

Behavioral intervention on nonpharmacological pain management for child : a systematic review



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Received: 2022-07-16

Accepted: 2022-08-14

Published: 2022-09-10

ABSTRACT

Introduction: Children should not only be managed in high pain conditions; pain management in children should also involve moderate procedures, particularly invasive. Behavioral intervention is pain management for children since it is invasive action. The study's objective was to examine how behavioral therapies were used to treat children's discomfort without the use of drugs.

Method: We used PRISMA principles and conducted a systematic review. The original keywords utilized were "child," "behavioral treatment," and "pain management," which were further developed using "medical subject headings." Scopus, PubMed, and Research Gate were the three databases that were searched for prospective papers published between 2000 and 2020.

Results: Children can experience less pain by engaging in behavioral interventions like joyful pingu pain relief, cognitive behavioral therapy, positive reinforcement, graphic books about intravenous placement for training the desired behavior, and watching their favorite music videos.

Conclusion: Children can experience less pain with the help of behavioral therapies like happy pingu, cognitive behavioral therapy, picture books about intravenous placement, and watching their favorite music videos. These interventions train the desired behavior and can also be used to stop discomfort.

Keywords: Acute Pain, Child, Behavior Therapy.

Cite This Article: Wesiana., Ugrasena., Sufyanti, Y., Hidayah, N., Utami, R. 2022. Behavioral intervention on nonpharmacological pain management for child : a systematic review. *Bali Medical Journal* 11(3): 1141-1145. DOI: 10.15562/bmj.v11i3.3531

INTRODUCTION

Every child experiences acute pain from time to time, including as a result of an injury, where parents consider acute and chronic pain to be common, although children and adolescents experience such pain on a routine basis.¹ Rarely is it acknowledged that all chronic pain was once uncontrolled, acute pain.² The primary risk factor for future alterations in pain mechanisms and long-term neurological growth,³ enhanced pain intensity,⁴ and progression from acute to chronic pain is poorly controlled acute pain early in life.⁵⁻⁷

According to the findings of the PAMPER (Pain Management Practices in a Pediatric Emergency Room) study, only 26.7 percent (40 out of 150) of children who came to the ER with moderate to severe pain were given analgesics, and only 16.7% (25 out of 150) were given non-pharmacological interventions.

According to research conducted in Saudi Arabia, 24.4 percent (n = 100) of people believe that children should not manage pain alone and that some children are incapable of doing so. According to the findings of a study of 224 nurses in Turkey, 72.3 percent did not know the effectiveness of nonpharmacological interventions for pain relief, and 74.6 percent did not believe that children could determine the severity of pain.⁵⁻⁷

Internal and external factors affect the effectiveness of pain treatment. The willingness of nurses to collaborate with parents to treat pain in children is an external factor that affects pain management performance. Low family capacity can lead to poor pain management, which can have negative psychophysiological effects, as well as increased health costs and chronicity. Fear of needles affects all aspects of a child's life, affecting appetite, ability to walk,

social isolation, changes in self-concept, depression, and suicidal thoughts, and even pain affects all aspects of a child's life, affecting appetite, ability to move, social isolation, changes in self-concept, depression, and suicidal thoughts.⁸

Adherence to medication may be affected by appropriate pain control in the future. A behavioral strategy called behavioral intervention uses video records, games, and interactive literature to distract kids from the unpleasantness of operations. Cognitive behavioral therapy can aid in the control of pain and anxiety in children undergoing medical procedures.⁸ Several studies have shown that using cognitive behavioral management approaches can alleviate pain.⁹ The aim of the study was to review the efficacy of behavioral interventions in pain management in children's pain responses based on findings published in the last ten years.

METHOD

Data Resource

This systematic review includes eight papers. For the main search technique to find papers, online databases Scopus, PubMed, and ReasearchGate were employed. The entire search technique was modified utilizing Boolean operators along with terms and medical topic headings (MeSH). These journals were searched using the keywords “Acute Pain” AND “Child” AND “Behavior Therapy.”

Study Selection

Using the PICOT (Population, Intervention, Comparison, Outcome, Time) paradigm, the study’s viability was evaluated. The inclusion criteria were (i) children patients enduring invasive operations (ii) during invasive action, nonpharmacological behavioral interventions were given to youngsters (iii) Randomized controlled trials (RCT), case control studies, quasi-experiments, and only English-language articles were considered as study categories (publication years; 2010 until 2020) the primary goal is to determine whether behavioral therapies can reduce pain in children without the use of drugs.

Data Extraction

The demographics, study design, outcome measure, sample size, intervention, control, pre-post intervention mean, country, and year of publication from each study were all taken from the eight papers. Relevant outcome data, such as the number of participants, were obtained.

Quality Assessment

For the stages of design and findings, this systematic review adhered to the PRISMA guidelines for preferred reporting items for systematic reviews.¹⁰

RESULT

Study Selection

The article search found 788 articles from three international databases, namely PubMed (680 articles), and ReasearchGate (100 articles) scopus 8 articles. Articles deemed irrelevant were excluded from the analysis. The articles that were excluded

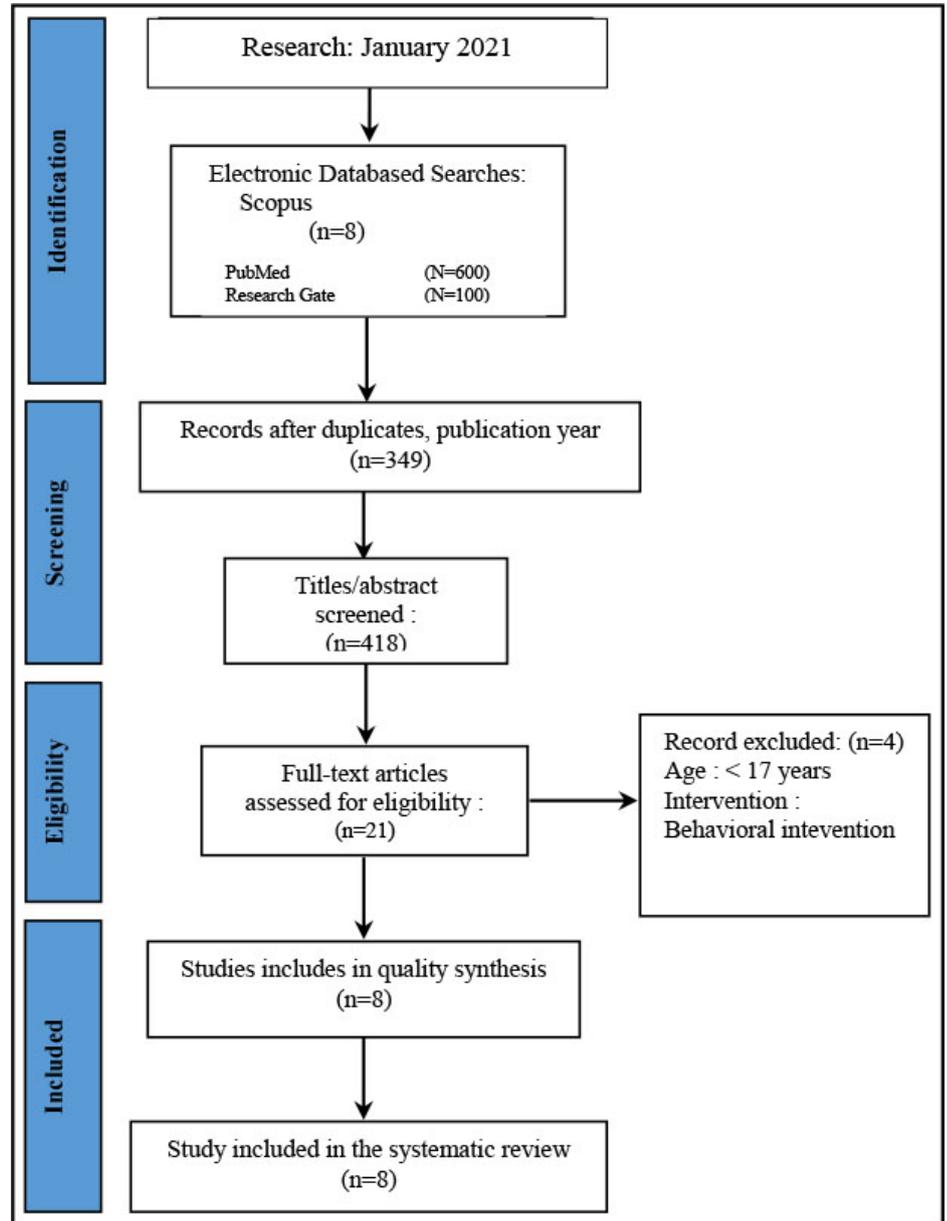


Figure 1. Flow diagram of the study selection, adaptation from Moher 2014.

were 349 articles were eliminated due to publication > 10 years, 418 articles were eliminated because the titles did not match the research objectives. The remaining 21 articles were analyzed by looking at the entire contents of the article, 9 articles were eliminated because the sample used was not suitable. After that, the remaining 12 articles were analyzed again. From this analysis, it was found that 4 articles were eliminated because the entire contents of the articles were not suitable. So that produced 8 articles that are relevant for review.

Main Results

Studies evaluate the efficiency of behavioral pain management treatments in lowering pain responses in children being hospitalized. Children get a variety of pain treatment behavioral strategies, such as “stop pain with Happy Pingu” pain management training¹³; psychological interventions with inspiration are the Cool Kids Program and the CBT program using 4 sessions where each session is given a different intervention¹⁴; 3 types of pain management behavior therapy can be identified, namely operants,

Characteristics of Study Participants

Table 1. Characteristics of Study Participants.

No.	Author (Year)	Place	Sample	Age (years)	Inclusion Criteria
1.	Dilek Sonmez Saglik, and Seda Çağlar (2019) ¹¹	Istanbul Turkey	111	9-12	Invasive procedures (blood withdrawal, vascular access, intramuscular injection, and intravenous injection)
2.	Boerner, Chambers, McGrath, LoLordo, & Uher (2017) ¹²	Canada	168	6-8	Healthy Children
3.	Groß, M., & Petra, W (2012) ¹³	Potsdam, Germany	29 children	7-12	Abdominal pain, duration of abdominal pain for at least 3 months. frequency of pain occurs at least once a week
4.	Lomholt, J., J., et al (2015) ¹⁴	Denmark Pediatric Rheumatology Clinic	19 children	9 - 14	League Against Rheumatism (ILAR), Ability to speak Danish fluently
5.	Bąbel, P., Anna M., Z., and Sławomir, T. (2013) ¹	Polandia	13 children	3-14	1. Case studies 12 a. Hospitalized b. Degree of burns level 2 and 3 2. Case study 3 a. Hospitalized b. Headache in children 3. Case study 4 Suffering from end-stage renal disease (ESRD)
6.	Hsieh, Y., C., et al (2017) ⁸	Ward for acute pediatric diseases in a private hospital in Northern Taiwan	68 children	6-12	1. Do not have physical or mental disabilities 2. Do not have hearing or vision problems 3. Have had IV insertion 4. Do not receive more than one IV insertion simultaneously during the procedure.
7.	Vervoort, et al (2014) ¹⁵	Belgium	62 pairs of parents - children	Grades 5-11	A sample of parents and students (in grades 5 to 11) who agreed to be contacted again after taking part in the questionnaire survey two years prior was used to find participants.
8.	Boerner, et al (2017) ¹²	Laboratory study	168 pairs of parents & children	6-8 years	1. Must have adequate spoken, written, and reading and writing skills in English to complete the questionnaire 2. Must not require the use of glasses or hearing aids to remedy vision or hearing issues. 3. Be free of any contracted conditions in order to do a cold pressor task. 4. Children should generally be pain free and healthy. 5. Never previously participated in research cold pressor task.

respondents, and cognitive behavior¹; providing educational photo book reading on intravenous placement and watching favorite music videos⁸; and using a cold pressor task (CPT) on children and parents.^{12,15}

DISCUSSION

A systematic review of 8 articles published in the last 10 years found that pain management is necessary in reducing pain. Different intervention strategies have been created to help children cope

with acute pain, but not all therapies are successful for all children, and it can be challenging to choose which programs are suitable for kids.¹⁶ The findings show that pain management is supported by its implementation in children, even though the behavioral interventions given in each study are different. Preterm infants can also benefit from various pain management techniques to effectively control pain behaviors brought on by acute pain therapies.⁵

Through social modeling, people can learn how to react to unpleasant situations

without actually feeling the pain, and when these learned behaviors are combined with a biological propensity for pain conditions, the results can have an impact on pain and functional impairment.¹² In addition to pain management techniques, parental pressure or involvement helps prevent children who are experiencing chronic or unavoidable pain from suffering further pain or harm.¹⁷⁻¹⁹ When parents see or anticipate their children's distress, they may put pressure on them to reduce the child's exposure to pain.^{20,21} Pain management behavioral interventions can

Pain scale instrument used

Table 2. Pain scale instrument.

Author	Instrument
Dilek, Sonmez Saglik, and Seda Çağlar (2019) ¹¹	visual analog scale (VAS) and (Visual State-Trait Anxiety Inventory (STAI)
Boerner, Chambers, McGrath, LoLordo, and Uher (2017) ¹²	visual analog scale (VAS)
Bąbel, P., Anna M., Z., and Slawomir, T (2013) ¹	case study and meta-analysis
Boerner, et al. (2017) ¹²	Questionnaire, <i>The Faces Pain Scale-Revised</i> (FPS-R) or revised facial pain scale, visual analog scores, children's self-reports of pain models at home, a multi-method and multi-informant approach.
Hsieh, et al. (2017) ⁸	Questionnaire, NRS numerical rating scale for assessing pain and fear
Groß and Petra (2012) ¹³	Questionnaire, pain diary, visual analog score, and notes in the 'disease-specific module' subscale of the KINDL-R for pain-related disorders
Lomholt, et al. (2015) ¹⁴	Questionnaire, pain diary, <i>The Faces Pain Scale-Revised</i> (FPS-R) or revised facial pain scale, and <i>Survey of Pain Attitudes</i> (children's version of SOPA)
Vervoort, et al. (2014) ¹⁵	Stimulus images of children playing neutral and painful facial expressions where all images coded for the incidence and intensity of facial pain display using the child's face coding system, and the CPT technique as an experimental technique to induce pain in children

Intervention

Table 3. Research Interventions.

Authors	Intervention
Dilek Sonmez Saglik and Seda Çağlar (2019) ¹¹	Presence of parents during invasive procedures.
Boerner, Chambers, McGrath, LoLordo, and Uher (2017) ¹²	Modeling of parents with facial expressions
Bąbel, P., Anna M., Z., and Slawomir, T. (2013) ¹	Operant conditioning of non-painful behavior, therapeutic intervention (cartoon presentation) and strengthening non-pain behavior), the procedure <i>biofeedback</i>
Boerner, et al. (2017) ¹²	<i>Cold pressor task</i> (CPT)
Hsieh, et al. (2017) ⁸	strategies
Groß and Petra's (2012) ¹³	Cognitive-behavioral pain management with CAP (stop pain with Happy-Pingu)
Lomholt, et al. (2015) ¹⁴	Cognitive-behavioral therapy
Vervoort, et al. (2014) ¹⁵	<i>Cold pressor task</i> (CPT)

significantly manage pain associated with pain procedures in hospital.

The limitations of this systematic review are the limited number of previous studies that examined behavioral intervention on nonpharmacological pain management for children and journals that matched the inclusion criteria were limited to 2019. Therefore, further research is needed to find out more specifically and in more detail about behavioral intervention on nonpharmacological pain management for children.

CONCLUSION

Based on the analysis of the 8 articles, to manage pain in children undergoing

procedures and hospital care, pain management needs to be done. Interventions in pain management can be of various kinds. Pain management can take the form of cognitive behavioral therapy strategies, operant conditioning of non-pain behaviors, whirlpool treatment (5 times a week), therapeutic interventions, behavior biofeedback, cold pressor task (CPT, and cognitive behavioral pain management with CAP). Research supports pain management behavioral interventions given to children to manage pain behavioral interventions can significantly reduce pain due to hospital admission procedures in children. Further research is needed with different study designs to evaluate more deeply

the factors that influence behavioral intervention on nonpharmacological pain management for children.

ACKNOWLEDGEMENT

The author would like to thank to the Faculty of Nursing Universitas Airlangga for providing the opportunity to present this study.

AUTHOR CONTRIBUTION

All authors contributed to this study's conception and design, data analysis and interpretation, article drafting, critical revision of the article, final approval of the article, and data collection.

FUNDING

The authors are responsible for all of the study funding without a grant or any external funding source.

CONFLICT OF INTEREST

The author declared that no competing interests.

ETHICAL CONSIDERATION

Not Applicable.

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