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CRD summary
This review concluded that some non-pharmacological therapies may help patients to reduce stuttering and/or improve social, emotional or cognitive variables. The authors' conclusions are in line with the evidence presented, but should be treated with caution in view of the small sample sizes and non-comparative design of many of the included studies.

Authors' objectives
To review the effectiveness of behavioural, cognitive and related treatments for stuttering.

Searching
MEDLINE, Web of Science, PsycINFO and ComDisDome were searched for articles published in English between 1970 and 2005; the search terms were reported. Articles were also identified through personal libraries, previously compiled reference lists and handsearches of four specialist journals.

Study selection
Study designs of evaluations included in the review
No inclusion criteria were reported for the study design. The primary studies included randomised and non-randomised controlled studies, single-subject experimental studies, case studies and single-group studies.

Specific interventions included in the review
Studies of non-pharmacological interventions were eligible for the review. Studies that included any pharmacological treatment were excluded. The most frequent interventions used in the included studies were prolonged/smooth speech, regulated breathing and airflow, and response contingencies. Other interventions were listed in the paper.

Participants included in the review
Participants were required to be individuals with developmental stuttering (not acquired, adult-onset, neurogenic or psychogenic). Studies of both adults and children were included.

Outcomes assessed in the review
Studies of interventions intended to have a clinical effect on the participant's daily life or beyond the setting of the study were eligible for the review, whether or not beyond-clinic measurements were reported. The included studies were assessed against four outcomes criteria: frequency of stuttering reduced to 5%; frequency maintained at 5% or less for at least 6 months post-treatment; improvement in any social, emotional or cognitive (SEC) variable; and improvement in any SEC variable from pre-treatment to 6-month follow-up post-treatment.

How were decisions on the relevance of primary studies made?
It appears that at least two reviewers were involved in assessing studies for relevance.

Assessment of study quality
Studies were evaluated against five methodological criteria covering study design, blinded data collection, data from before and after treatment, data from beyond-clinic conditions, and data about speech rate, speech naturalness and observer agreement if claims were made about stuttering frequency or severity. Studies were also assessed using the Oxford Centre for Evidence-Based Medicine's levels of evidence and grades of recommendation, and Chambless and Hollon's criteria for identifying empirically supported therapies. The authors did not state how many reviewers performed the validity assessment.

Data extraction
Two independent reviewers extracted the data, with any disagreements resolved by consensus.
Methods of synthesis
How were the studies combined?
The studies were combined in a narrative, grouped by type of intervention, with emphasis on results from studies that met at least four of the five methodological criteria.

How were differences between studies investigated?
Differences between the studies were discussed in the text.

Results of the review
A total of 197 ‘units of analysis’ (an evaluation of one treatment represented a unit of analysis) reported in 162 publications were included. Of these, 57 units of analysis (39 articles) met at least four of the five methodological quality criteria, or were included for other specified reasons, and were included in the review synthesis. The total number of participants was not provided but sample sizes in the 57 units of analysis ranged from 1 to 39.

Most of the studies that met the trial quality criterion reported a stuttering frequency below 5% immediately after treatment. About half measured stuttering frequency at 6 months and the majority of these still reported a frequency below 5%, including 8 of the 9 studies of prolonged/smooth speech and all 7 studies of response contingencies. The majority of studies did not report on changes in SEC variables.

Authors’ conclusions
A range of evidence-based treatments was available that may help patients to reduce stuttering and/or improve SEC variables.

CRD commentary
This review addressed a clear question and had clear inclusion criteria for the participants and interventions. Inclusion criteria for the outcomes were broad and it appears that all types of study design were eligible. The authors searched a range of relevant sources, although the search was restricted to English language material and some relevant studies could therefore have been missed. Unpublished studies were not sought and publication bias was not assessed, so the review could be at risk of publication bias. Study quality was assessed and the results were used in the synthesis. It appears that appropriate methods were used to minimise errors and bias during the review process. Limited details of the included studies were reported. A narrative synthesis was presented, which seems appropriate given the variety of included interventions and study designs. The authors’ conclusions are in line with the evidence presented, but should be treated with caution in view of the small sample sizes and non-comparative design of many of the included studies.

Implications of the review for practice and research
Practice: The authors stated that response-contingent principles were the predominant feature of the most powerful interventions for young children with stuttering. The most powerful interventions for adults appear to combine variants of prolonged speech, self-management, response contingencies and other variables.

Research: The authors stated that research is needed to compare treatment outcomes in adolescents and adults and to evaluate long-term changes following treatment in adults.

Funding
Partially supported by the National Institutes of Health, grant number R01-004638.

Bibliographic details

PubMedID
17102144
DOI
10.1044/1058-0360(2006/031)

Other publications of related interest

Indexing Status
Subject indexing assigned by NLM

MeSH
Acupuncture; Adolescent; Adult; Aged; Behavior Therapy; Child; Child, Preschool; Clinical Trials as Topic /standards; Cognitive Therapy; Electromyography; Feedback /physiology; Female; Humans; Male; Middle Aged; Research; Research Design; Speech Therapy /methods /standards; Stuttering /therapy; Treatment Outcome

AccessionNumber
12007005256

Date bibliographic record published
06/12/2007

Date abstract record published
30/09/2008

Record Status
This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn.