Research Paper Review

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Manual Therapy for Childhood Respiratory Disease: A Systematic Review

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ABSTRACT

Objective

This study reviewed the scientific evidence available on the effects of manipulative techniques on children with respiratory diseases.

Method

Three databases (SciELO, PEDro, and MEDLINE) were searched for clinical trials on the effects of manual therapy techniques on children and adolescents with respiratory diseases. The relevant studies were chosen by 2 independent researchers who assessed their abstracts and selected the studies that met the criteria for a complete and structured review.

Results

Of the 1147 relevant titles, 103 titles were selected for abstract assessment, and of these, 24 were selected for a full-text review. After critical analysis, 8 studies were included in the review and 16 were excluded for the following reasons: 1 covered only conventional therapy, 7 were not about the studied theme, and 8 included adults. Of the 8 studies included in the present review, 5 consisted of asthmatic children and the others of children with the following conditions: cystic fibrosis, bronchiolitis, recurrent respiratory infections, among others. Only 2 studies did not identify positive results with the use of manual therapy. The other 6 studies found some benefit, specifically in spirometric parameters, immunologic tests, anxiety questionnaire, or level of salivary cortisol.

Conclusion

The use of manual techniques on children with respiratory diseases seems to be beneficial. Chiropractic, osteopathic medicine, and massage are the most common interventions. The lack of standardized procedures and limited variety of methods used evidenced the need for more studies on the subject.

ANALYSIS

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Background Information

It has become more common in recent years for manipulative therapy to be used as a complementary treatment, along with pharmacological interventions, in the management of respiratory disease. To date, research has produced mixed results, making it unclear how useful these therapies are in treating respiratory disorders. Further difficulty arises from poor and inconsistent study methodology in this area (much of this research exists as case studies – a lower level of evidence).

Past reviews have focused on the use of manual therapy in asthma and have shown mixed results. A 2005 Cochrane review (9) and a 2012 review by Bronfort et al. (4) showed insufficient evidence for the use of manual therapy in the treatment of asthma, while a review by Gleberzon and colleagues in 2012 (6) showed that children with asthma receiving spinal manipulative therapy showed significant subjective and objective improvements.

The purpose of this review was to systematically investigate the evidence regarding the effects of manipulative techniques on children with different respiratory diseases, list the techniques used, and analyze and discuss these results.

PERTINENT RESULTS

Overall, 8 articles met the study's inclusion criteria: 5 studied asthmatic children, while the remaining 3 looked at other pulmonary diseases. A variety of manual therapies were used in the studies with 2 studies investigating chiropractic, 2 investigating osteopathy, and 4 investigating massage.

Manual Therapy for Asthma

- Five studies looked at the use of manual therapy to treat asthma.
- The highest rated study, by Balon et al. (1), looked at the effect of chiropractic manipulation on children with asthma. Treatment was applied 3x/wk for 1 month, then 2x/wk for 1 month, and 1x/wk for 2 months, and included spinal manipulation and soft tissue therapies specific to the needs of each child as determined by their practitioner. The study showed that chiropractic care did not significantly improve objective respiratory measures in children with asthma - (EDITOR'S NOTE: however, subjective measures did improve – resulting in long-standing controversy over how the results of this study were reported and interpreted by the media and within the medical profession).
- Nekooee et al. (10) investigated the effects of muscle stroking, applied by the child's parents for 20 minutes at bedtime for 1 month, and showed improved pulmonary function, with improved Forced Vital Capacity (FVC) and Forced Expiratory Volume (FEV) both before and after exercise.
- Field et al. (5) studied the effects of muscle stroking, applied at bedtime by the child's parents for 20 minutes for 1 month, and found reduced anxiety in the children, decreased cortisol levels, and increased FVC, FEV, and Forced Expiratory Flow (FEF).
- Bronfort et al. (3) examined the effect of chiropractic care on the clinical symptoms of asthmatic

children. Joint manipulation was applied with thrust and drop tables as indicated by clinical examination by the practitioner over 20 sessions spread over 12 weeks. The children receiving treatment showed improvements in quality of life and reduced asthma severity.

- Finally, Guiney et al. (7) looked at the use of 1 session of osteopathic joint mobilization, muscle energy techniques for the ribs, and myofascial release, applied according to each child's needs, compared to a control group. They found that the children receiving the treatment showed improvements in their peak expiratory flow (PEF).

Manual Therapy for Other Pulmonary Diseases

- Three studies looked at the use of manual therapy to treat other pulmonary diseases.
- A study by Zhu et al. (12) investigated the effect of acupuncture and meridian massage – applied daily for 1 month – on the immune function of children with recurrent pulmonary infections. They found an improvement not only in signs and symptoms of the infection, but also decreased the levels of C3b-IC, indicating a reduction in the level of infection and an improvement in their immune function.
- Hernandez-Reif et al. (8) studied children with cystic fibrosis, specifically the effect of muscle stroking, applied by their parents for 20 minutes at bedtime over 30 days, on anxiety, mood, and PEF. They found that patients' moods improved, anxiety of both the child and the parents lessened, and the PEF improved after treatment.
- Finally, Belcastro et al. (2) studied children with bronchiolitis receiving osteopathic treatment, finding no difference in presence or absence of wheezing, intercostal retraction, transcutaneous oxygen levels, length of hospital stay, radiographic findings, complete blood count (CBC), or microorganism cultures with treatment.

CLINICAL APPLICATION & CONCLUSIONS

There is clearly a lack of high quality evidence in this area, which needs to be addressed through further research. Future studies need to address the methodological issues currently plaguing this type of research.

The limited body of research that does exist is inconsistent, but does provide some evidence that manual therapy can have beneficial effects for children with respiratory diseases. This evidence, combined with the lack of reported negative side effects associated with these techniques, suggest that manual therapy is at least a reasonable option for managing children with respiratory disease. As always in these clinical scenarios with incomplete research, a reasonable treatment plan should be proposed, including careful monitoring of patient outcomes to assess treatment efficacy.

STUDY METHODS

The authors searched the Scientific Electronic Library Online (SciELO), the Physiotherapy Evidence Database (PEDro), and MEDLINE for articles in English and Portuguese. All articles found were assessed by 2 independent researchers and accepted or rejected first by title, then by abstract. The final group of articles was read in full to ensure they fit the inclusion/exclusion criteria.

Studies were included if they were clinical trials which utilized manual therapy techniques and included participants between 0 and 17 years of age (including preterm infants).
Of the 8 articles included in this review, 5 studied asthmatic children, while the remaining 3 looked at

other pulmonary diseases. A variety of manual therapies were used in the studies with 2 studies investigating chiropractic, 2 investigating osteopathy, and 4 investigating massage.

The methodological quality of the studies reviewed is questionable with only 1 of the 8 studies scoring higher than a 5/10 on the PEDro's Assessment Scale. This was most commonly due to a lack of therapist, participant, and tester blinding.

STUDY STRENGTHS / WEAKNESSES

Strengths

The literature search was thorough, including multiple high quality databases and multiple languages. As well, the additional search of the included articles' references lists minimized the chance of articles being overlooked.

Weaknesses

The methodological quality of the studies reviewed is questionable with only 1 of the 8 studies scoring higher than a 5/10 on the PEDro's Assessment Scale. This was most commonly due to a lack of therapist, participant, and tester blinding. It is important to note that blinding is often very difficult to achieve due to the nature of the studies and interventions. In addition, it must always be considered with literature reviews, that some articles may have been missed due to the databases chosen for the search.

Additional References

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