
  - Adrenaline

- **Muscle relaxation mechanism:** Parasympathetic Nervous System
  - Acetilcholine

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Anti-Stress Program (ASP)

- 2004 - 2007 GUSOM: Ph.D. + MBSR Training
- 2008 UFMG: INFERTILITY
- 2013 UNIBH: Medical Students and Professors

| Table 1: Evaluation of MEDICAL STUDENTS general well-being before and after the ASP |
|-----------------|-----------------|----------|
|                  | Before ASP      | After ASP | p        |
|                  | (X ± SD)        | (X ± SD) |          |
| Anxiety          | 15.0 ± 2.35     | 23.4 ± 1.13* | 0.04    |
| Depression       | 14.8 ± 1.16     | 17.2 ± 0.2  | 0.21    |
| General health   | 12.6 ± 0.93     | 16.2 ± 0.38* | 0.02    |
| General well-being | 17.0 ± 1.93 | 18.6 ± 1.03  | 0.59    |
| Self-control     | 11.8 ± 1.07     | 15.0 ± 0.78* | 0.03    |
| Vitality         | 15.4 ± 1.33     | 18.4 ± 0.98* | 0.003   |
| General index    | 86.6 ± 7.44     | 108.8 ± 3.06* | 0.02    |

Data corresponds to media (X) ± standard deviation (SD) of answers from PGWBI questionnaire (Psychological General Well-Being Index). * = statistically significant for “t” Student test of media and 5% significance.

Table 2: Evaluation of PROFESSORS general well-being before and after the ASP

<table>
<thead>
<tr>
<th></th>
<th>Before ASP</th>
<th>After ASP</th>
<th>p</th>
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<tbody>
<tr>
<td></td>
<td>(X ± SD)</td>
<td>(X ± SD)</td>
<td></td>
</tr>
<tr>
<td>Anxiety</td>
<td>19.46 ± 1.46</td>
<td>23.15 ± 1.19*</td>
<td>0.02</td>
</tr>
<tr>
<td>Depression</td>
<td>14.77 ± 0.86</td>
<td>16.46 ± 0.54</td>
<td>0.07</td>
</tr>
<tr>
<td>General health</td>
<td>14.31 ± 0.81</td>
<td>15.92 ± 0.51</td>
<td>0.06</td>
</tr>
<tr>
<td>General well-being</td>
<td>16.85 ± 1.43</td>
<td>20.0 ± 1.0*</td>
<td>0.02</td>
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<tr>
<td>Self-control</td>
<td>11.54 ± 1.35</td>
<td>14.38 ± 0.67*</td>
<td>0.02</td>
</tr>
<tr>
<td>Vitality</td>
<td>15.38 ± 1.57</td>
<td>19.31 ± 0.93*</td>
<td>0.003</td>
</tr>
<tr>
<td>General index</td>
<td>89.15 ± 6.99</td>
<td>107.92 ± 4.48*</td>
<td>0.01</td>
</tr>
</tbody>
</table>

Data corresponds to media (X) ± standard deviation (SD) of answers from PGWBI questionnaire (Psychological General Well-Being Index). * = statistically significant for “t” Student test of media and 5% significance.

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Anti-Stress Program (ASP)

2015 UFMG: ENDOMETRIOSIS

- To teach skills that promote self-knowledge, self-connection and self-care
- Stress coping strategies to deal with endometriosis and CPP
- Inclusion and exclusion criteria // Participants // Group meetings

![Diagram showing flow of patients with endometriosis, control group, study group, clinical treatment, and clinical treatment + ASP with questionnaires at day one and after 12 weeks.]

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Anti-Stress Program (ASP)

Group Session
- Check in
- MBSR Techniques
- Group processing

MBSR Techniques
- Drawing
- Autogenic training
- Biofeedback
- Mindfulness meditation
- Guided imagery

Instruments of evaluation
- Questionnaires
  - PGWBI / BECK inventory / SPE-10
- Drawings
- Blood
- Saliva
- Oximeter
- Thermostat

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Conclusions

- Endometriosis + CPP = chronic stress / physical and psychological symptoms
- ASP = Women with endometriosis can engage in self-care (mindfulness, self-awareness and self-reflection)
- Increased mindfulness = changes in mood and perceived stress (improved impact on disease-related stress coping)
Impact of a STRESS REDUCTION PROGRAM on psychological well-being in endometriosis

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