OBJN
ONLINE BRAZILIAN JOURNAL OF NURSING

ISSN: 1676-4285

Non-pharmacological therapies in the relief of cardiac surgery postoperative pain: a scoping review

Terapias não farmacológicas no alívio da dor pós-operatória de cirurgias cardíacas: revisão de escopo

Terapias no farmacológicas para el alivio del dolor postoperatorio en cirugías cardíacas: revisión de alcance

Sabrina Daiane Gurgel Sarmento[1]
ORCID: 0000-0002-5999-0139

Kauanny Vitoria Gurgel dos Santos[1]
ORCID: 0000-0003-4679-1840

Joyce Karolayne dos Santos Dantas[1]
ORCID: 0000-0002-5259-8556

Bruna Vilar Soares da Silva[1]
ORCID: 0000-0002-4199-238X

Daniele Vieira Dantas[1]
ORCID: 0000-0003-0307-2424

Rodrigo Assis Neves Dantas[1]
ORCID: 0000-0002-9309-2092

1 Federal University of Rio Grande do Norte, RN, Brazil

Editor: Ana Carla Dantas Cavalcanti
ORCID: 0000-0003-3531-4694

Corresponding author:
Rodrigo Assis Neves Dantas
E-mail: rodrigoenf@yahoo.com.br

Submission: 02/11/2021
Approved: 07/01/2021

ABSTRACT
Objective: To map the production of knowledge on the main non-pharmacological therapies in postoperative pain relief in patients who underwent cardiac surgery. **Method:** A scoping review carried out as recommended by the Joanna Briggs Institute and the Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews checklist, in 11 national and international data sources. A total of 17 studies were selected, without time or language restrictions. **Results:** There was predominance of myocardial revascularization surgeries. Of the 17 selected articles, ten (58.8%) referred to massage, five (29.4%) to music therapy, one (5.9%) to acupressure and one (5.9%) to aromatherapy. The Visual Analog Scale predominated in pain assessment. The intervention time varied from three to 30 minutes. **Conclusion:** The main non-pharmacological measures used in pain relief during the postoperative period of cardiac surgeries were therapeutic massages, music, acupressure and aromatherapy. **DESCRIPTORS**: Complementary Therapies; Postoperative Care; Pain; Thoracic Surgery; Cardiac Surgical Procedures; Nursing.

RESUMO
Objetivo: Mapear a produção do conhecimento sobre as principais terapias não farmacológicas no alívio da dor pós-operatória de pacientes submetidos à cirurgia cardíaca. **Método:** Revisão de escopo realizada conforme recomendações do Instituto Joanna Briggs e do *checklist Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews*, em 11 fontes de dados nacionais e internacionais. Selecionaram-se 17 estudos sem recorte temporal ou de idioma. **Resultados:** Predominaram as cirurgias de revascularização do miocárdio. Dos 17 artigos selecionados, dez (58,8%) se referiram à massagem, cinco (29,4%) à musicoterapia, um (5,9%) à acupressão e um (5,9%) à aromaterapia. A Escala Visual Analógica predominou na avaliação da dor. O tempo de intervenção variou de três a 30 minutos. **Conclusão:** As principais medidas não farmacológicas utilizadas no alívio da dor no pós-cirúrgico de cirurgias cardíacas foram massagens terapêuticas, música, acupressão e aromaterapia.
DESCRITORES: Terapias Complementares; Cuidados Pós-Operatórios; Dor; Cirurgia Torácica; Procedimentos Cirúrgicos Cardíacos; Enfermagem.

RESUMEN
Objetivo: Mapear la producción de conocimiento sobre las principales terapias no farmacológicas para el alivio del dolor postoperatorio en pacientes sometidos a cirugía cardíaca. **Método:** Revisión de alcance realizada de acuerdo con las recomendaciones del Instituto Joanna Briggs y *checklist Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews*, en 11 fuentes de datos nacionales e internacionales. Se seleccionaron 17 estudios sin límite de tiempo ni restricciones de idioma. **Resultados:** Predominó la cirugía de revascularización miocárdica. De los 17 artículos seleccionados, diez (58,8%) se referían a masajes, cinco (29,4%) a musicoterapia, uno (5,9%) a acupresión y uno (5,9%) a aromaterapia. La Escala analógica visual predominó en la valoración del dolor. El tiempo de intervención varió de tres a 30 minutos. **Conclusión:** Las principales medidas no farmacológicas utilizadas en el alivio del dolor posquirúrgico fueron el masaje terapéutico, la música, la acupresión y la aromaterapia.
DESCRIPTORES: Terapias Complementarias; Cuidado Postoperatorio; Dolor; Cirugía Torácica; Procedimientos Quirúrgicos Cardíacos; Enfermería.

Sarmento SD, Santos KV, Dantas JK, Silva BV, Dantas DV, Dantas RA. Non-pharmacological therapies in the relief of cardiac surgery postoperative pain: a scoping review. Online Braz J Nurs [Internet]. 2021 Mês [cited year month day];20:e20216494. Available from: https://doi.org/10.17665/1676-4285.20216494

INTRODUCTION

Cardiovascular diseases exert a major impact on the health of the population, causing nearly 6.77% of mortality and increased health-related costs[1]. Heart diseases can be treated clinically or surgically, with myocardial revascularization being the most common intervention[2]. Patients undergoing these procedures have a critical postoperative (PO) period with a risk of hemodynamic instability due to the increased physiological response and to the stress caused by the surgery, requiring continuous and specialized attention from the team[3].

The cardiac surgery PO is marked by significant changes, by the severity of the surgical procedure and by risk factors intrinsic to the patient, as well as by complications such as acute kidney injury, acute myocardial infarction, arrhythmias, respiratory failure, pneumothorax, venous thromboembolism, increased the sympathetic response, low cardiac output syndrome, cerebral ischemia and infectious complications[4-5].

Pain is a commonly reported symptom in cardiac surgery PO. It affects the functional recovery of the individual because it involves physical and psychological aspects such as distress and complications in the PO period, namely: changes in the ability to cough, breathe and move, influencing their morbidity and mortality[6]. Acute pain is present with tachycardia, hypertension, hyperventilation, while chronic pain affects quality of life through anxiety, depression or physical or emotional disabilities[7].

Pain treatment occurs through the use of medications or non-pharmacological therapies and, although it is a common symptom, it becomes challenging for the health team. Factors such as difficult diagnosis or absence of protocols or incoherent association between pain and analgesic hinder its management in care[8]. Therefore, it is advantageous to apply non-pharmacological strategies, as they present lower costs and minimal adverse effects, in addition to significant pain reduction[9].

Given the above, the following question emerges: Which are the main non-pharmacological therapies used to relieve pain in patients in the cardiac surgery postoperative period?

This manuscript is justified by the need to evidence studies that address alternative and complementary strategies for the treatment of pain in cardiac surgery PO, as it is a symptom commonly experienced by the patients. In addition to that, these conditions are usually stressful events for the critical patient under the care of the health team, especially Nursing. From this perspective, it is believed that studies of this nature may assist the professional Nursing practice in specialized treatment and give visibility to non-pharmacological therapies.

Thus, this study aims at mapping the production of knowledge about the main non-pharmacological therapies in the relief of postoperative pain in patients who underwent cardiac surgery.

METHOD

A scoping review in order to investigate the main scientific evidence available in the literature on a given topic so that it is possible

to identify the main existing gaps[10]. Thus, through the evaluation of emerging evidence, it provides significant support for future research studies[10]. It was prepared in accordance with the recommendations of the JBI[10], using the Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) checklist [11]. The essential stages for the elaboration of a scoping review were followed, namely: 1) elaboration of the objectives and of the research question; 2) development of the inclusion and exclusion criteria; 3) identification of evidence from the search; 4) selection of studies relevant to the review; 5) mapping of the data contained in the studies selected; 6) collection, synthesis and reporting of the results[10].

A search was carried out to identify reviews with a similar theme, ensuring data exclusivity. The following platforms for the registration of scientific studies were researched: International Prospective Register of Systematic Reviews (PROSPEROUS), Open Science Framework (OSF), The Cochrane Library, JBI Clinical Online Network of Evidence for Care and Therapeutics (COnNECT+) and Database of Abstracts of Reviews of Effects (DARE). It was verified that there were no publications with a scope similar to that of this review. After this stage, the study was registered in the OSF[12].

For the definition of the research question, the Population, Concept and Context (PCC) mnemonic established by the JBI was used; where the following was obtained: Population: patients who underwent cardiac surgery; Concept: non-pharmacological therapies for pain relief; and Context: cardiac surgery postoperative. Thus, the following question was elaborated: "Which are the main non-pharmacological therapies used to relieve pain in patients in the cardiac surgery postoperative period?"

The terms used for the searches were the following controlled descriptors from the Medical Subject Headings (MeSH) and from the Descriptors in Health Sciences (*Descritores em Ciências da Saúde*, DeCS): "Thoracic Surgery", "Cardiac Surgical Procedures", "Cardiovascular Surgical Procedures", "Therapeutics", "Complementary Therapies", "Pain", "Postoperative Care" OR "Postoperative Period"; as well the following keywords: "Cardiac surgery" and "Non-pharmacological therapies". For the crossings, the Boolean descriptors "AND" and "OR" were used, according to Chart 1.

Chart 1 - Descriptors and keywords used in the search. Natal, RN, Brazil, 2020.

PCC	MESH/DeCS		Keywords
Population	Thoracic Surgery/*Cirurgia torácica* *OR* Cardiovascular Surgical Procedures/*Procedimentos Cirúrgicos Cardiovasculares* *OR* Cardiac Surgical	***OR***	Cardiac surgery/*Cirurgia cardíaca*

	Procedures/*Procedimentos Cirúrgicos Cardíacos*		
	AND		
Concept		Therapeutics/*Terapêutica* ***OR*** Complementary Therapies/*Terapias complementares* ***AND*** Pain/*Dor*	Non-pharmacological therapies/ *Terapias não-farmacológicas*
	AND		
Context	Postoperative Care/*Cuidados pós-operatórios* ***OR*** Postoperative Period/*Período pós-operatório*	***OR***	

Source: Elaborated by the authors, 2020.

The search was carried out simultaneously in October 2020 by two researchers, independently, and in eleven data sources: Cumulative Index to Nursing and Allied health Literature (CINAHL), Web of Science, Scopus, Wiley Online Library, Cochrane Library, Scientific Electronic Library Online (SciELO), Gale Academic OneFile, Medical Literature Analysis and Retrieval System Online (MEDLINE), Catalogue of Theses and Dissertations (CAPES), in the Digital Library of Theses and Dissertations at the São Paulo University (*Universidade de São Paulo*, USP) and in Google Scholar. In cases of divergence in the selection of articles, a third researcher analyzed the article in full for the final decision to include or exclude the study. Chart 2 addresses the search syntax used.

Chart 2 - Search syntax used in the data sources. Natal, RN, Brazil, 2020.

DATA SOURCES	SEARCH SYNTAX
Web of Science	*TS=(Thoracic Surgery OR Cardiac surgery OR Cardiac Surgical Procedures OR Cardiovascular Surgical Procedures) AND TS=(Therapeutics OR Complementary Therapies OR Non-pharmacological therapies AND Pain) AND TS=(Postoperative Care OR Postoperative Period)*
CINAHL	*(Thoracic Surgery OR Cardiac surgery OR Cardiac Surgical Procedures OR Cardiovascular Surgical Procedures) AND (Therapeutics OR Complementary Therapies OR Non-pharmacological therapies AND Pain) AND (Postoperative Care OR Postoperative Period)*
Scopus	*(TITLE-ABS-KEY (Thoracic Surgery OR Cardiac surgery OR Cardiac Surgical Procedures OR Cardiovascular Surgical Procedures) AND TITLE-ABS-KEY (Therapeutics OR Complementary Therapies OR Non-pharmacological therapies AND Pain)) AND (TITLE-ABS-KEY (Postoperative Care OR Postoperative Period))*

Cochrane Library	*Thoracic Surgery OR Cardiac surgery OR Cardiac Surgical Procedures OR Cardiovascular Surgical Procedures in Title Abstract Keyword AND Therapeutics OR Complementary Therapies OR Non-pharmacological therapies AND Pain in Title Abstract Keyword AND Postoperative Care OR Postoperative Period in Title Abstract Keyword*
Gale Academic Onefile	*(Thoracic Surgery OR Cardiac surgery OR Cardiac Surgical Procedures OR Cardiovascular Surgical Procedures) AND (Therapeutics OR Complementary Therapies OR Non-pharmacological therapies AND Pain) AND (Postoperative Care OR Postoperative Period)*
SciELO	*(Thoracic Surgery OR Cardiac surgery OR Cardiac Surgical Procedures OR Cardiovascular Surgical Procedures) AND (Therapeutics OR Complementary Therapies OR Non-pharmacological therapies AND Pain) AND (Postoperative Care OR Postoperative Period)*
MEDLINE	*(Thoracic Surgery OR Cardiac surgery OR Cardiac Surgical Procedures OR Cardiovascular Surgical Procedures) AND (Therapeutics OR Complementary Therapies OR Non-pharmacological therapies AND Pain) AND (Postoperative Care OR Postoperative Period)*
Wiley Online Library	*(Thoracic Surgery OR Cardiac surgery OR Cardiac Surgical Procedures OR Cardiovascular Surgical Procedures) AND (Therapeutics OR Complementary Therapies OR Non-pharmacological therapies AND Pain) AND (Postoperative Care OR Postoperative Period)*
Catalogue of Theses and Dissertations (CAPES)	*(Cirurgia torácica OR Procedimentos Cirúrgicos Cardíacos OR Procedimentos cirúrgicos cardiovasculares) AND (Terapias complementares OR Terapêutica AND Dor) AND (Período pós-operatório OR Cuidados pós-operatórios)*
USP Digital Library of Theses and Dissertations	*(Cirurgia torácica OR Procedimentos Cirúrgicos Cardíacos OR Procedimentos cirúrgicos cardiovasculares) AND (Terapias complementares OR Terapêutica AND Dor) AND (Período pós-operatório OR Cuidados pós-operatórios)*
Google Scholar	*(Thoracic Surgery OR Cardiac surgery OR Cardiac Surgical Procedures OR Cardiovascular Surgical Procedures) AND (Therapeutics OR Complementary Therapies OR Non-pharmacological therapies AND Pain) AND (Postoperative Care OR Postoperative Period)*

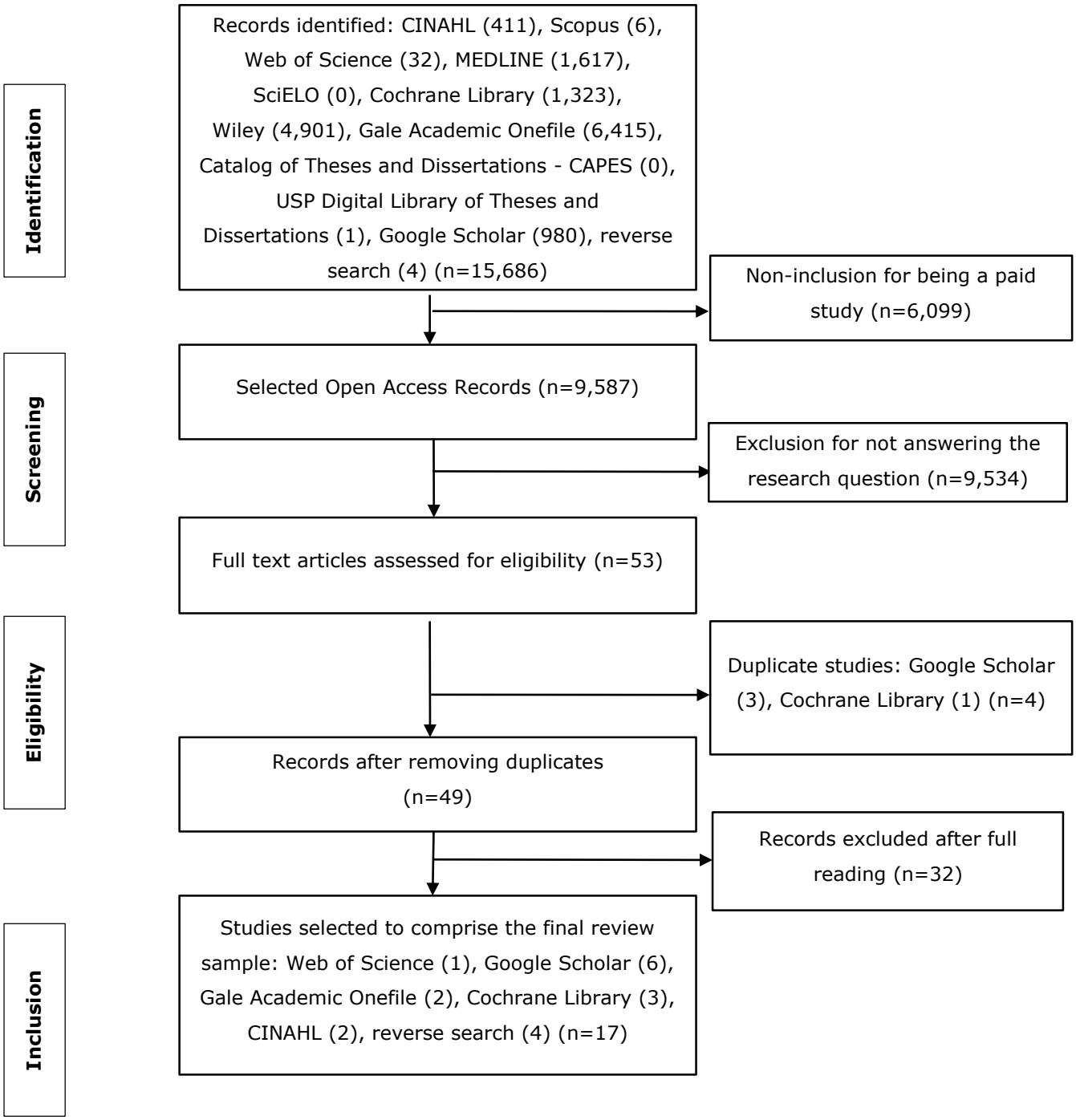
Source: Elaborated by the authors, 2020.

The material included were scientific articles in full text online, available through remote access via the Federated Academic Community (*Comunidade Acadêmica Federada*, CAFe), and with no time or language restrictions. Studies that did not answer the research question were excluded, as well as abstracts, letters to the editor and opinion articles.

RESULTS

A total of 15,686 scientific articles were found in the data sources. In order to compose the results, a reverse search was also conducted, selecting articles contained in the references of the studies included in this review, finding four articles. After two independent reviewers read the studies in their entirety, 17 scientific articles were included in the qualitative synthesis of this review, excluding those that escaped the topic, were unavailable or duplicated, as shown in Figure 1.

Figure 1 - Adapted search scheme (PRISMA-ScR). Natal, RN, Brazil, 2020.



Source: Elaborated by the authors, 2020.

As for the country where the studies were conducted, prevalence of Iran is observed, accounting for four (23.5%) publications, as well as of the United States of America (USA), with three (17.6%). Saudi Arabia and Canada have two (11.8%) studies each. The years 2018 and 2006 had three (17.6%) studies published, while 2014 and 2019 had two (11.8%) publications each.

The results were organized according to year, locus, reference, procedure, participants, intervention, protocol, outcome and pain scale used, shown in Chart 3.

Chart 3 - Summary of the studies included in the review. Natal, RN, Brazil, 2020.

Year/ Locus/ Reference	Procedure/ Participants	Intervention and protocol	Outcome/ Pain scale used
2020/ USA[13]	Congenital heart disease/ 60 babies	Massage for 30 minutes with gentle friction and passive touch on the babies' upper and lower extremity accesses, for seven days.	Lower score during the first six days. Massage reduced heart rate and respiratory rate and increased oxygen saturation/ Face, Legs, Activity, Cry, Consolability.
2019/ Saudi Arabia[14]	Unspecified cardiac surgery/ 31 adult patients.	Therapeutic foot massage, twice a day for five minutes on each foot. It included *effleurage* movements, thumb glide, foot spread and range of motion.	Reduction of pain and anxiety/ Visual Analog Scale.
2019/ Saudi Arabia[15]	Cardiac catheterization/ 40 adult patients.	Massage performed on the hands, arms, shoulders, dorsal region of the abdomen and legs with a bitter and odorless almond for three minutes, during three days after catheterization.	Pain reduction after treatment completion. Reduction of anxiety and fatigue, and mood improvement/ McGill Pain Questionnaire.
2018/ Canada[16]	Unspecified cardiac surgery/ 83 adult patients.	Therapeutic hand massage for 20 minutes twice a day.	Two-point reduction on the pain scale, decreased anxiety and muscle tension/ Visual Analog Scale.
2018/ Iran[17]	Myocardial revascularization/ 70 adult patients.	Acupressure on the hands at the LI4 point for 20 minutes with pressure of 10 seconds, with two seconds of rest.	Reduction in the pain scores, mainly immediately after acupressure and 20 minutes after the intervention/ Visual Analog Scale.
2018/ Iran[18]	Myocardial revascularization/ 60 adult patients	Aromatherapy with lavender essential oil, from the inhalation of two drops mixed with distilled water for 20 minutes.	Significant reduction in the pain levels in the first two days after surgery/ Visual Analog Scale.
2016/ Turkey[19]	Coronary artery surgery/ 68 adult patients.	Classical or folklore music with headphones, every day for 30 minutes during postoperative until the patient's discharge.	Reduction in the pain and anxiety levels/ Visual Analog Scale.
2015/ New Delhi[20]	Unspecified cardiac surgery/ 54 patients aged from 18 years old.	Music therapy for 30 minutes twice a day for the first two days after surgery.	No significant differences in the pain and physiological parameters/ Visual Analog Scale.
2014/ Canada[21]	Unspecified cardiac surgery/ 40 adult patients.	Five-minute moderate pressure massage on the back and palms of the hands,	Reduction in pain intensity and muscle tension/ Faces Pain Thermometer (FPT); Critical Care

		followed by a 30-minute rest period.	Pain Observation Tool (CPOT); Brief Pain Inventory (BPI).
2014/ Iran[22]	Unspecified cardiac surgery/ 60 adult patients.	Sedative music selected by a specialist, 30 minutes a day.	Reduction in the pain level from 6.32 ± 0.21 to 3.11 ± 0.12/ Visual Analog Scale.
2012/ Australia[23]	Coronary artery bypass graft and/or valve surgery/ 152 adult patients.	Therapeutic massage of moderate pressure for 20 minutes in the patient's area of maximum discomfort after application of odorless hypoallergen.	After 4-5 days of massage application, there was a 38% reduction in the pain scores, of 40% in anxiety and of 44% in relation to muscle tension/ Visual Analog Scale.
2011/ Iran[24]	Unspecified cardiac surgery/ 65 adult patients.	Massage for 20 minutes on hands and feet, five minutes on each end.	Significant pain attenuation immediately and 24h after the intervention, when compared to the control group, which presented twice the pain score/ Visual Analog Scale.
2009/ Ohio[25]	Coronary artery bypass graft and/or valve surgery/ 252 adults aged between 18 and 85 years old.	Therapeutic massage for 30 minutes after the second postoperative day until the fifth day.	The scores of preoperative pain, mood and affective status were positively associated with the intervention/ Visual Analog Scale
2006/ Brazil[26]	Unspecified cardiac surgery/ 84 patients aged from 1 day of life to 16 years old.	Music therapy with classical music for 30 minutes in the first 24 hours after surgery.	Reduction in heart and respiratory rates/ Visual Analog Scale.
2006/ USA[27]	Unspecified cardiac surgery/ 104 patients aged over 18 years old.	From the first to the third postoperative day, the patients listened to music for 20 minutes, in addition to light touch or gentle massage and the use of guided imagery.	Reduction in the pain and tension level/ Visual Analog Scale.
2006/ USA[28]	Unspecified cardiac surgery/ 86 adult patients.	Musical intervention for 20 minutes twice a day. Bed rest in a comfortable position for 20 minutes was assigned to the control group.	Significant reduction in the pain and anxiety levels/ Visual Analog Scale.
2002/ England[29]	Myocardial revascularization/ 25 adult patients.	Guided relaxation for 20 minutes with music through a headset. Another group received foot massage for 20 minutes.	No significant differences in the reduction of pain, anxiety, tension, calm, rest and relaxation levels/ Visual Analog Scale.

Source: Elaborated by the authors, 2020.

DISCUSSION

Pain can affect length of hospitalization in the postoperative period in patients who underwent major procedures such as cardiac surgeries. They usually suffer intense pain, anxiety and stress, negatively reflecting on treatment, recovery and quality of life[30]. The use of non-pharmacological therapies represents an effective technique to alleviate pain in the postoperative period of these surgeries.

Of the 17 studies selected, nine[14,16,20-22,24,26-28]

did not specify the type of surgical procedure to which the patient was subjected. Among the studies that specified this data, there was predominance of myocardial revascularization surgeries[17-18,29], coronary artery bypass grafts[23,25], cardiac catheterization[15] and congenital heart disease[13]. It is appropriate to relate a large number of myocardial revascularization surgeries with the prevalence of atherosclerotic diseases[1].

Massage corresponds to the most used non-pharmacological technique for pain relief in cardiac surgery PO[13-16,21,23-25,27,29], followed by the use of music[19-20,22,26-29], acupressure[19] and aromatherapy[18].

The duration of the massage varied from three to 30 minutes. Massage lasting 20 minutes was more frequent[16,23-24,29], followed by ten[14,21], 30[11] and three minutes[15].

A randomized clinical trial conducted with 70 patients after coronary artery bypass graft surgery addressed therapeutic massage for pain relief. Performed for 30 minutes, there was a reduction in the pain scores, a mean of 60 minutes after the intervention. There is congruence with the findings regarding the varied onset of pain relief after the procedures[31].

The main sites for massage application were as follows: hands[13,15-16,21,24], feet[13-15,24,29], arms, shoulders, dorsal region of the abdomen[15] and the area of greatest discomfort reported by the patient[23]. In the intervention, moderate pressure[21,23], smooth friction movements and passive touch[13] were used, in addition to effleurage, thumb glide and spreading movements[14].

A quasi-experimental study with 60 patients in the postoperative period of cardiothoracic surgery was in consonance with the findings when performing an intervention that consisted in applying therapeutic massage with light touches, massage with moderate to deep pressure and acupressure. The pain scores decreased, especially 45 minutes after the intervention[32].

The use of music for pain relief in the cardiac surgery postoperative period lasted from 20[27-29] to 30 minutes[19-20,22,25-26]. The musical intervention varied in terms of rhythm, being applied through music with a sedative effect[22], classical music[26] and the patient's preference[27-28].

The musical intervention can be applied to patients belonging to different age groups, and contributes to the recovery process[33] by reducing pain, anxiety, fear irritability, and encouraging social integration. Classical music is the most chosen for therapeutic purposes due to its low amplitudes, with around 60 to 80 beats per minute, contributing to the relaxing effect[34].

Acupressure and aromatherapy comprised the minimum results of the review, with acupressure being applied to the LI4 point of the hands for 20 minutes, applying pressure for 10 seconds followed by two seconds of rest[17]. Aromatherapy was administered by inhaling two drops of lavender essential oil diluted in distilled water for 20 minutes[18].

Acupressure differs from acupuncture for not using needles. However, it has a similar principle of maintaining the body energy balance, being associated with certain organs, and the stimulation of its points is used for pain relief or relaxation[35]. Through essential oils,

aromatherapy also promotes physical and emotional well-being, as well as relaxation[33].

Considering the patients' outcome, 11 studies (64.7%) presented significant results regarding the reduction of pain scores[17-18,22,24], vital signs, anxiety, muscle tension, fatigue, improvement in mood, relaxation, calm, rest and saturation[13-16,23,26,28]. Some studies present disagreement in relation to these results, with no significant differences between the intervention and control groups in terms of pain reduction and vital signs[20-21,25,29].

The Visual Analog Scale was the most used tool to assess pain level[14,16-20,22-29], followed by Face, Legs, Activity, Cry, Consolability[13], McGill Pain Questionnaire[15], and Faces Pain Thermometer, Critical Care Pain Observation Tool and Brief Pain Inventory[21].

The main limitation of this review is the scarcity of literature on the application of non-pharmacological therapies in infants and children, as only one study[13] addressed a type of complementary therapy in this population segment. Thus, the review does not provide consistent results on the application of complementary therapy for pain relief in these patients.

CONCLUSION

Responding to the objective of this study, the main non-pharmacological therapies identified and described by the studies included in this review were as follows: therapeutic massage, music, acupressure and aromatherapy. The results show a significant impact on the reduction of the pain responses in patients after the application of the procedures.

Disseminating the non-pharmacological benefits is important for quality recovery, promoting alternative and effective measures for the patient's hospital rehabilitation. It is expected to drive the development of future research studies related to the non-pharmacological measures applied in the cardiac surgery postoperative period, in order to add technical-scientific knowledge to the health professionals working in this area.

REFERENCES

1. Ministério da Saúde (BR). DATASUS - Sistema de Informações Hospitalares do SUS (SIH/SUS). Procedimentos hospitalares do sus - por local de internação - BRASIL [Internet]. [place unknown]: Ministério da Saúde. 2020 [Cited 2020 out 26]. Available from: http://tabnet.datasus.gov.br/cgi/deftohtm.exe?sih/cnv/qiuf.def
2. Vieira CAC, Soares AJC. Perfil clínico e epidemiológico dos pacientes que realizaram cirurgia cardíaca no hospital sul fluminense – HUSF. Rev Saúde [Internet]. 2017 [Cited 2020 out 2020];8(1):3-7. Available from: https://doi.org/10.21727/rs.v8i1.607
3. Ribeiro KRA, Gonçalves FAF, Borges MM, Loreto RGO, Amaral MS. Pós-Operatório de Revascularização do Miocárdio: possíveis diagnósticos e intervenções de enfermagem. Rev Pesqui (Univ Fed Estado Rio J, Online) [internet]. 2019 [cited 2021 may 20];11(3):801-808. Available from: https://doi.org/10.9789/2175-5361.2019.v11i3.801-808
4. Silva LLT, Mata LRF, Silva AF, Daniel JC, Andrade AFL, Santos ETM. Cuidados de enfermagem nas complicações no pós-operatório de cirurgia de revascularização do miocárdio. Rev baiana enferm [Internet]. 2017 [Cited 2020 out 28];31(3):201-81. Available from:

https://doi.org/10.18471/rbe.v31i3.20181

5. Pereira KT, Silva BS, Soares NJD, Hueb AC. Perfil de pacientes e a ocorrência de complicações após cirurgia cardiovascular em hospital quaternário. Rev Ciênc Saúde [Internet]. 2019 [cited 2021 may 20];9(2):17-22. Available from: https://doi.org/10.21876/rcshci.v9i2.850
6. Menezes TC, Bassi D, Cavalcanti RC, Barros JESL, Granja KSB, Calles ACN et al. Comparações e correlações da intensidade da dor e da força muscular periférica e respiratória no pré e pós-operatório de cirurgia cardíaca. Rev Bras Ter Intensiva [internet]. 2018 [Cited 2021 may 20];30(4):479-486. Available from: https://doi.org/10.5935/0103-507x.20180069
7. Lima V, Lohmann PM, Costa AEK, Marchese C. O uso da escala da dor pelos profissionais de enfermagem no contexto da urgência e emergência: uma revisão integrativa. Res Soc and Dev [internet]. 2020 [Cited 2021 may 20];9(11):e079119403. Available from: https://doi.org/10.33448/rsd-v9i11.9403
8. Varndell W, Fry M, Elliott D. Exploring how nurses assess, monitor and manage acute pain for adult critically ill patients in the emergency department: protocol for a mixed methods study. Scand J Trauma Resusc Emerg Med [Internet]. 2017 [Cited 2020 out 29]; 25(1):75. Available form: https://doi.org/10.1186/s13049-017-0421-x
9. Bonilla-Marciales AP, Vásquez-Hernandéz SM, Ariza-Silva PA, Pinzon-Gómez ID, Ramos-Ortega L, Santiago-Alvarez JC et al. Avaliação dos conhecimentos para o tratamento não farmacológico da dor. Rev Cienc Cuidad [Internet]. 2020 [cited 2021 may 20];17(2):65-76. Available from: https://doi.org/10.22463/17949831.1646
10. Peters MDJ, Godfrey C, McInerney P, Munn Z, Tricco AC, Khalil H. Chapter 11: scoping reviews (2020 version). In: Aromataris E, Munn Z, editors. JBI Manual for Evidence Synthesis [Internet]. [place unknow]: JBI; 2020 [cited 2020 out 23]. Available from: https://reviewersmanual.joannabriggs.org/
11. Tricco AC, Lillie E, Zarin W, O'Brien KK, Colquhoun H, Levac D, et al. PRISMA Extension for Scoping Reviews (PRISMA-ScR): checklist and explanation. Ann Intern Med [Internet]. 2018 [cited 2020 out 23];169(7):467-73. Available from: https://doi.org/10.7326/M18-0850
12. Dantas JKS, Sarmento SDG, da Silva BVS, Dantas DV, Dantas RAN. Terapias não farmacológicas no alívio da dor no pós-operatório de cirurgia cardíaca: revisão de escopo. OSF [Internet]. 2020 [Cited 2020 nov 01]. Available from: https://doi.org/10.17605/OSF.IO/BQ678
13. Harrison TM, Brown R, Duffey T, Frey C, Bailey J, Nist MD. Effects of Massage on Postoperative Pain in Infants With Complex Congenital Heart Disease. Nurs Rec [Internet]. 2020 [Cited 2020 nov 15];69(5):36-46. Available from: https://doi.org/10.1097/NNR.0000000000000459 [incluída na revisão]
14. Alameri R, Dean G, Castner J, Volpe E, Elghoneimy Y, Jungquist C. Efficacy of Precise Foot Massage Therapy on Pain and Anxiety Following Cardiac Surgery: pilot study. Pain Manag Nurs [Internet]. 2019 [Cited 2020 nov 15]; 21(4):314-22. Available from: https://doi.org/10.1016/j.pmn.2019.09.005 [incluída na revisão]
15. Hassan HE, Mokabel FM, AL_Radwan NA. Effect of Massage Therapy on the Mood and Pain of Post Cardiac Catheterization Patients. Am J Nurs [Internet]. 2019 [Cited 2020 nov 15];7(3):392-9. Available from: https://doi.org/10.12691/ajnr-7-3-21 [incluída na revisão]
16. Boitor M, Martorella G, Maheu C, Laizner AM, Gélinas C. Effects of Massage in Reducing the Pain and Anxiety of the Cardiac Surgery Critically III—a Randomized Controlled Trial. Pain Med [Internet]. 2018 [Cited 2020 nov 15];19:2556-69. Available from: https://doi.org/10.1093/pm/pny055 [incluída na revisão]
17. Narimani M, Jaberi AA, Bonabi TN, Sadeghi T. Effect of Acupressure on Pain Severity in Patients Undergoing Coronary Artery Graft: A Randomized Controlled Trial. Anesth Pain Med [Internet]. 2018 [Cited 2020 nov 15];8(5):e82920. Available from: https://doi.org/10.5812/aapm.82920 [incluída na revisão]
18. Seifi Z, Bikmoradi A, Bazrafshan M,

Poorolajal J, Araghchian M, Kashfi SH et al. The Effect of Inhalation Aromatherapy with Lavender Essential oil on Pain Severity of Patients After Coronary Artery Bypass Surgery: a single-blind randomised clinical trial. J Clin Diagn Res [Internet]. 2018 [Cited 2020 nov 18];12(7):1-5. Available from: https://doi.org/10.7860/JCDR/2018/34865.11721 [incluída na revisão]

19. Cigerci Y, Ozbayir T. The effects of music therapy on anxiety, pain and the amount of analgesics following coronary artery surgery. Turk Gogus Kalp Dama [Internet]. 2016 [Cited 2020 nov 18];24(1):44-50. Available fom: https://doi.org/10.5606/tgkdc.dergisi.2016.12136 [incluída na revisão]

20. Tarika, Qureshi A, Mawar S, Devagourou. A Study to Evaluate the Effect of Music on Pain Intensity and Physiological Parameters among Post - Operative Cardiac Patients in AIIMS, New Delhi. IJSR [Internet]. 2015 [Cited 2020 nov 18];4(2):762-8. Available from: https://www.ijsr.net/search_index_results_paperid.php?id=SUB151233 [incluída na revisão]

21. Boitor M, Martorella G, Maheu C, Laizner AM, Gélinas C. Effects of Massage in Reducing the Pain and Anxiety of the Cardiac Surgery Critically III—a Randomized Controlled Trial. Pain Med [Internet]. 2018 [Cited 2020 nov 18];19:2556-69. Available from: https://doi.org/10.1093/pm/pny055 [incluída na revisão]

22. Ajorpaz NM, Mohammadi A, Najaran H, Khazaei S. Effect of Music on Postoperative Pain in Patients Under Open Heart Surgery. Nurs Midwifery Stud [Internet]. 2014 [Cited 2020 nov 23];3(3):e20213. Available from: https://doi.org/10.17795/nmsjournal20213 [incluída na revisão]

23. Braun AL, Stanguts C, Casanelia L, Ed CG, Spitzer O, Paul E, et al. Massage therapy for cardiac surgery patients—a randomized trial. J Thorac Cardiovasc Surg [Internet]. 2012 [Cited 2020 nov 23];144(6):1453-9. Available from: https://doi.org/10.1016/j.jtcvs.2012.04.027 [incluída na revisão]

24. Asadizaker M, Fathizadeh A, Haidari A, Goharpai S, Fayzi S. The effect of foot and hand massage on postoperative cardiac surgery pain. Int J Midwifery Nurs [Internet]. 2011 [Cited 2020 nov 23];3(10):165-9. Available from: https://academicjournals.org/journal/IJNM/article-full-text-pdf/5992CBF1057 [incluída na revisão]

25. Albert NM, Gillinov AM, Lytle BW, Feng J, Cwynar R, Blackstone EH. A randomized trial of massage therapy after heart surgery. Heart Lung [Internet]. 2009 [Cited 2020 nov 23];38(6):480-90. Available from: https://doi.org/10.1016/j.hrtlng.2009.03.001 [incluída na revisão]

26. Hatem TP, Lira PIC, Mattos SS. The therapeutic effects of music in children following cardiac surgery. J Pediatr (Rio J) [Internet]. 2006 [Cited 2020 nov 23];82(3):186-92. Available from: https://doi.org/10.2223/JPED.1473 [incluída na revisão]

27. Kshettry VR, Carole LF, Henly SJ, Sendelbach S, Kummer B. Complementary Alternative Medical Therapies for Heart Surgery Patients: feasibility, safety, and impact. Ann Thorac Surg [Internet]. 2006 [Cited 2020 nov 23];81(1):201-5. Available from: https://doi.org/10.1016/j.athoracsur.2005.06.016 [incluída na revisão]

28. Sendelbach SE, Halm MA, Doran KA, Miller EH, Gaillard P. Effects of Music Therapy on Physiological and Psychological Outcomes for Patients Undergoing Cardiac Surgery. J Cardiovasc Nurs [Internet]. 2006 [Cited 2020 nov 23];21(3):194-200. Available from: https://doi.org/10.1097/00005082-200605000-00007 [incluída na revisão]

29. Hattan J, King L, Griffiths P. The impact of foot massage and guided relaxation following cardiac surgery: a randomized controlled trial. J Adv Nurs [Internet]. 2002 [Cited 2020 nov 23];37(2):199-207. Available from: https://doi.org/10.1046/j.1365-2648.2002.02083.x [incluída na revisão]

30. Chandrababu R, Nayak BS, Pai VB, N R, George LN, Devi ES et al. Effects of foot massage and patient education in patients undergoing coronary artery bypass graft surgery: a randomized controlled trial. Complement Ther Clin Pract [Internet].

2020 [Cited 2020 nov 23];40(2020):1-9. Available from: https://doi.org/10.1016/j.ctcp.2020.101215

31. Najafi SS, Rast F, Momennasab M, Mahmood G, Dehghanrad F, Mousavizadeh SA. The Effect of Massage Therapy by Patients' Companions on Severity of Pain in the Patients Undergoing Post Coronary Artery Bypass Graft Surgery: a single-blind randomized clinical trial. Int J Community Based Nurs Midwifery [internet]. 2014 [Cited 2020 dez 03];2(3):128-35. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4201205/
32. Abdou F, El-Hafez AIA. Effect of Foot Reflexology Practice on Acute Pain and Anxiety of Critically ill Patients after Cardiothoracic Surgery. Int J Innov Res Sci Eng Technol [Internet]. 2018 [Cited 2020 dez 03];3(8):2121-8. Available from: https://doi.org/10.23958/ijirms/vol03-i08/01
33. Silva KG, Taets GGC, Bergold LB. A utilização da música em uma unidade pediátrica: contribuindo para a humanização hospitalar. Rev Enferm UERJ [Internet]. 2017 [Cited 2020 dez 03]; 25:1-5. Available from: https://doi.org/10.12957/reuerj.2017.26265
34. Firmeza MA, Rodrigues AB, Melo GAA, Aguiar MIF, Cunha GH, Oliveira PP et al. Control of anxiety through music in a head and neck outpatient clinic: a randomized clinical trial. Rev Esc Enferm USP [Internet]. 2017 [Cited 2021 may 24];51:1-8. Available from: https://doi.org/10.1590/s1980-220x2016030503201
35. França GS, Lima CM, Sarah TL, Santos GRAC, Oliveira LL, Souza RR. A utilização de métodos não farmacológicos para o alívio da dor durante o trabalho de parto e parto. REAS [Internet]. 2021 [Cited 2021 may 20];13(5):1-14. Available from: https://doi.org/10.25248/reas.e7215.2021

AUTHORSHIP CONTRIBUTION

Project conception: Sarmento SDG, Dantas DV, Dantas RAN

Data collection: Sarmento SDG, Santos KVG, Dantas JKS, Silva BVS

Data analysis and interpretation: Sarmento SDG, Santos KVG, Dantas JKS, Silva BVS

Writing and/or critical review of the intellectual content: Sarmento SDG, Santos KVG, Dantas JKS, Silva BVS, Dantas DV, Dantas RAN

Final approval of the version to be published: Dantas DV, Dantas RAN

Responsibility for the text in ensuring the accuracy and completeness of any part of the paper: Dantas DV, Dantas RAN