

## 1 **Review title**

2 Non-pharmacological interventions for pain management in adults' victims of trauma: a scoping  
3 review protocol.

## 4 **Introduction**

5 Pain is an unpleasant multidimensional experience, not limited only to a sensory component, but also  
6 to an emotional component. It is associated with a potential tissue injury or a concrete tissue injury,  
7 though always subjective.<sup>1</sup> The physiological and psychological consequences of not managing acute  
8 pain are responsible for organic dysfunction and have a direct effect on a patient's prognoses.<sup>2, 3</sup> Pain  
9 is present in the critically ill person and it is a consequence of basic pathology or a traumatic event, as  
10 well as of all invasive and non-invasive procedures resulting from health care implemented.<sup>4</sup>

11 Regarding the incidence and prevalence of pain, it is verified that in the pre-hospital care the values  
12 described are clearly superior to those found in the in-hospital care in which, moderate to unbearable  
13 pain is around 42%, and relatively to trauma patients the rate of pain relief is even lower.<sup>5</sup> The  
14 prevalence of pain in trauma victims is high, and some studies point out as far as 70% as the  
15 approximate value reported, with 30% of these patients reporting on the Numeric Rating Scale an  
16 average value of 6.<sup>6</sup>

17 Despite its high prevalence the specific acute pain as a direct consequence of trauma is one of the  
18 least studied amongst acute pains, regardless of the fact that it is one of the important symptoms in  
19 these victims.<sup>7</sup> The patient's difficulty in communicating the pain may result in a worsening of his  
20 clinical state, manifesting later with altered state of consciousness, fear and anxiety, with a direct  
21 repercussion at the hemodynamic level.<sup>8</sup> Furthermore, the insufficient level of knowledge manifested  
22 by the health professionals that works directly with victims of trauma, the lack of use of instruments to  
23 perform an effective evaluation as well as the choice of adequate relief measures may help to justify  
24 these data.<sup>9</sup>

25 The evaluation of pain is compromised by the unstable conditions of the trauma victim, often of the  
26 level of consciousness itself.<sup>10</sup> The implementation of non-pharmacological measures is, on the other  
27 hand, devoid of mandatory character since it is not implemented in the pre-hospital emergency  
28 protocols.<sup>10, 11</sup>

29 A scoping review on non-pharmacological interventions for pain relief in people suffering from trauma  
30 will help to clarify the existing evidence regarding its applicability as a complement to pharmacological  
31 ones and will make it possible to know the need to fit determined measures depending on the type of  
32 trauma itself. Some systematic reviews have demonstrated the efficacy of the pharmacological  
33 interventions.<sup>12, 13</sup> However, there are no systematic reviews on the efficacy of non-pharmacological  
34 field and primary evidence is dispersed mainly due to the heterogeneity of interventions, populations

35 and approaches.<sup>14-16</sup> It is for this reason that the only suitable methodology is the scoping review.  
 36 Several non-pharmacological interventions are pointed out in the literature, such as the application of  
 37 cold/heat, distraction, immobilization and elevation of extremities and the presence of relatives and  
 38 friends,<sup>5</sup> and they can be divided into some categories, as cognitive behavioral, emotional support,  
 39 physical technique, creating a comfortable environment and helping with activities of daily living.<sup>17</sup>  
 40 These interventions, however, do not seem to meet conditions of applicability in all contexts, and for  
 41 this, we understand that a scoping review is the 'best research' option to map the existing evidence  
 42 on this issue. Some researches demonstrate that some emergency departments offer non-  
 43 pharmacological measures to a high level of patients and those who receive only non-  
 44 pharmacological treatment had a considerable mean pain reduction and achieved clinically relevant  
 45 pain relief.<sup>18</sup> Other investigations, otherwise, show that only a small part of patients receive non-  
 46 pharmacological treatments, although they recognized the importance of introducing their  
 47 administration.<sup>14, 19, 20</sup> There are also other interventions of pain relief that showed important results,  
 48 such as the transcutaneous electrical nerve stimulation<sup>21</sup> and acupoint stimulation which inhibit the  
 49 nociceptive signal and induce an analgesic effect.<sup>22</sup> Moreover, active warming is usually used in minor  
 50 trauma patients (including limited bleeding, fractures, or contusions) that induce less pain.<sup>23</sup> Despite  
 51 the lack of consensus on the implementation of all these non-pharmacological interventions, they are  
 52 responsible for pain relief in more than 40% of patients.<sup>19</sup> These procedures, however, are not  
 53 available or recommended in all contexts.

54 For mild pain relief, non-pharmacological interventions can be used independently, on the other hand,  
 55 in moderate to severe pain situations, its association with pharmacological interventions is  
 56 recommended.<sup>13, 14, 18</sup> There is, however, a lack of knowledge regarding the association of  
 57 pharmacological and non-pharmacological interventions, and in this context the need to perceive not  
 58 only what interventions should be associated with pharmacological ones, but also, in what situations it  
 59 should be applied.

60 The mapping of non-pharmacological interventions seems to be a priority to be able to identify what  
 61 are the non-pharmacological interventions used according to the typology of trauma.

62 An initial search of the Joanna Briggs Institute Database of Systematic Reviews and Implementation  
 63 Reports, the Cochrane Database of Systematic Reviews, PROSPERO, Medline and CINAHL  
 64 revealed that currently there is no scoping review (published or in progress) that has been performed  
 65 to map the non-pharmacological interventions, in pre-hospital context, emergency rooms and trauma  
 66 centers, that have been implemented and evaluated to reduce the acute pain in all people who are  
 67 victims of trauma.

## 68 **Review question**

69 This scoping review will focus on the following questions:

- 70 1. What non-pharmacological interventions for pain management were implemented, during  
 71 the emergency cares, in people who were victims of trauma?

- 72 2. What are the clinical specificities of the trauma pathophysiology in which these  
73 interventions were performed?  
74 3. What are the characteristics of these non-pharmacological interventions?  
75 4. In what contexts have these interventions been implemented and evaluated?  
76 5. What health professionals performed these non-pharmacological interventions?

## 77 **Keywords**

78 Trauma; Acute Pain; Pain Management; Review.

## 79 **Inclusion Criteria**

### 80 **Participants**

81 This scoping review will consider all studies that focused on adult patients, victims of trauma, aged 18  
82 years or over.

### 83 **Concept**

84 This scoping review will consider all non-pharmacological interventions implemented and evaluated in  
85 people's victims of trauma with the aim of reduce their pain which cause suffering and hemodynamic  
86 instability. For this propose, it was considered that non-pharmacological interventions include any  
87 kind of treatment that is not a registered drug and be performed as emergency care.

### 88 **Context**

89 This scoping review will consider all the contexts of trauma. This included pre-hospital emergency  
90 care, emergency rooms and trauma centers.

### 91 **Types of sources**

92 This scoping review will consider quantitative and qualitative studies, and systematic reviews.  
93 Quantitative studies will consider any experimental study designs (including randomized controlled  
94 trials, non-randomized controlled trials, or other quasi-experimental studies, including before and after  
95 studies), and observational designs (descriptive studies, cohort studies, cross-sectional studies, case  
96 studies, and case series studies). Qualitative designs will include any studies based on qualitative  
97 data such as, but not limited to, phenomenology, grounded theory and ethnography designs.  
98 Systematic reviews will include meta-analyses and meta-syntheses.

99 Studies published and unpublished in English, French, Spanish and Portuguese language and from  
100 2000 to the present will be considered for inclusion in this review. Prior to this date, studies in this  
101 area were few, interventions were poorly described and there's not clearly specifies the non-  
102 pharmacological measures that has been implemented for each of the different types of trauma.

## 103 **Methods**

104 The JBI methodology will be used to complete this scoping review.<sup>24, 25</sup>

## 105 **Search strategy**

106 The search strategy aims to find both published and unpublished studies. A three-step search  
107 strategy will be utilized in this review.

108 An initial search, limited to PubMed and CINAHL has been undertaken to identify articles on this topic,  
109 followed by analysis of the text words contained in the titles or/and abstracts, and of the index terms  
110 used to describe these articles. This informed the development of a search strategy including  
111 identified keywords and index terms which will be tailored for each information source. A proposed  
112 search strategy for the PubMed database is listed below in detailed (Appendix I).

113 A second search using all identified keywords and index terms will then be undertaken across all  
114 included databases. Finally, the reference lists of all identified reports and articles will be searched for  
115 additional studies.

116 The databases to be searched will include: CINAHL Plus with Full Text, PubMed, Cochrane Central  
117 Register of Controlled Trials, Scopus, PsycINFO, The JBI Connect+ and Cochrane Database of  
118 Systematic Reviews.

119 The search for unpublished studies will include: RCAAP – Repositório Científico de Acesso Aberto de  
120 Portugal; OpenGrey – System for Information on Grey Literature in Europe.

## 121 **Study selection**

122 Following the search, all identified citations will be uploaded into Endnote and duplicates removed.  
123 Titles and abstracts will then be screened by two independent reviewers to assess eligibility according  
124 to the inclusion criteria for the review. The full article will be retrieved for all studies that, clearly or  
125 probably, meet these inclusion criteria. Based on full texts, two reviewers will independently examine  
126 whether the studies conform to the inclusion criteria. Any disagreements that arise between the  
127 reviewers will be resolved through discussion, or with a third reviewer. Citations of eligible studies  
128 retrieved in full will be imported into JBI SUMARI.

129 Full text studies that do not meet the inclusion criteria will be excluded and reasons for exclusion will  
130 be provided in an appendix in the final systematic review report. The results of the study selection will  
131 be reported in full in the final report and presented in a PRISMA flow diagram.<sup>26</sup>

## 132 **Data extraction**

133 Data will be extracted from the selected studies using a form that has been developed specifically for  
134 this scoping review (Appendix II), to collect the relevant data from each paper and include specific  
135 details about the populations, concept, context, and study methods of significance to the scoping  
136 review question and specific objectives. However, this may be further refined during the review  
137 process.

138 Two reviewers will extract data independently. Any disagreements that arise between the reviewers  
139 will be resolved through discussion or with a third reviewer.

140 The data extraction instrument will be modified and revised as necessary during the process of  
141 extracting data from each included study. Modifications will be detailed in the full scoping review  
142 report. If necessary, authors of included papers will be contacted for further information/clarification of  
143 the data.

## 144 **Data mapping**

145 The extracted data will be presented in a tabular form in a manner that aligns with the review  
146 questions of this scoping review.

147 A narrative synthesis will accompany the tabulated results and will describe how they relate to the  
148 review objectives. The data presentation table has been developed specifically for this scoping review  
149 (Appendix III and IV). However, this may be further refined for use during the review process.

## 150 **Conflicts of interest**

151 The authors declare no conflict of interest.

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154 carry out the work described in this article.

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	Treatment) OR first aid[MeSH Terms] OR emergency responders[MeSH Terms] OR trauma centers[MeSH Terms] OR trauma units[Title/Abstract] OR Emergency Room[Title/Abstract] OR Emergency Units[Title/Abstract] OR Accident[MeSH Terms] OR Emergency Department[Title/Abstract])) AND (((((((((((non-pharmacological[Title/Abstract] OR non pharmacological[Title/Abstract] OR non surgical interventions[Title/Abstract] OR non-surgical interventions[Title/Abstract] OR non surgical intervention[Title/Abstract] OR non-surgical intervention[Title/Abstract] OR psychosocial interventions[Title/Abstract] OR cryotherapy[Title/Abstract] OR Cold Therapy[Title/Abstract] OR Therapy, Cold[Title/Abstract] OR hypothermia, induced[MeSH Terms] OR immobilisation[Title/Abstract])) AND (((((((((((((trauma[Title/Abstract] OR (wounds[MeSH Subheading] AND injuries[MeSH Subheading])) OR injuries[Title/Abstract] OR wounds[Title/Abstract] OR injuries, Wounds[Title/Abstract] OR wounds, Injury[Title/Abstract] OR fracture[Title/Abstract] OR fractures[Title/Abstract] OR dislocation[Title/Abstract] OR Research-Related Injuries[Title/Abstract] OR Acute Pain[MeSH Terms] OR pain[MeSH Terms] OR Suffering, Physical[Title/Abstract] OR Pain, Splitting[Title/Abstract] OR Pain, Crushing[Title/Abstract])	
#14	Search (((((((((((((trauma[Title/Abstract] OR (wounds[MeSH Subheading] AND injuries[MeSH Subheading])) OR injuries[Title/Abstract] OR wounds[Title/Abstract] OR injuries, Wounds[Title/Abstract] OR wounds, Injury[Title/Abstract] OR fracture[Title/Abstract] OR fractures[Title/Abstract] OR dislocation[Title/Abstract] OR Research-Related Injuries[Title/Abstract] OR Acute Pain[MeSH Terms] OR pain[MeSH Terms] OR Suffering, Physical[Title/Abstract] OR Pain, Splitting[Title/Abstract] OR Pain, Crushing[Title/Abstract]	1163983
#13	Search (((((((((((non-pharmacological[Title/Abstract] OR non pharmacological[Title/Abstract] OR non surgical interventions[Title/Abstract] OR non-surgical interventions[Title/Abstract] OR non surgical intervention[Title/Abstract] OR non-surgical intervention[Title/Abstract] OR psychosocial interventions[Title/Abstract] OR cryotherapy[Title/Abstract] OR Cold Therapy[Title/Abstract] OR Therapy, Cold[Title/Abstract] OR hypothermia, induced[MeSH Terms] OR immobilisation[Title/Abstract]	69527
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225 **Appendix II: Data extraction form**

Authors (s)	
Year of publication	
Country of origin	
Aims	
Study population and sample size	
Context	
Methods	
Non-pharmacologic intervention description	
Duration of the intervention	
Dose of intervention	
Frequency of intervention	
Outcomes and details of these	
Key findings related to the scoping review questions	

226

227 **Appendix III: Template data presentation for Question 1 and 2.**

Author/ Year of publication/ Country of Origin	Methods/ Aims	Study population / clinical specificities	Non-pharmacological intervention	Outcomes	Key findings
(...)					

228

229 **Appendix IV: Template data presentation for Question 3, 4 and 5.**

Author/	Non-pharmacological intervention	Study population / clinical specificities	Characteristics of intervention			Outcomes	Context	Health professional that perform	Key findings
			Frequency	Duration	Dose				
(...)									

230