The Availability & Efficacy of Non-Pharmacological Interventions For Pain Management for Children with Sickle Cell Disease: A Systematic Review of the Literature

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The Availability & Efficacy of Non-Pharmacological Interventions for Pain Management for Children with Sickle Cell Disease

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METHODS

Design
This study examined the availability and efficacy of non-pharmacological interventions used to manage pain in pediatric patients with SCD through a systematic review of literature.

Literature Search Strategies
For this literature review, an electronic search of the literature was completed by using Cumulative Index of Nursing and Allied Health (CINAHL) Complete, ProQuest Nursing & Allied Health Source, and PubMed. The keywords that were used in this search were “sickle cell disease AND sickle cell anemia”, “child**”, “pain OR painful”, “management”, “nursing” and “interventions”. Searching for articles that were referenced within other literature was also a strategy that was used.

Literature Search Limitations and Inclusion/Exclusion Criteria
Inclusion criteria: Articles that were reviewed had to be available in the English language. Although not a requirement, articles were preferred to have been published in scholarly journals over the last 10 years. Articles must also have been of the nursing, medical or public health discipline. Lastly, articles that were selected focused on non-pharmacological interventions used to manage pain in pediatric patients with SCD.

Exclusion criteria: Articles were excluded if they only reviewed pharmacological interventions for managing pain in pediatric patients with SCD. Also, since the population of this study was pediatric patients, articles that were geared towards managing pain in adult patients (individuals over 21) were also excluded.

RESULTS

Of the articles reviewed, four non-pharmacological interventions were found to be available and effective for pain management during a Sickled Cell Pain Crisis.

<table>
<thead>
<tr>
<th>Intervention</th>
<th>Description</th>
<th>Population</th>
<th>Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Guided Imagery</td>
<td>A quasi-experimental interrupted time series design used to measure changes in medication used for pain control due to guided imagery</td>
<td>Sample of 21 children aged 6-11 years old with SCD</td>
<td>Guided imagery was effective adjunct to pain management with results of reported decreased pain and decreased use of opioid medication</td>
</tr>
<tr>
<td>Massage Therapy</td>
<td>Investigation of the short-term effects of massage therapy on youth with SCD</td>
<td>34 adolescents with SCD</td>
<td>Youth showed higher levels of functional status, and lower levels of depression, anxiety and pain</td>
</tr>
<tr>
<td>Video Games</td>
<td>A one-group repeated measure quasi-experimental design</td>
<td>Sample of 30 hospitalized adolescents (between the ages of 12-21 years) diagnosed with SCD pain</td>
<td>Use of videogames as a distraction modality proves to show positive/significant results in the treatment of acute pain</td>
</tr>
<tr>
<td>Omega-3 Supplements</td>
<td>Randomized, placebo-controlled double-blind trial to assess the effectiveness of Omega-3 supplementation in patients with SCD</td>
<td>140 patients from a single sickle cell center</td>
<td>Omega-3 treatment reduced the median rate of clinical vaso-occlusive events. Findings suggest omega-3 can be effective therapy</td>
</tr>
</tbody>
</table>

DISCUSSION

• Guided imagery, massage therapy, use of video games, and Omega-3 supplementation were found to be the most common non-pharmacological interventions available for pain management in pediatric patients with SCD.
• Cognitive behavioral therapies, which include the use of guided imagery, have shown promise in changing pain perception and coping patterns in people with chronic illnesses (Dobson, C., 2014).
• Massage therapy offers physical benefits such as increased blood and parasympathetic circulation, and improved joint movement, along with psychological benefits, such as relaxation, daily activity promotion, and pain relief (Lemanek et al., 2009).
• Distraction is a well-known non-pharmacological intervention for pain.
• Supplementation with fish oil containing omega-3 (n-3) fatty acids (EPA and DHA) decreases the occurrence of pain episodes that require hospitalization and the number of sickle cell crises.
• Equally, these interventions were found to be the most effective in either treating, reducing, or preventing pain.

LIMITATIONS
• To small a sample size for the study
• Pediatric patients of all age groups were not tested in the study (i.e., infants, school-age children, adolescents, etc.)
• There hasn’t been a substantial amount of similar studies done prior

NURSING IMPLICATIONS
It is recommended that nurses caring for sickle cell patients should have an interest in the condition and be provided with continuing education and support. With additional studies, nurses will be able to help patients cope, cannulate veins and undertake phlebotomy, recognize signs of complications, identify psychosocial problems, involve appropriate support agencies, but most importantly recognize, assess, and treat pain.

CONCLUSIONS
This systematic review of literature revealed that there is a limited amount of non-pharmacological interventions available for pain management in children with SCD. Supplementary research needs to be done in order to increase the number of available non-pharmacological interventions. At the same time, interventions like guided imagery, massage therapy, distraction with videogames, and omega-3 supplementation need to be executed on a regular basis in order to improve their effectiveness as well as have a positive impact on treating pain.

BACKGROUND
• The leading clinical feature of Sickle Cell Disease (SCD) is acute episodes/attacks (also known as a crisis) of severe pain that occur in the back, legs, arms, abdomen or chest and risk of infection.
• These episodes of vaso-occlusive pain are the most common reasons for repeated hospital admissions among SCD sufferers (Elander J., Lusher, J., Bevan, D., Telfer, P. & Burton, B., 2004).
• Between 50% and 60% of all emergency room visits by pediatric SCD patients are for painful events, and between 60% and 80% of hospitalizations for pediatric SCD patients are pain related (Meier et al., 2012).
• Unfortunately, the nature of the pain is often poorly understood, and the pain is often sub-optimally managed with medication, causing distress for patients and compromising the therapeutic alliance between healthcare professionals and patients (Booker, M.J., Blihtyn, K.L., Wright, C.J. & Greenfield, S.M., 2006).

PURPOSE OF STUDY
• The purpose of this literature review was to examine the availability and efficacy of non-pharmacological interventions used to manage pain in pediatric patients with SCD. In addition to examining the availability and efficacy of non-pharmacological interventions, this study aimed to find possible recommendations for best practices to pediatric nurses who provide care for children with SCD.

RESEARCH QUESTIONS
1. What non-pharmacological interventions are available for pediatric patients during a sickle cell pain crisis?
2. What is the efficacy of the available non-pharmacological treatments for a sickle cell pain crisis?