

NON-PHARMACOLOGICAL METHODS IN CHILDREN'S PAIN MANAGEMENT

Päivi Kankkunen, RN, PhD, Senior
lecturer

University of Kuopio
Department of nursing science



What are non-pharmacological methods?

- a variety of approaches designed to relieve pain without using drugs (Vessey & Carlson 1996)
- using of these methods makes the pain more tolerable and give the children a sense of control over the situation (Pederson 1996)

- can enhance activity in descending inhibitory systems and decrease pain sensation
- together with analgesics may provide better pain relief
- advantages: simple to use, require minimum training and equipment, allow patients' active role in pain management, families can be involved

Goals:

- to modify the patient's perceptions of pain
- to alter pain behavior
- to provide the patient a greater sense of control over pain
- to minimize adverse effects of opioids

Several definitions:

- psychological interventions
- cognitive-behavioral interventions
- non-drug approaches
- non-invasive pain relieving measures
- alternative methods
- mind-body therapies
- complementary / alternative medical therapies

Classifications

- non-pharmacological methods can be classified into physical or cognitive-behavioral interventions and relaxation techniques
- cognitive-behavioral and physical methods, providing emotional support, helping with daily activities, creating a comfortable environment (Pölkki 2002)

- kinesthetic
- behavioral
- imaginable
- sensory
- cognitive
- cognitive-behavioral methods

(Gerik 2005)

Cognitive-behavioral methods

- involving child's cognition, expectancies, appraisals and resulting in a modification of behavior
- can affect child's perceptions of pain by leaving less attention or focus available to perceive pain, thus altering or suppressing painful sensations

- Preparatory information

- providing the child information of about the procedure, what will be done

- providing the child information of sensations before the procedure to help the child develop realistic expectations for the procedure

- Information should include:

- preoperative procedures

- purpose of procedure

- postoperative limitations

- postoperative observation

- postoperative placements

- pain management

- sensations during different phases

- verbal information is often not sufficient
- videos, demonstrations, books and written instructions can be used to provide preparatory information
- the child can be asked to imagine while they have pain

- Imagery
 - urging the child to visualize or think of positive and distracting images, e.g. pleasant action, place or trip
 - auditory, visual and kinesthetic components can be included
 - e.g. "magic stick"

- Distraction

- focusing the child's attention away from pain

- arranging meaningful activities, e.g. playing games, reading, talking, watching TV or videos, doing hobby crafts, telling stories

- hearing, vision, touch, smell, movement

- Relaxation

- relaxation of muscles groups of the body
- resulting to altered state of consciousness

- Breathing techniques

- teaching the child to take deep and slow breaths

- Positive reinforcement

- rewarding the child verbally or in a concrete way

- Desensitization

- exposing children to stimuli associated with the procedure

- Reframing beliefs and changing memories

- helping children to realistically appraise the situation and evaluate their ability to cope with pain

- Modeling and behavioral rehearsal

- letting the child to observe another child undergoing a procedure with successful coping

- a video showing positive coping behaviors could be helpful

Physical methods

- stimulating physically different sites of the body

- Thermal regulation

- providing heat (e.g. warm bandages, pillow, towel) application

- providing cold application (e.g. cold bandages, cold drink or food, cold towels, ice bag)

- Massage

- manipulation of soft tissue to reduce muscle spasms and tension

- works e.g. by endorphin release, neural gate control and skeletal muscle relaxation via parasympathetic stimulation

- Positioning
 - helping the child to have a comfortable position
- TENS (transcutaneous electrical nerve stimulation)
 - applying electrical stimulation cutaneously through an electric pulse generator

- Acupuncture and manual pressure can also be used
- parents use several methods at home, including special feeding techniques, limited playing, administration of nature health products and re-establishing joy (Kankkunen 2003)

Emotional support

- Presence
 - being with the child
- Comforting / reassurance
 - e.g. talking to the child in reassuring voice, telling that everything will be all right

- Touch
 - touching the child
 - e.g. stroking the child's head or holding the child's hand

Obs! Cultural traditions

Helping with daily activities

- assisting the child with daily activities, e.g. helping to move or wash

Creating a comfortable environment

- e.g. minimizing noise problems, maintaining comfortable temperature, air conditioning, providing favourite belongings, decoration

Are non-pharmacological methods effective in children's pain relief?

- cognitive methods: distraction, imagery, relaxation, breathing techniques and preparatory information have been widely tested and found to be effective
- however, children's individual factors and developmental status must be considered

- studies focusing on physical methods have shown that TENS and massage are effective methods to manage children's pain
- presence of family members and friends are found to alleviate children's pain, while the effectiveness of many non-pharmacological methods used by nurses and parents has not been tested

- a systematic literature review showed that non-pharmacological methods were effective for pain relief in neonates undergoing painful procedures in the intensive care units
- modulation of arousal and excitability during and after painful stimulus can be easy and safe to use with neonates

(Stoffel et al. 2005)

- analysis of 44 randomized controlled trials showed that sucrose was effective for analgesia in newborn infants undergoing painful procedures (heel lance or venepuncture)
- however, there was inconsistency in the dose of sucrose that was effective (0.012 g to 0.12 g), and optimal dosing could not be identified

(Stevens et al. 2004)

- contrary findings were described in a randomized study of 104 health term neonates having pain from heel pricks.
- At 30 seconds after the pain stimulus pain scores were lowest in the sucrose group.
- However, at 2 and 4 minutes pain scores were lowest in non-nutritive sucking and rocking groups. Rocking and giving a pacifier are effective in neonates' pain relief.

(Mathai et al. 2006, India)

- both oral sucrose and pacifiers reduce pain in neonates undergoing painful procedures
- also simple methods, such as skin-to-skin contact can be used in neonates' pain relief

(Leslie & Marlow 2006)

Children's view point

- children (N=6) and their parents were interviewed to investigate the non-pharmacological methods they used after children's tonsillectomy
- thermal regulation and distraction were used most frequently

Idvall et al. 2005, Sweden

- Chinese children used mostly relaxation and distraction at hospital
- Positioning was commonly used, but only 9 % used thermal regulation (He 2006)
- In a Finnish sample, the children used at least one non-pharmacological to alleviate their opstoperative pain (Pölkki 2002)

- child's gender is related to parental use of non-pharmacological methods
 - massage is used more with girls
 - positive reinforcement is used more with boys (He 2006)
 - several methods are used more with boys and by fathers (Pölkki 2002)

Nurses' view point

- Study findings demonstrate that nurses use versatile non-pharmacological methods to manage children's pain
- Most commonly used methods are giving preparatory information, comforting, creating a comfortable environment, distraction and positioning (He 2006)

- Use of physical methods is very limited
- Some nurses use positioning
- Thermal regulation and massage are used less
- None of the nurses had used TENS (He 2006)

Limitations in use of non-pharmacological pain management methods

- too few nurses
- no time
- lack of knowledge
- methods are not part of conventional postoperative practice
- traditional culture
- ineffectiveness of methods

- lack of parental support and cooperation
- less ideal conditions in the hospital environment
- older nurses and nurses with long working experience are found to use non-pharmacological methods more than young nurses
- nurses with lower education did not prepare the children carefully

- nurses with low position used many methods less than nurses with a high staff position
- nurses having own children used several methods more than those who had no children
- nurses who had experience of earlier hospitalization of their own children used the methods more

Parents' view point

- Parents use mainly emotional support strategies, helping with daily activities, distraction and imagery with hospitalized children (He 2006)
- Parents have received insufficient information about their children's non-pharmacological pain management (Kankkunen 2003, He 2006)

- However, nurses have described that they guide the parents to use non-pharmacological pain management methods (He 2006)
- older parents use more methods than younger parents
- parents with higher education and who were employed used these methods more than other parents

- according to parents, factors hindering the use of non-pharmacological methods include:
 - lack of understanding the information provided
 - being underused as a potential in pain management
 - negative feelings related to the child's hospitalization

- Parents use several non-pharmacological pain management methods also at home after children's day surgery
 - holding the child in parent's lap
 - comforting the child
 - spending more time with the child than usual
- mothers used the methods more than fathers, mainly with girls

Future challenges

- validated pain assessment instruments should be used in further studies to be able to compare the findings of efficacy of non-pharmacological methods (Cignacco et al. 2007)
- also long-term effects of use of non-pharmacological methods should be investigated (Leslie & Marlow 2006)

- non-pharmacological methods should also be investigated from pharmaco-economic view point to assess their cost-effectiveness (Robinson & Jones 2006)
- use of culturally appropriate methods should be investigated (e.g. in some cultures touching of the head is extremely impolite)

- List of references can be sent via e-mail: paivi.kankkunen@uku.fi