QUESTION: Do psychological interventions positively influence immune response?

Data sources
Studies were identified by searching Medline and PsycINFO, using combinations of the terms intervention, psychotherapy, disclosure, hypnosis, relaxation, biofeedback, conditioning, stress management, leukocyte, lymphocyte, natural killer cell, psychoneuroimmunology, and immune function. Further studies were identified using the ancestry method. Post 1960 issues of 7 journals in the field of psychoneuroimmunology were handsearched.

Study selection
Studies were selected if they were English language randomised controlled trials with multiple subject designs of psychological interventions for modulating immune functions. Studies that aimed to improve wellbeing by manipulating anatomical or physiological processes were excluded.

Data extraction
Data were extracted on study design, patient background characteristics, type of intervention (stress management, relaxation, disclosure, hypnosis, and conditioning), and immune system parameters (enumerative and functional measures). Aggregate effect sizes (ESs) were calculated using the fixed effects model, and heterogeneity and publication bias (file drawer problem) were considered.

Main results
59 trials (2135 patients) were included of which 16% heterogeneity and publication bias (file drawer problem) were not subject to a file drawer problem and heterogeneity existed among trials for several measures.

<table>
<thead>
<tr>
<th>Intervention</th>
<th>Immune measure</th>
<th>Number of trials</th>
<th>Aggregate effect size (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stress management</td>
<td>Lymphocytes</td>
<td>2</td>
<td>0.28 (0.01 to 0.51)</td>
</tr>
<tr>
<td>Relaxation</td>
<td>Total secretory immunoglobulin A</td>
<td>6</td>
<td>0.37 (0.25 to 0.47)</td>
</tr>
<tr>
<td>Disclosure</td>
<td>T helper lymphocytes</td>
<td>2</td>
<td>-0.31 (-0.5 to -0.09)*</td>
</tr>
<tr>
<td></td>
<td>Epstein Barr virus</td>
<td>2</td>
<td>-0.29 (-0.44 to -0.10)</td>
</tr>
<tr>
<td>Hypnosis</td>
<td>Total secretory immunoglobulin A</td>
<td>4</td>
<td>0.15 (0.01 to 0.28)</td>
</tr>
<tr>
<td></td>
<td>Neutrophil adherence</td>
<td>2</td>
<td>0.50 (0.27 to 0.68)</td>
</tr>
<tr>
<td></td>
<td>Immediate type hypersensitivity</td>
<td>8</td>
<td>0.23 (0.04 to 0.41)</td>
</tr>
<tr>
<td>Conditioning</td>
<td>Natural killer cell cytotoxicity</td>
<td>4</td>
<td>0.57 (0.36 to 0.73)</td>
</tr>
</tbody>
</table>

*Result does not favour intervention.

Psychoneuroimmunology is an interdisciplinary field integrating current knowledge and research methods of diverse disciplines such as basic immunology and endocrinology, neurosciences, and psychiatry and psychology. It focuses on the interaction between the main information transmitting and processing subsystems of the body, in particular the central and peripheral nervous systems, the endocrine system, and the immune system. Accumulating evidence that various chronic stressors may negatively influence the immune system and have detrimental health effects has inspired a new area of research examining the potentially protective or ameliorative effects of interventions aimed at stress reduction.

The conclusions of Miller and Cohen are important, but they should be received with caution. While the authors argue that their meta-analysis shows that psychological interventions can positively influence immune function, the limited number of studies included and the lack of standardisation in the interventions studied make the results less robust. The authors also fail to consider the potential for publication bias, which could inflate the apparent effectiveness of these interventions.

In conclusion, further research is needed to determine the true effects of psychological interventions on immune function. Until then, the results of this meta-analysis should be interpreted with caution.

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REFERENCE

COMMENTARY

Review: psychological interventions have a narrow application in influencing immune response

Evid Based Mental Health 2001 4: 83
doi: 10.1136/ebmh.4.3.83

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