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The Development and Efficacy of Cognitive Behaviour Therapy for Multiple Sclerosis Fatigue: A Randomised Controlled Trial

Volume I

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A thesis submitted in partial fulfilment of the requirements for the degree of Doctor of Philosophy in Health Psychology

The University of Auckland

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Abstract

Aim

Multiple Sclerosis (MS) is an unpredictable demyelinating disease of the central nervous system (CNS), with fatigue being one of the least understood symptoms. Based on a systematic review of the literature, a cognitive behavioural model of MS fatigue was developed and used to design a manualised eight session cognitive behaviour therapy (CBT) intervention to treat MS fatigue. The purpose of the randomised controlled trial (RCT) was to investigate the efficacy of CBT compared to relaxation training (RT) to treat fatigue in MS.

Methods

Seventy-two patients with MS fatigue were randomly assigned to either eight sessions of CBT or eight sessions of RT, designed to control for therapist time and attention. Participants were assessed before and after treatment, and at three and six months follow-up. Primary outcomes included the Fatigue Questionnaire (FQ) and the Clinical Global Impression Scale (CGIS). Secondary outcomes included measures of fatigue related impairment, mood, stress, sleep problems and daytime sleepiness. Seventy of the 72 participants completed all therapy sessions and 69 participants completed all assessments.

Results

Analyses were carried out by intention-to-treat. There was a significant group by time interaction for fatigue, indicating that the CBT group had significantly greater reductions in fatigue severity than the RT group (p<.02). A-priori contrasts showed that this significant effect was largely accounted for by changes between baseline and end of treatment (p<.00). By six month follow-up improvement in fatigue was equivalent in both groups. The key mechanism of improvement in fatigue severity during CBT was a positive change in schematic beliefs about fatigue. At the end of treatment 88.6% of the
CBT group rated themselves as improved compared to 73% of the RT group, but this difference was not significant ($p<.09$). Both groups improved on almost all secondary outcomes, with the CBT participants improving more significantly on depression, anxiety and stress between baseline and end of treatment ($p<.05$).

**Conclusions**

CBT appears to be an effective treatment for MS fatigue, with CBT participants improving significantly more on fatigue than RT participants between baseline and end of treatment. Obtained effect sizes for fatigue in both CBT and RT were considerably larger than those in previous controlled trials of pharmacological and non-pharmacological interventions. Both groups improved on almost all of the secondary outcomes. Findings support the relevance of a cognitive behavioural model for MS fatigue.
Acknowledgements

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<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>ANOVA</td>
<td>analysis of variance</td>
</tr>
<tr>
<td>B-IPQ</td>
<td>Brief Illness Perceptions Questionnaire</td>
</tr>
<tr>
<td>CBSQ</td>
<td>Cognitive and Behavioral Responses to Symptoms Questionnaire</td>
</tr>
<tr>
<td>CBT</td>
<td>cognitive behaviour therapy</td>
</tr>
<tr>
<td>CFS</td>
<td>chronic fatigue syndrome</td>
</tr>
<tr>
<td>CGIS</td>
<td>Clinical Global Impression Scale</td>
</tr>
<tr>
<td>CI</td>
<td>confidence interval</td>
</tr>
<tr>
<td>CNS</td>
<td>central nervous system</td>
</tr>
<tr>
<td>DV</td>
<td>dependent variable</td>
</tr>
<tr>
<td>EDSS</td>
<td>Expanded Disability Status Scale</td>
</tr>
<tr>
<td>ESS</td>
<td>Epworth Sleepiness Scale</td>
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<tr>
<td>FSS</td>
<td>Fatigue Severity Scale</td>
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<tr>
<td>FQ</td>
<td>Fatigue Questionnaire</td>
</tr>
<tr>
<td>HADS</td>
<td>Hospital Anxiety and Depression Scale</td>
</tr>
<tr>
<td>HPA</td>
<td>hypothalamic-pituitary-adrenal</td>
</tr>
<tr>
<td>IV</td>
<td>independent variable</td>
</tr>
<tr>
<td>MV</td>
<td>mediating variable</td>
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<tr>
<td>MS</td>
<td>multiple sclerosis</td>
</tr>
<tr>
<td>PMR</td>
<td>progressive muscle relaxation</td>
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<tr>
<td>PSS</td>
<td>Perceived Stress Scale</td>
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<tr>
<td>PTRC</td>
<td>Primary Therapy Rating Scale</td>
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<tr>
<td>SPQ</td>
<td>Sleep Problem Questionnaire</td>
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<tr>
<td>WSAS</td>
<td>Work and Social Adjustment Scale</td>
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