Efficacy of hydrotherapy in fibromyalgia syndrome: a meta-analysis of randomized controlled clinical trials

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CRD summary
This review concluded that there was moderate evidence that hydrotherapy had short-term beneficial effects on pain and health-related quality of life in fibromyalgia syndrome patients. This was a generally well-conducted review and the findings reflected the evidence, but as acknowledged by the authors the reliability of the pooled results may have been compromised by a paucity of good quality data.

Authors' objectives
To assess the efficacy of hydrotherapy in fibromyalgia syndrome (FMS).

Searching
MEDLINE, PsycINFO, SCOPUS, Cochrane Central Register of Controlled Trials (CENTRAL) and CAMbase were searched without language restrictions to December 2008. Search terms were reported in supplementary data online, but this was not accessible. Reference lists of original articles, qualitative systematic reviews and evidence-based guidelines were searched manually for additional studies. Only studies published as full papers were included.

Study selection
Randomised controlled trials (RCTs) that compared hydrotherapy without exercise with any other intervention or no intervention in patients diagnosed with fibromyalgia syndrome based upon recognised criteria were eligible for inclusion. Studies reported at least one symptom-specific outcome of fibromyalgia syndrome: pain, fatigue, sleep disturbances, depressed mood and health-related quality of life (HRQOL). Included studies used various hydrotherapy treatments (spa therapy, balneotherapy and thalassotherapy, hydrotherapy and packing and compresses). A wide range of comparisons was employed; the most frequent was therapy as usual. For most studies the duration of individual treatments was 20 minutes. Frequency of treatments varied. Mean patient age in included studies varied from 37 to 54 years. With one exception, the proportion of women patients ranged from 92% to 100%.

Two reviewers independently screened titles and abstracts. Two reviewers independently selected studies from full-text papers for inclusion in the review.

Assessment of study quality
Methodological quality was assessed by the van Tulder score using 11 criteria; studies were rated low (score 1 to 4), moderate (score 5 to 7) and high quality (score 8 to 11).

The reviewers did not state how the study quality assessment was undertaken.

Data extraction
Two reviewers independently extracted data to calculate standardised mean differences (SMDs), using means and standard deviation or change scores for each intervention, and 95% confidence intervals (CI).

Methods of synthesis
Standardised mean differences and 95% confidence intervals were pooled for studies of similar outcome types (for example, pain, HRQOL) using a random-effects meta-analysis. Hedge's g were categorised as small (0.20 to 0.50), medium (0.50 to 0.80) or large (>0.80). Heterogeneity was assessed using the X² test (p<0.10 was considered evidence of heterogeneity). The I² statistic was used to quantify heterogeneity (I²>50% was considered significant heterogeneity).

Subgroup analysis was used to investigate differences between type and intensity of hydrotherapy, co-therapies, control
groups, setting and sex ratios. Sensitivity analyses was performed by excluding studies based on quality criteria: inadequate randomisation; no allocation concealment; drop-out rate greater than 20% in treatment group, low-quality scores and missing values substituted to calculate effect sizes. Publication bias was assessed by means of a funnel plot and fail-safe N tests.

Results of the review
Ten RCTs were included in the review (n=446, range 24 to 80). Three studies had a moderate quality score and seven had a low quality score. None of the included studies undertook an intention-to-treat analysis or performed an adequate allocation concealment. Due to the small number of studies it was not possible to assess publication bias, although fail-safe N suggested that publication bias was absent.

By the end of therapy, hydrotherapy resulted in a significant reduction of pain (SMD -0.78, 95% CI -1.42 to -0.13; nine study arms) and improved HRQoL (SMD -1.67, 95% CI -2.91 to -0.43; four studies). At the latest follow-up (median 14 weeks), there was a significant reduction of pain (SMD -1.27, 95% CI -2.15 to -0.38; four studies) and improved HRQoL (SMD -1.16, 95% CI -1.96 to -0.36; four studies). Significant heterogeneity was present for all comparisons ($I^2 >83\%$).

Subgroup analyses were presented and sensitivity analyses did not alter the findings.

Authors' conclusions
There was moderate evidence that hydrotherapy had short-term beneficial effects on pain and HRQoL in fibromyalgia syndrome patients. There was a risk to over-estimate the effects of hydrotherapy due to methodological weaknesses of the studies and small trials included in meta-analysis.

CRD commentary
The review question was clear and was supported by appropriate inclusion criteria. A seemingly thorough search of the literature was conducted without language restrictions, which reduced potential for language bias. There was no specific search for unpublished studies, so it was possible that some relevant studies were missed; there were insufficient studies to assess whether publication bias was present. The reviewers went some way to minimise reviewer error and bias by undertaking study selection and data extraction in duplicate, but this did not appear to be the case for validity assessment. The authors assessed study quality and found it to be low in most studies. Most of the included trials were small and had methodological weaknesses that could have impacted on the reliability of their results. Given that different comparators and potentially different interventions were investigated, it was not clear that appropriate methods of synthesis were employed; evidence of significant statistical heterogeneity suggested that pooled estimates were of limited value. This was a generally well-conducted review and the findings reflected the evidence, but as acknowledged by the authors the reliability of the pooled results may have been compromised by the poor quality of included studies, small sample sizes and significant heterogeneity.

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Implications of the review for practice and research
Practice: The authors did not state any implications for practice

Research: The authors stated that high quality studies with larger sample sizes were required to confirm the conclusions of this review.

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