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

Wesiana1,4*, Ugrasena2, Yuni Sufyanti3, Nur Hidayah4, Resti Utami5

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.


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 psychophysiologic 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.9 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.

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METHOD

Data Resource
This systematic review includes eight papers. For the main search technique to find papers, online databases Scopus, PubMed, and ResearchGate 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.

RESULT

Study Selection
The article search found 788 articles from three international databases, namely PubMed (680 articles), and ResearchGate (100 articles) scopus 8 articles. Articles deemed irrelevant were excluded from the analysis. The articles that were excluded 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 training; psychological interventions with inspiration are the Cool Kids Program and the CBT program using 4 sessions where each session is given a different intervention; 3 types of pain management behavior therapy can be identified, namely operants,
Characteristics of Study Participants

<table>
<thead>
<tr>
<th>No.</th>
<th>Author (Year)</th>
<th>Place</th>
<th>Sample</th>
<th>Age (years)</th>
<th>Inclusion Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Dilek Sonmez Saglık, and Seda Çaglar (2019)</td>
<td>Istanbul Turkey</td>
<td>111</td>
<td>9-12</td>
<td>Invasive procedures (blood withdrawal, vascular access, intramuscular injection, and intravenous injection)</td>
</tr>
<tr>
<td>2.</td>
<td>Boerner, McGrath, LoLordo, &amp; Uher (2017)</td>
<td>Canada</td>
<td>168</td>
<td>6-8</td>
<td>Healthy Children</td>
</tr>
<tr>
<td>3.</td>
<td>Groß, M., &amp; Petra, W (2012)</td>
<td>Potsdam, Germany</td>
<td>29</td>
<td>7-12</td>
<td>Abdominal pain, duration of abdominal pain for at least 3 months, frequency of pain occurs at least once a week</td>
</tr>
<tr>
<td>6.</td>
<td>Hsieh, Y., C., et al (2017)</td>
<td>Ward for acute pediatric diseases in a private hospital in Northern Taiwan</td>
<td>68</td>
<td>6-12</td>
<td>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.</td>
</tr>
<tr>
<td>7.</td>
<td>Vervoort, et al (2014)</td>
<td>Belgium</td>
<td>62 pairs of parents - children</td>
<td>Grades 5-11</td>
<td>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.</td>
</tr>
<tr>
<td>8.</td>
<td>Boerner, et al (2017)</td>
<td>Laboratory study</td>
<td>168 pairs of parents &amp; children</td>
<td>6-8 years</td>
<td>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.</td>
</tr>
</tbody>
</table>

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. 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. 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. 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. When parents see or anticipate their children’s distress, they may put pressure on them to reduce the child’s exposure to pain. Pain management behavioral interventions can...
Pain scale instrument used

Table 2. Pain scale instrument.

<table>
<thead>
<tr>
<th>Author</th>
<th>Instrument</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dilek, Sonmez Saglık, and Seda Çaglar (2019)</td>
<td>visual analog scale (VAS) and (Visual State-Trait Anxiety Inventory (STAI)</td>
</tr>
<tr>
<td>Boerner, Chambers, McGrath, LoLordo, and Uher (2017)</td>
<td>visual analog scale (VAS)</td>
</tr>
<tr>
<td>Bąbel, P., Anna M., Z., and Sławomir, T (2013)</td>
<td>case study and meta-analysis</td>
</tr>
<tr>
<td>Hsieh, et al. (2017)</td>
<td>Questionnaire, NRS numerical rating scale for assessing pain and fear</td>
</tr>
<tr>
<td>Groś and Petra (2012)</td>
<td>Questionnaire, pain diary, visual analog score, and notes in the ‘disease-specific module’ subscale of the KINDL-R for pain-related disorders</td>
</tr>
<tr>
<td>Lomholt, et al. (2015)</td>
<td>Questionnaire, pain diary, <em>The Faces Pain Scale-Revised</em> (FPS-R) or revised facial pain scale, and <em>Survey of Pain Attitudes</em> (children’s version of SOPA)</td>
</tr>
<tr>
<td>Vervoort, et al. (2014)</td>
<td>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</td>
</tr>
</tbody>
</table>

Intervention

Table 3. Research Interventions.

<table>
<thead>
<tr>
<th>Authors</th>
<th>Intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boerner, Chambers, McGrath, LoLordo, and Uher (2017)</td>
<td>Modeling of parents with facial expressions</td>
</tr>
<tr>
<td>Bąbel, P., Anna M., Z., and Sławomir, T. (2013)</td>
<td>Operant conditioning of non-painful behavior, therapeutic intervention (cartoon presentation) and strengthening non-pain behavior, the procedure biofeedback</td>
</tr>
<tr>
<td>Boerner, et al. (2017)</td>
<td><em>Cold pressor task</em> (CPT)</td>
</tr>
<tr>
<td>Hsieh, et al. (2017)</td>
<td>strategies</td>
</tr>
<tr>
<td>Vervoort, et al. (2014)</td>
<td><em>Cold pressor task</em> (CPT)</td>
</tr>
</tbody>
</table>

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.

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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.
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CONFLICT OF INTEREST
The author declared that no competing interests.

ETHICAL CONSIDERATION
Not Applicable.

REFERENSI
10. PRISMA. Welcome to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) [Internet]. 2015. Available from: http://www.prisma-statement.org/