



NONPHARMACOLOGICAL APPROACHES TO PAEDIATRIC PAIN ALLEVIATION: A REVIEW ARTICLE

Nursing

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KEYWORDS

Hospitalization can cause significant stress and anxiety in a large portion of the paediatric population, making it an important public health issue¹. Medical procedures, particularly those involving a needle, are one of the most common causes of anxiety, stress, and pain in children². Children's distress resulting from a brief hospitalisation could compromise the success of their desired medical procedure. On the other hand, stress associated with long-term hospitalisation of children may result in aggression and regression in behaviour, non-cooperation, and delayed recovery from the procedure^{3,4}. The response of children to anxiety and stress may vary depending on their age, sex, level of development, temperament, reason for hospitalisation, sociocultural factors, and prior pain experiences^{5,6}. There are both pharmacological and non-pharmacological approaches to pain management. Non-pharmaceutical approaches include singing, reading, and playing games as distractions. Parent, child, and/or observer reports of decreased pain, distress, and anxiety are among the benefits of nonpharmacological methods. There are both pharmacological and nonpharmacological approaches to pain management. Non-pharmacological methods include singing, reading, and playing a game as methods of distraction. Parent, child, and/or observer reports of decreased pain, distress, and anxiety are among the benefits of nonpharmacological methods. Anxiety and stress related to hospitalisation may be treated with pharmacological and non-pharmacological methods⁷. The pharmacological approach entails the use of medications to alleviate stress, anxiety, and pain. However, pharmacological approaches have disadvantages that limit their long-term use, such as the potential for hyperalgesia and tolerance, the possibility of central nervous system (CNS) and gastrointestinal side effects in young children, and the high cost, among others⁸. Non-pharmacological approaches consist of a variety of distraction activities for the children, and are thus cost-effective and secure. They aid in reducing the child's distress, pain, and anxiety during hospitalisation⁹. The most common non-pharmaceutical method for stress and pain relief in hospitalised children is distraction. It is an effort that focuses on diverting children's attention to other stimulants in order to reduce and manage their stress¹⁰. It operates on the principle that the brain has a limited capacity to focus its attention on stimulation. Diverse techniques, including party blowers, watching cartoons, audio-visual games, distraction cards, and listening to short stories, are used to implement the distraction method¹¹.

Heat aids in alleviating pain and muscular spasms. Ice lowers inflammation and pain. Ice might also reduce tissue damage. Massage therapy may alleviate pain and relax the muscles of a youngster. Attached to your child's skin is a battery-operated, portable device known as transcutaneous electrical nerve stimulation (TENS). Typically, it is administered to the affected region. It utilises mild, non-harmful electrical signals to aid in pain management. Using biofeedback, the child's body reacts differently to the stress of being in pain. Hypnosis or hypnotherapy may aid a child in blocking out pain and other distractions. Teaching the child to take calm, deep breaths until they feel their stomachs rising can help in easing the anxiety.¹²

Non-pharmacological Methods for alleviating Procedural Pain according to developmental age

There are three basic groups of pain-relieving interventions: (cognitive, behavioral, or combined). For older children, cognitive treatments are frequently used to shift their attention away from the unpleasantness of a procedure (e.g., counting, listening to music, non procedure-related talk). Examples of cognitive therapy include the

subsequent: Imagery. The child is instructed to visualise a positive object or event (e.g., playing on the beach).

Preparation/Education/Information.

The child is given an age-appropriate explanation of the procedure and any sensations involved. Instructions on what the child must do throughout the operation are provided to help him or her comprehend what to expect. Remedy phrases The child is told to continuously think positive affirmations, such as "I can do this" and "this will soon be over."

Parenting instruction

As reducing parent stress frequently reduces child stress, parents and other family members are taught one of the above stress-reduction techniques.

Television and electronic games

These could be utilised to distract children from unpleasant procedures.

Behavior-based interventions

are utilised to distract the youngster from the discomfort of the treatment. videotapes, games, and interactive texts are examples. Several examples are:

Techniques for breathing

The need of deep breathing is emphasised to the kid. The use of bubble blowers or party blowers can be employed by medical workers to engage younger children.

Desensitization.

This is a systematic approach for overcoming unpleasant stimuli. It demands successfully completing easier tasks before going on to the next, as well as progressively introducing the essential technique and responsibility.

Inspiring words.

Following a difficult operation, the child is compensated with compliments or material gifts (e.g., stickers, toys, games, small trophies).

Parental advice.

Parents are instructed to strongly encourage their children to use these approaches.

According to recent studies, children respond differently to distraction methods based on their age, developmental stage, and level of maturity. This section seeks to provide a variety of age-specific diversion methods that have been demonstrated to be effective.

Neonates and Infants

It is essential to consider the procedure's context while performing uncomfortable procedures on babies (i.e., is the procedure really necessary, how many painful procedures has the infant had in the past, and what was their previous pain experience). In addition, the procedural environment must be developmentally suitable. In reality, pain reactions in babies can be mitigated by reducing noise and light, employing relaxing aromas, and employing clustering strategies to minimise excessive handling. The majority of distraction methods for this age group are passive. As cognitive approaches, visual or auditory

interventions are used to reduce infants' pain perception. Examples of visual help include images, cartoons, smart phones, and mirrors. Auditory aids include music and lullabies sung by parents or medical workers.

More frequently, music is used to alleviate the painful effects of childbirth. According to studies, music may significantly influence behavioural responses to pain, but not physiological measures. For this age group, behavioural approaches are becoming more common and include "direct or indirect" interventions involving the carers in the care of babies. It has been established that greater effectiveness can be attained by combining a variety of strategies designed to stimulate different senses. The following are examples of behavioural strategies. It was revealed that non-nutritive sucking, which involves placing a pacifier or nonlactating nipple in the mouth of a newborn to develop sucking habits, stimulates the orotactile and mechano receptors and reduces cry times and heart rate. During or after a traumatic event, the infant is placed on the mother's bare chest in a practise called "kangaroo care," which involves skin-to-skin contact.

If feasible, the infant is held and rocked while being carried by a parent or other caregiver throughout and after the arduous procedure. Another comparable technique is swaddling, which consists of wrapping the baby's limbs close to their trunk to prevent excessive movement.

Toddlers & Preschoolers

Young children should be allowed to ask questions while age-appropriate information is provided regarding the procedures. Active distraction tactics for this age group include allowing children to blow bubbles, providing them with colourful toys, and providing them with items that light up. For older children, it can be good to provide diverting dialogues (such as "How many siblings do you have?" and "What did you do at your birthday party?") and deep breathing exercises. Passive distraction techniques include practising "blowing out birthday candles" with the child and having parents or a child life professional read age-appropriate books, sing, and dance. A Quasi-experimental study conducted by Devi CP et al., revealed that majority of preschoolers had severe pain during venipuncture which was found to decrease after the intervention of animated cartoon video as a distraction strategy. The study concluded that animated cartoon video is effective in reducing pain perception among preschoolers.¹⁴

Schoolers

It is crucial to provide older children with age-appropriate information since they have a greater knowledge of procedures and why they are being performed. Giving children options (e.g., sit or lie down, choose which hand) gives them a sense of control. Asking parents about their child's previous pain experiences and coping techniques assists health care specialists in determining which interventions to implement with the youngster. Informing school-aged youngsters about the available passive and active coping techniques can be beneficial. This age group's active coping techniques include playing with technology, blowing bubbles, singing songs, and squeezing balls. Passive diversions include watching movies, listening to music through headphones, reading aloud to the youngster, and giving them a story. A Comparative evaluation of the impact of two different distraction strategies as a non-pharmacological anxiolytic among hospitalized children was done by S Alatekar & J Shinde. In this study, Most patients were in the age group of 3-6 years, with a male predominance (53.75%) (Male: Female=0.67:0.57). Significant difference was noted in the post-test anxiety scale test score between ACV and control group, DCT and control group ($p < 0.001$), with high post-test score noted in the control group. Slightly high mean test score noted in the DCT group (6.8) than ACV group (5.5), but non-significant. Majority of children in the age group of 3-6 years had moderate anxiety levels in the ACV group ($p = 0.01408$) and DCT group ($p = 0.0316$) indicating their significant association with age group.¹⁵

Adolescents

Teenagers have a tendency to minimise their discomfort in front of friends and family, so it is imperative that all therapies with teenagers take place in a quiet setting. It is advantageous to give them the option to choose if they want friends and family around or what type of distraction to use. Passive tactics include watching videos, instructing them to breathe deeply (in through the nose, count to five, and exhale through the mouth), and listening to music. Active strategies include having conversations with them, utilising squeeze balls, or letting them play with electronic equipment.¹³

+In another study conducted on the effectiveness of Non conventional attire on the anxiety level among children conducted by L Lokhande & J Shinde. In this study, 60 subjects were randomly selected according to inclusion criteria, by Non-probability purposive sampling method for experimental (30) and control group (30). Children were selected and randomly allotted to experimental and control group. The investigator performed vital signs procedure to all the study samples to avoid bias in performance of procedure. The investigator appointed a trained observer for the scoring of modified faces child anxiety scale. Non-conventional attire (colorful attire) was worn to the children in the experimental group. Routine Conventional attire (white apron) was worn to the control group. Anxiety level of children was assessed using modified faces child anxiety scale for both experimental group and for control group. Same observer had used same modified faces child anxiety scale and measured the anxiety level, to avoid the bias. The collected data was analyzed and tabulated. This indicated that there was statistically significant difference between the mean posttest anxiety score value of experimental and the control groups. ($p < 0.05$). Therefore it can be inferred that Nonconventional attire is effective in reducing anxiety level during noninvasive procedure among children. In the present study, the subjects in experimental group 17 (56.67%) had moderate anxiety and 3 (10.00%) showed mild anxiety whereas in control group majority of subjects 22 (73.33.5%) had severe anxiety and only 1 (12.5%) had moderate anxiety.¹⁶

CONCLUSION

Although there is a wealth of information regarding the assessment and treatment of paediatric pain, it is not always used effectively. Current research indicates that pain management in children remains inadequate. Health care practitioners are responsible for educating their peers and advocating for adequate pain treatment in children. Infants and children provide a unique difficulty that requires taking into account their age, developmental level, cognitive and communicative skills, prior pain experiences, and associated beliefs. To improve the treatment of pain in children, additional research is required to illuminate optimal pain management and techniques that take these particular demands into account.

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