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The effects of two non-pharmacologic pain management methods for intramuscular injection pain in children

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Summary
Purpose: To study the effect of local cold therapy and distraction in pain relief using penicillin intramuscular injection in children.
Methods: In this work, 90 children with ages from 5 to 12 who had penicillin injection intramuscularly in a health centre were studied. The samples were chosen randomly and divided into three groups: the first group received local cold therapy, the second group received distraction and the third group (the control group) received routine care. The data were collected through interview and questionnaire. Oucher scale was used to measure pain intensity. Descriptive and inferential statistics were used to analyse the findings.
Results: Average pain intensity in local cold therapy, distraction, and control groups was 26.3, 34.3, and 83.3, respectively.

The findings indicate that pain intensity was significantly higher in the control group than the experimental groups. Also, pain intensity among children was inversely proportional to their age.
Conclusion: This study supports the efficacy of non-pharmacologic pain management methods in children. Nurses are recommended to use local cold therapy and distraction to decrease pain intensity of penicillin intramuscular injection in 5—12-year-old children.

1. Introduction

Pain is one of the most common causes of human suffering. Although pain among adults is consid-

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ered a major health problem, it is often ignored in children. Children report injection pain as being awful. In research on hospitalized children, 48% of the injected children mentioned needle injection as very disturbing. Children will deny their pain due to their fear of injections [1]. Most children anticipate the oncoming pain and manifest misbehaviours accompanied with anxiety, resulting in a lot of time wasted to achieve an injection [2]. Children's responses to pain become a nursing problem; behavioural responses among children aged from 1 to 12 years have been reported as significant for venous catheterization and insertion of IV lines [3]. These responses can be so bad that the nurses have to hold the child firmly to do the injection, creating unpleasant experiences for the child and worsening his future responses to injection [4].

Reducing patients' pain is important for all nurses for many reasons. Unnecessary pain can damage the nurse—patient relationship, whereas knowledge of alternative techniques can improve patient care and satisfaction. As advocates for children, nurses are obligated to minimize the emotional and physical effects of painful procedures [5]. Nurses have used various successful methods to control procedural pain such as local cold therapy to inject heparin; however, this method was not effective in vaccination [1]. Distraction has been effective to decrease the pain due to blood sampling and intravenous cannulation vaccination [6]. There are other methods reported such as music distraction for venipuncture [7]. Since these studies have often investigated venous injections and reported different outcomes, other researchers have recommended further studies in different cultural circumstances and with other painful procedures to improve children's pain control at different ages and to be able to generalize the previous findings better [8]. Annually a large number of Iranian children are inflicted with upper respiratory infections (URI) and need penicillin by IM injection for prevention and treatment. This being a very stressful procedure for the children, an appropriate method had to be found to decrease pain and anxiety. Local cold therapy is one of the non-pharmacologic methods used and acts through local skin desensitisation according to gate-control theory [9,10]. Distraction is also a nursing intervention focusing the patients' attention on other stimulants resulting in pain reduction and better pain control in IM injection.

To follow the above goal this research aimed to define and compare pain intensity due to penicillin IM injection using the methods of distraction, cold therapy, and routine procedures among children referred to an outpatient clinic. Procedural pain is generally a poorly researched area, despite the importance of good pain management in this field; as repeated procedures that have poor pain management methods result in patients' experiencing more anxiety and pain. Therefore, this research work has a contribution to make in helping health care professionals manage and reduce procedural pain.

2. Methods

This is an experimental study carried out on three groups of children. The purpose of this study was to evaluate distraction and local cold therapy as two practical and low-cost interventions to decrease injection pain in children. The groups consisted of 5—12 years old children undergoing IM injection of penicillin 6.3.3 in the outpatient clinic. A convenience sample of 90 subjects meeting the sample criteria and having parental informed consent (additional consent by the child if 7 years or older) was selected for participation in the study [11] and was randomly divided into three groups.

The sampling criteria included: children aged 5—12 years who had to undergo IM injection of penicillin 6.3.3 prescribed by a physician; being able to know and report numbers; having no developmental delay or other disabilities that would make communication difficult; receive penicillin 6.3.3 as the only injected medication.

Subjects were excluded from the study if reporting any pain before injection, having diseases other than URI, being too fat or thin (95th percentile < weight < 5th percentile), being non-cooperative or having a blocked needle leading to a delay in injection and needing another injection.

2.1. Procedure

Parents and children were greeted at the registration desk, seated in an open lobby, and given a package containing the research introduction letter and demographic sheet to complete. They were then taken to a private injection room where the research nurse explained the study to the parent and child, answered any questions, and obtained parental informed consent and child consent [11].

The injection techniques in all three groups were consistent. In all three groups, vital signs were checked before the injection.

2.2. Interventions

(1) In the cold therapy group, the subjects were informed that a 2—3 cm piece of ice would be