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Data Availability

The data associated with this publication are in the supplemental files.

Massage Therapy Techniques for the Prevention and Treatment of Pneumonia: A Protocol for a Scoping Review

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Author contributions: A.C.B. and N.S.R. conceived of this review. N.S.R. is the principal investigator, advisor, and corresponding author. A.C.B., R.B.L., C.B.C., and N.S.R. created, edited, and approved the protocol manuscript. E.D.F. created the search strategy with assistance from A.C.B., N.S.R, R.B.L., and C.B.C.

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INTRODUCTION

Rationale

Massage has been shown to decrease stress hormone levels, reduce anxiety, improve blood flow, and promote relaxation and muscle health in humans and animals alike (Field, 1995). One of the applications of massage therapy is to improve respiratory function of patients with a variety of respiratory diseases such as acute bronchiolitis, pneumonia, and cystic fibrosis (Mitichkina and Turchaninov, 2013; Pouzot-Nevoret et al., 2018). Pneumonia is an inflammatory lesion of the lungs, that usually is caused by highly pathogenic microorganisms (i.e. bacteria, virus, parasites, and fungi) or by aspiration or inhalation of some material, which causes different symptoms (such as dyspnea, coughing, fever, and chills) depending on the type, severity, and chronicity of pneumonia.In chronic cases, this disease can lead to lung abscesses, lung fibrosis, and pleural effusion (Reynolds, 2010; Lopéz and Martinson, 2017). Pneumonia treatment is based on the underlying cause, and usually, antibiotics and analgesic drugs are used (Hesbach 2014; Salvo, 2017). In many pneumonic patients, pharmacologic therapy is mixed with physiotherapy because massage techniques can aid patients in secretion and mucus clearance, accomplishing this by percussive motions that increase lung function capacity by muscle relaxation and thus allowing secretion drainage from the lungs (Mitichkina and Turchaninov, 2013; Hesbach, 2014; Salvo, 2017; Pouzot-Nevoret et al., 2018). Prevention of respiratory disease, especially pneumonia, is also being investigated. Massage is utilized in both the medical and veterinary fields to treat

patients with respiratory diseases, but there is a lack of uniformity or consensus on the techniques applied to treat patients with manual therapy with any disease (Haussler 2010). Due to this, it is necessary to provide an overview of the available research evidence about massage techniques in application to patients with pneumonia, reviewing all the reported methods and looking for those that are most often used in both veterinary and human medicine.

Objective

The objective of this study is to identify what massage techniques are utilized in the prevention and treatment of pneumonia in animal and human patients and explore if there is a consensus on these methods in current research. The research question is: what are the massage techniques that have been used to prevent or treat pneumonia?

Population

All animal species and humans will be included, without limitations on age or sex.

Interventions and Exposures

Interventions: Massage, touch therapy, manual therapy, physiotherapy, and manual manipulation

Exposures: Exposure to bacterial, fungal, viral, parasitic (including protozoal), aspiration pneumonia, bronchopneumonia, interstitial pneumonia, embolic pneumonia, pneumonitis, bronchoaspiration, or granulomatous pneumonia.

METHODS

Eligibility Criteria

As described above, eligible studies are those conducted in humans and any animal species that evaluate any type of massage therapy used to prevent or treat pneumonia. No restrictions on patient age or sex will be applied. The proposed scoping review will include published peer-review primary research articles with no restrictions on study designs. Thus, descriptive studies (i.e. case-studies, surveys), analytical studies (i.e. case-control, cross-sectional, longitudinal, and correlation) and controlled studies (i.e. randomized and quasi-randomized) will be selected. Grey literature, review articles, and non-peer-reviewed literature will not be included in this study.

Information sources

Relevant publications were searched in Medline (via PubMed, 1966 to present), CAB Abstracts (via CAB Direct, 1972 to present), Scopus (via Scopus, 1970 to present), CINAHL (via EBSCO, 1937 to present), and PEDro (via PEDro 1929 to present) (Appendix 1).

Search Strategy

The search strategy was designed with the assistance of a health and veterinary science academic librarian (E.D.F.) and it includes keywords for intervention [massage, touch therapy, manual

therapy, physiotherapy, and manual manipulation] and disease [pneumonia, aspiration pneumonia, fungal pneumonia, viral pneumonia, protozoal pneumonia, parasitic pneumonia, bacterial pneumonia, bronchopneumonia, interstitial pneumonia, embolic pneumonia, pneumonitis, bronchoaspiration, and granulomatous pneumonia] (Appendix 1). The searching period was based on database coverage, and there was no limit for the publication date. The searching language was not limited, but only publications in English, French, Spanish, Russian, and Portuguese were reviewed. Relevant publications found in a language other than those mentioned above were translated.

Study Records

Data Management

Citations retrieved after conducting the search strategy will be imported into the EndNote reference management software (Clarivate Analytics; Philadelphia, US). Duplicates will be eliminated through Covidence software. Title and abstract screening of research articles will be conducted also using Covidence software (Cochrane Community, London, UK).

Selection Process

Three independent researchers (A.C.B., R.B.L, and C.B.C.) will screen the titles and abstracts based on two questions: 1) Does the title or abstract describe a study involving a massage technique? 2) Does the title or abstract describe a study involving a goal to prevent pneumonia, patients undergoing a chronic or acute pneumonia, or recovering from a pneumonia episode? Only studies that answer "yes" to both questions will be retained for full-manuscript review. Disagreements on study eligibility between the three reviewers will be consulted with a fourth researcher (N.S.R). A.C.B. will conduct the full manuscript review. A PRISMA flow diagram will be generated to display the included and excluded studies.

Data Collection

The data from selected full-manuscripts will be extracted into Microsoft Excel spreadsheets, including study details (i.e. author, year of publication, type of publication, country, funding), study characteristics (i.e. species, gender, study design, sample size, mean age, and age range of participants), disease characteristics (i.e. type of pneumonia, stage of pneumonia, presence of diseases other than pneumonia), and intervention characteristics (i.e. massage technique, duration of massage, region of the body where massage is applied).

Descriptive Analysis

Data will be summarized using descriptive statistics using GraphPad (La Jolla, California). Data will be plotted using frequency bar graphs, scatter plots, box plots, and pie charts. Tables reporting means, ranges and coefficient of variation will be prepared.

Analysis of Subgroups

We will describe massage techniques based on human and veterinary patients, the country of origin, and the type of pneumonia prevented or treated.

Discussion

The purpose of this scoping review is to identify the most common massage techniques utilized with pneumonic patients, both human and animal, and to recognize if there is a current consensus on the type of massage treatment or preventative for pneumonic patients.

Availability of Data and Materials

The information and datasets analyzed by the corresponding author will be available upon acceptable request.

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Type and Method of Review

Scoping Review

Start Date

01 June 2020

Anticipated Completion Date

07 August 2020

Language

English

Country

United States of America

Stage of Review

Review Ongoing

Subject Index Terms

Massage, touch therapy, manual manipulation, pneumonia, aspiration pneumonia, bacterial pneumonia, viral pneumonia, fungal pneumonia

Date of Registration in SYREAF: 15 July 2020

Stage of Review at Time of This Submission

Stage	Started	Completed
Preliminary Searches	Yes	Yes
Search Results Screened Against Eligibility Criteria	No	No
Data Extraction	No	No

Search Reporting based on PRISMA-S Template (based on v1.0 retrieved from https://osf.io/2ybwn/)

Appendix I: Identifying literature massage therapy techniques for the prevention and treatment of pneumonia

Databases and Interfaces Searched:

Database	Interface	Date Coverage	Date Searched
CAB ABstracts	CABDirect	1910 to Present	13 July 2020
Medline	PubMed	1946-Present	13 July 2020

Scopus	Scopus	1823-Present	13 July 2020
CINAHL	EBSCO	1937-Present	13 July 2020
PEDro	PEDro	1929-Present	13 July 2020

Citation Searching And Text Analysis:

Article Citation:
Field, T. 1995. Massage therapy for infants and children. *Journal of Developmental and Behavioral Pediatrics*, *16*(2): 105–111.
Haussler KK. The role of manual therapies in equine pain management. *Vet Clin North Am Equine Pract*. 2010;26(3):579-601. doi:10.1016/j.cveq.2010.07.006
Hesbach, A.L.. Manual therapy in veterinary rehabilitation. *Top Companion Animal Medicine*. 2014; 29(1):20-23. doi:10.1053/j.tcam.2014.02.002
Mitichkina T.V. and Turchaninov R. "Medical Massage in Cases of Pneumonia. Part I." *Science of Massage Institute*. *Journal of Massage Science*, 2013, https://www.scienceofmassage.com/2013/01/medical-massage-in-cases-of-pneumonia-part-i/. Accessed 28 June 2020.
Pouzot-Nevoret, C., Goy-Thollot, I., Billet, D., Barthélemy, A., Blesch, M., Pin, A., & Hopper, K. (2018). Evaluation of a new chest physiotherapy technique in dogs with airway fluid accumulation hospitalized in an intensive care unit. *Journal of Veterinary Emergency and Critical Care*, *28*(3), 213-220. doi: https://doi.org/10.1111/vec.12713
Polastri M, Clini EM, Nava S, Ambrosino N. Manual Massage Therapy for Patients with COPD: A Scoping Review. *Medicina (Kaunas)*. 2019;55(5):151. Published 2019 May 17. doi:10.3390/medicina55050151
Shakespeare AS. Aspiration lung disorders in bovines: a case report and review. *J S Afr Vet Assoc*. 2012;83(1):921. Published 2012 Nov 1. doi:10.4102/jsava.v83i1.921
Kuznetsov OF, Lagutina TS. Novaia metodika massazha v kompleksnom lechenii bol'nykh khronicheskoĭ pnevmonieĭ [New massage method in the overall treatment of chronic pneumonia]. *Vopr Kurortol Fizioter Lech Fiz Kult*. 1980;(3):13-17.
Pattanshetty RB, Gaude GS. Effect of multimodality chest physiotherapy in prevention of ventilator-associated pneumonia: A randomized clinical trial. *Indian J Crit Care Med*. 2010;14(2):70-76. doi:10.4103/0972-5229.68218

Zeng H, Zhang Z, Gong Y, Chen M. *Zhonghua Wei Zhong Bing Ji Jiu Yi Xue*. 2017;29(5):403-406. doi:10.3760/cma.j.issn.2095-4352.2017.05.004

Process: Key articles were identified by Principal Investigator and keywords were mined by finding references in PubMed, CAB Direct, and Scopus. Keywords were collected and compared with keywords already utilized.

Limits and Restrictions

Date and Time Period: No limitation set.

Language: English, French, Spanish, Russian and Portuguese.

Publication status: No grey literature will be included

Species Included: Human and animal studies without age limit

Study Design: descriptive studies (i.e. case-studies, surveys), analytical studies (i.e. case-control, cross-sectional, longitudinal, and correlation) and controlled studies (i.e. randomized and quasi-randomized)

Search Filters:

Database	Interface	Search Filters Applied
PEDro	PEDro	Therapy: Stretching, mobilisation, manipulation, massage

Full Search Strategy:

Search Database:CABDirect

Search ID	Terms (copy and paste)	Results

#1 massage	de:("physical therapy" or "massage" or “physiopathology”) OR title:(“massage” or “touch therapy” or “manual therapy” or “physiotherapy” or “manual manipulation” or “coupage” or “percussive therapy” or “vibration”) OR ab:(“massage” or “touch therapy” or “manual therapy” or “physiotherapy” or “manual manipulation” or “coupage” or “percussive therapy” or “vibration”)	29,763
#2 Pneumonia	Ti: (“pneumonia” or “bronchopneumonia” or “pneumonitis” or “bronchoaspiration”) OR de:("pneumonia" or "pneumonitis")	58,196
#3	#1 AND #2	389

Search Database: PubMed

Search ID	Terms (copy and paste)	Results
#1 massage	“massage”[tiab] OR “therapeutic touch”[tiab] OR “manual therapy”[tiab] OR “physiotherapy”[tiab] OR “manual manipulation”[tiab] OR “coupage”[tiab] OR “vibration”[tiab] OR "Massage"[Mesh] OR "Therapy, Soft Tissue"[Mesh] OR "Physical Therapy Modalities"[Mesh] OR "Musculoskeletal Manipulations"[Mesh] OR "Kinesiology, Applied"[Mesh]	171,613
#2 pneumonia	“pneumonia”[tiab] OR “bronchopneumonia”[tiab] OR “pneumonitis”[tiab] OR “bronchoaspiration”[tiab] OR "Pneumonia"[Mesh] OR “ventilator”[tiab] OR “ventilation”[tiab] OR "Pneumonia, Viral"[Mesh] OR "Pneumonia, Bacterial"[Mesh] OR "Pneumonia, Aspiration"[Mesh] OR "Lung Diseases, Interstitial"[Mesh] OR "Pneumonia, Ventilator-Associated"[Mesh]	224,205
#3	#1 AND #2	1,464

Search Database: Scopus

Search ID	Terms (copy and paste)	Results
#1Massage	“massage” or “touch therapy” or “manual therapy” or “physiotherapy” or “manual manipulation” or “coupage”	115,908

#2 Pneumonia	“pneumonia” or “bronchopneumonia” or “pneumonitis” or “bronchoaspiration”	**306,692**
#3	#1 AND #2	**1,542**

Search Database: CINAHL

Search ID	Terms (copy and paste)	Results
#1 Massage	TI (“massage” OR “touch therapy” OR “manual therapy” OR “physiotherapy” OR “manual manipulation” OR “coupage” or “vibration”) OR AB (“massage” OR “touch therapy” OR “manual therapy” OR “physiotherapy” OR “manual manipulation” OR “coupage”) OR MW (“massage” OR “touch therapy” OR “manual therapy” OR “physiotherapy” OR “manual manipulation” OR “coupage”)	53,161
#2 Pneumonia	TI (“pneumonia” OR “bronchopneumonia” OR “pneumonitis” OR “bronchoaspiration”) OR AB (“pneumonia” OR “bronchopneumonia” OR “pneumonitis” or “bronchoaspiration”) OR MW (“pneumonia” OR “bronchopneumonia” OR “pneumonitis” OR “bronchoaspiration”)	**40,661**
#3	#1 AND #2	**166**

Search Database: Pedro

Search ID	Terms (copy and paste)	Results
#1 Pneumonia	pneumon*	
#2 Massage	Filter: therapy: Stretching, mobilisation, manipulation, massage	
#3	#1 AND #2	14

Search Designers:
Information Specialists or Librarians involved in process were: Erik Fausak
Content Experts involved: Ashley Caron-Brummel and Noelia Silva-Del-Rio

Peer Review:
No formal peer review was conducted of search strategy.

Total Records	Total Records after deduplication	Deduplication software/methodology
3575	**2975**	**Mendeley**
2975	**2964**	**Covidence**

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Field, T. 1995. Massage therapy for infants and children. *Journal of Developmental and Behavioral Pediatrics*, *16*(2): 105–111.

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Hesbach, A.L.. Manual therapy in veterinary rehabilitation. *Top Companion Animal Medicine*. 2014; 29(1):20-23. doi:10.1053/j.tcam.2014.02.002

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Reynolds, J.H., McDonald G., Alton H., Gordon S.B. Pneumonia in the immunocompetent patient. *Br J Radiol*. 2010;83(996):998-1009. doi:10.1259/bjr/31200593

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