The Use of Music in Managing Pain for Hospitalized Children

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Abstract:
A study of the research literature indicate neurological, physiological and psychological links between music and pain. Various theories are presented to describe the effect of music on pain perception. Music therapy techniques used to alleviate pain for hospitalized children are illustrated through case studies.

Before the nineteenth century, pain was thought to be an emotion rather than a sensory experience. As pain is such an involved human experience, it is now defined by the International Association for the Study of Pain as: ". . . an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage" (cited in Brown, Chen & Dworkin, 1989, p. 49). Pain may arise from tissue damage and insult to nerve endings. However, it cannot be explained in physical terms alone.

Neurophysiological Factors in the Perception of Pain

The "Gate Control Theory of Pain" was proposed by Ronald Melzack and Patrick Wall in 1965. Melzack & Wall (as cited in Brown et al., 1989) suggested that neural activity in the dorsal horns of the spinal cord act like a "gate" that can increase or decrease the amount of nerve impulses from the receptors to the central nervous system. Sensory input is therefore controlled by the "gating" mechanism before pain perception occurs. Thus, the existing inhibiting mechanisms that stimulate the closure of the "gate" can be seen as a sensory-discriminative experience of an individual (Melzack & Casey, as cited in Locsin, 1983).

The gate control theory has made a major contribution to the understanding of pain mechanisms. Within the spinal cord, ascending pathways transmit pain impulses to higher levels. The spinothalamic pathways are of chief importance in the transmission of pain impulses (Nolan, 1987). Processing of painful information occurs in the thalamic area and the cortex (Portenoy, 1996).

The most important advancement on the gate control theory is the discovery of an intrinsic neural system that is able to alter both perception of and responses to noxious stimuli. Opiate receptors in the brain, the anatomic pathways which mediate opiate and stimulation-produced analgesia have been identified (Nolan, 1987). It is now understood that the pain pathway involves many peripheral, local spinal cord and descending mechanisms (O'Callaghan, 1996).

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Psychological and Emotional Factors in the Perception of Pain

Pain may be experienced in relation to an emotional state such as anxiety. Contraction of muscles especially in the neck and scalp, may occur as a result of anxiety, and this tension in the muscles produces pain. This may be experienced as headache, which generates further anxiety and alarm; thus, making the pain even worse (Taylor, 1986).

Anticipation of pain may in itself, be a form of "pain" and may be even worse than the actual pain itself (Pace, 1976; Copp, 1990). For example, someone waiting in a dental surgery may feel a pain sensation or feel uneasy when the 'dreaded' sounds of drilling come peeling through the waiting room.

The Psychoneurological Link between Pain and Music

The limbic system of the upper brain stem is partly responsible for processing information about pain (Roederer, 1979). Roederer states that:

> "In conjunction with the hypothalamus, the limbic system polices sensorial input, selectively directs recent memory storage, and mobilizes motor output, with the specific function of ensuring a response that is most beneficial for the self-preservation of the organism in a complex, continuously changing environment. It accomplishes this function by dispensing sensations of reward and punishment or pleasure and pain, depending upon the current circumstances" (Roederer, 1979, p. 164).

Roederer's statement suggests at least two psychoneurological similarities between pain and music (Eagle & Harsh, 1988). The first similarity is that both pain and music can be identified as sensory **input**. Noxious stimuli are transmitted through, and perceived by the thalamus, and interpreted by the cerebral cortex. In considering the limbic-thalamic-cortical influence on the interpretation of a noxious stimuli, it is interesting to note that these are also the centres for music appreciation (Altshuller, as cited in Locsin, 1982).

The second psychoneurological similarity between pain and music as indicated by Roederer (1979), lies in the **output** from the limbic system, which is usually conceptualized to be the centre for emotional synthesis (Regelski; Roederer, as cited in Eagle & Harsh, 1988). Since the limbic system is chiefly responsible for emotional output, the emotional aspects of pain and music may be closely intermingled.

In the limbic area of the brain, "specific opioid receptor sites have been discovered in high concentrations. The endorphins . . . are thought to function as natural opioids, acting as ligand at these receptor sites" (Moulds, 1988, p. 28). Opioid drugs stimulate opioid receptors and activation of these receptors inhibits transmission of impulses along pain pathways (Moulds, 1988). These morphine-like substances are assumed to be plentiful in the thalamic area, the centre for pain perception. Thus, in considering the influences of music on the thalamic area, it may be that the release of these substances can be stimulated by musical interventions (Locsin, 1982). Pomeranz (as cited in Locsin, 1982) theorized that endorphins are released into circulation when the hypothalamus is stimulated, and therefore, block pain pathways at the synaptic level. Thus, since pain and music

signals seem to follow similar neural pathways, it seems reasonable to suggest that they may affect each other.

The Psychoacoustical Link between Pain and Music

Two of the acoustical or vibrational parameters of sound are intensity and duration (Hedden; Lundin, as cited in Eagle & Harsh, 1988). Their respective tonal equivalent are loudness and time (Lundin; Radocy & Boyle, as cited in Eagle & Harsh, 1988).

In defining intensity, researchers in both acoustics and pain refer to it as an amount of exerted energy and pressure (Eagle & Harsh, 1988). The psychophysiological perception of the intensity of pain is influenced by the severity, or the amount of energy used in communicating the pain. Similarly, the psychophysical perception of loudness of a musical message is also determined by the amount of energy transmitting the acoustical sound (Eagle & Harsh, 1988).

Within the structure of music, the duration/time is not only created via perceived pitches, tone qualities, and loudnesses; but, also in beats, tempi and rhythms (Eagle & Harsh, 1988). Therefore, "music alters time because music **is** time" (Eagle & Harsh, 1988, p. 22). In a non-musical environment, music can modify the perception of time in that slow music may reduce the subjective judgement of time, while fast time may exaggerate the estimation of time (Heddon, as cited in Eagle & Harsh, 1988).

> "Persons who experience pain ordinarily live in a contracted or constricted time sense. Minutes seem like hours when one is hurting. Because the time sense is constricted, pain is magnified sometimes far beyond what seems appropriate. . . . Can we lessen pain by "stretching" the time sense? . . . any device or technique that expands one's sense of time can be used as an analgesic!" (Dossey, as cited in Eagle & Harsh, 1988, p. 22).

Since music is time, and as it can also alter the perception of time, music can be used as an analgesic. "Music therapy *is* time therapy" (Eagle & Harsh, 1988, p. 22).

The Management of Pain

Pharmacological Management

After swallowing sugar-coated pills or having a 'glucose' injection, some patients may actually experience less pain, become less anxious and believe that they will improve. The resulting placebo effect may be a consequence of the suggestion and thus the expectation that relief will occur (Rose & Fitzgerald, 1987). With more commonly used analgesic agents such as aspirin, part of the benefit is accountable to direct pharmacological effects on anxiety and hence on pain, and the other part is attributable to the psychological expectation of relief (Taylor, 1986).

The neuro-chemical, endorphin, seem to function as the body's own analgesic (Rose & Fitzgerald, 1987). It is probable that many of the therapeutic measures that help relieve pain, do so by increasing the level of endorphins. Heroin, morphine, and other opiates are chemically similar to endorphins and seem to

achieve their pain-relieving effects by binding to the same sites as do endorphins (Moulds, 1988).

Physiological Management

As has been shown, pain produces substantial anxiety that can lead to increased muscle tension, which in turn can increase pain. Relaxation can lessen pain by directly affecting this cycle. For example, in muscle relaxation training, the primary purpose is to relax tensed muscles to create a diversion of blood flow (Taylor, 1986). Controlled breathing also helps induce relaxation (Davidson & Schwartz, as cited in Taylor, 1986).

Psychological Management Through Distraction

By focusing one's attention on some irrelevant and attention-holding stimulus, or by distracting oneself with a high level of activity, one can turn attention away from pain. Micci (as cited in Malone, 1996) found that music aided in distraction and relaxation for children undergoing cardiac catheterization. In evaluating the effects of suggestion and music distraction on pain in children receiving injections, Fowler-Kerry and Lander (as cited in Malone, 1996) found that music distraction significantly decreased pain while suggestion did not.

Since distraction requires active focusing and concentration, it may not work as a treatment of chronic pain, as chronic pain patients cannot distract themselves indefinitely. As distraction can provide temporary relief, distraction techniques for the control of pain may be best employed for managing short-term pain, e.g. pain that is due to painful medical procedures.

Music used as a distraction, is effective in breaking the vicious cycle of anxiety, fear and pain. Faurot (as cited in Locsin, 1984) suggested that there are two types of distraction. They are: (i) **positive distraction**: i.e. when a patient listens to the music, and forgets his/her pain, focusing his/her attention onto something soothing and pleasurable, thus, breaking the anxiety-fear-pain cycle; (ii) **negative distraction**: where music promotes physical activities, and encourages the patient to forget the pain by focusing full attention on the enjoyable physical actions.

Chetta (as cited in Froehlich, 1984) found that music therapy offered the night before surgery and immediately prior to the induction of pre-operative medication, significantly lessened anxiety and fear behaviours in children. Pfaff, Smith, and Gowan (as cited in Malone, 1996), found that music-assisted relaxation with children undergoing bone marrow aspirations, tended to decrease anticipatory and experienced fear. Furthermore, it was observed that there was significant reduction in crying. McDonnell's (1984) study of paediatric trauma patients and their families, found that these children are often deprived of the most basic comfort, such as being held. Through the use of rhythm, sound and associations to familiar songs, a compensatory holding environment can be created; thus engendering a sense of safety and security which lessens anxiety. Songs are expressions of the human voice — "a source of nurturing, warmth and interpersonal contact" (Bailey, as cited in Brodsky, 1989, p. 23).

> Allan, a seven-year-old boy who is visually impaired and has an intellectual disability, was a post-operative patient who suffered from dehydration. He

was small for his age and was exceptionally thin. The music therapist was informed that Allan was involved in the music therapy programme at his school. He was reported to "cry many times in a day". Allan was referred for music therapy, as he was very distressed and was experiencing discomfort. As Allan had no speech, crying may have been his way of communicating pain.

Allan was crying at the beginning of the session. However, when the music therapist sang "Twinkle, Twinkle Little Star", his crying lessened gradually. The song had a calming effect on him. He stopped crying in the song, "I've Got A Body". It was later discovered that this song was used in his school programme. Thus, the familiarity of the song may have secured a sense of safety: a song from a world that he could relate to.

In an activity, that aimed at providing Allan with some form of gentle stimulation, a triangle was gently struck at a distance from Allan, and then allowed to resonate above and around Allan's head. The gentle, tingling resonance of the triangle captured his attention and he seemed to enjoy the resonating quality of the instrument. Allan seemed less distressed and was concentrating on the pleasing musical 'sensations' around him. The song "Sing A Rainbow" seemed to relax him as his breathing deepen and he showed no signs of agitation. He began to close his eyes, and the song "Twinkle, Twinkle Little Star", lulled him into a restful and peaceful sleep.

The music and the stimulation activity provided a form of distraction from his discomfort. The singing of familiar songs calmed and soothed Allan to a more settled state.

Children who are terminally ill may develop a fear of sleeping, and soft, soothing music such as lullabies, may be useful. Fagen (1982) cites a child saying, "If you sing to me when I go to sleep, I know I won't be alone 'cause I can still hear you when I am sleeping" (Fagen, 1982, p. 21).

Nathan, a twelve-year-old boy, who suffers from *Duchene's disease*, had an operation on his back. His body and face were very swollen, and he felt "very uncomfortable and very sore". Nathan requested music to "make him go to sleep".

Nathan closed his eyes, and as he listened to recorded piano music, he began to take deeper breaths and relax. He drifted in and out of sleep. When the music therapist suggested Nathan focus on the music while she gently massaged his hand, he nodded in response. The music and the gentle massage seemed to settle Nathan, easing him gradually off to sleep.

Pleasurable sensory experiences and emotional states can be induced by gentle steady rhythms and flowing melodies. As physical and emotional relaxation occurs, awareness of pain decreases. "Music seems to melt physical, psychological, and emotional boundaries and penetrate levels of awareness unreachable by words or bodily touch" (Bailey, 1986, p. 27).

Music can alter the perception of time. By cognitively engaging in the music, distraction away from the reality of the moment, and away from self-preoccupation

may be achieved. For an individual who is able to "lose him/herself" in the music, the pain sensation may or may not totally diminish, but the suffering involved may be greatly decreased (Brown et al., 1989)

C. Yee, a fourteen-year-old Chinese girl, who suffered from *scoliosis*, was hospitalized for two surgeries, one for a spinal fusion and another operation to 'correct' her anterior spinal condition. Her mother, who was very protective of her, was always by C. Yee's bedside. C. Yee was referred for music therapy after her first surgery. It was felt that perhaps music could break the barrier, to ease the anxiety and pain, and to enable a more positive and comforting experience at the hospital. Through conversation with the therapist, C. Yee requested for the electronic keyboard and Chinese folksongs.

In her first session, C. Yee was fascinated by the sounds of the keyboard. She expressed her love for music, especially listening and playing the keyboard. When the Music Therapist began to play Chinese folksongs, C. Yee's mother, who was reading a book, came closer to the bed and leaned towards her daughter. She began singing the song softly by her daughter's side.

After her second surgery, C. Yee was very sore and expressed her uncomfortable and painful state. She agreed to listening to music after the therapist assured her that it would help. C. Yee requested piano music, which gradually "laid her down" to sleep, as she listened to it.

Two days after the surgery, doctors permitted C. Yee to sit up. Although she was still in pain, C. Yee was determined to sit up in order to play the keyboard. Two nurses were required to assist her into the correct sitting position. When the nurses were help ing C. Yee, her facial expression showed intense pain. The analgesic that was given was not effective enough for her situation and a stronger painkiller was ordered for her.

Even though she was in pain and experiencing discomfort, it did not deter C. Yee from playing the keyboard, and enjoying her music. C. Yee played melodies while the therapist accompanied her at the lower end of the keyboard. They played and sang some songs. Then, C. Yee began playing some Chinese tunes to which the therapist provided an accompaniment. C. Yee liked the accompaniment so much that she kept playing the same tune and other similar tunes just to listen to the accompaniment.

During the session, nurses came in to check on C. Yee and asked if she needed the stronger drug, to which she shook her head in response, while she was concentrating on a particular tune. The concerned nurses checked on C. Yee three times, and each time C. Yee refused it. C. Yee stated to the nurse in her third visit, that she did not want the stronger medication.

The Chinese folksongs were essential in involving both mother and daughter in a more positive hospital experience. It enabled a development of rapport and trust. As for C. Yee, her profound interest and deep love for music prevailed. These seemed to have helped her win the "battle of pain" as she involved herself fully in her music, really putting her mind to it. The music therapist felt that music not

only provided C. Yee with a form of distraction, but it also affected her physiologically and assisted in lifting her spirits. Through total involvement and focus on playing the keyboard, C. Yee seemed to have gained a sense of control over her painful experience and did become active in her own pain management.

Psychological Management Through Guided Imagery.
This style of coping involves deep thinking and visualization (Copp, 1990). Guided imagery has been used to control some acute pain and discomfort (Lyle, cited in Taylor, 1986) and to bring about relaxation (Horan, Layng, & Purcell, in Taylor, 1986). In guided imagery, the patient is encouraged to visualize a peaceful, relatively unchanging scene, to hold it in his/her mind, and to fully focus on it. This procedure induces a relaxed state, concentrates attention, and distracts the patient from the pain or discomfort. The use of guided imagery to induce relaxation, can control slow-rising pains that can be anticipated and prepared for, or it can be used to control the discomfort of a painful medical procedure. In helping children through painful procedures, Heiney (1991) reports that children tend to be more co-operative throughout these procedures when they are encouraged to practise breathing and to use "magic" (relaxation and imagery).

Bonny's (1983) research of adult patients in a coronary Intensive Care Unit, found that listening to carefully selected taped music decreased heart rate, increased greater tolerance of pain and suffering, and lessened anxiety and depression. Reduction of pain may occur when music is presented together with the *suggestion* that it will reduce pain (Lavine, Buckbaum, & Poney; Melzack, Weisz & Sprague, as cited in Peters, 1987). While these experiences relate to Music Therapy with adult patients suffering pain, these findings seem relevant and pertinent in the understanding of pain experienced by children.

> Lauren, a thirteen-year-old girl who was hospitalized for *Femoral Tibial Epiplysiodes*, had surgery involving one of her legs. When the music therapist saw Lauren, a nurse was sitting by her side, helping her to attempt to sit up for the first time after surgery. Lauren said that she felt nauseous and that her head was so "full" and dizzy. Her face showed discomfort and she was quite teary. She had her hands on her stomach. When the music therapist suggested that music could help take her mind off the pain, Lauren hesitated. She agreed to listen, only *after* the therapist had assured her that music has helped other patients.
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> As she listened to the soundtrack of "Out of Africa", Lauren closed her eyes. The therapist suggested that she "try to relax and concentrate on the music". Lauren was then encouraged to 'dream' to the music. Later Lauren reported that ". . . the music really helped . . . it helped clear my head . . . I choreographed a ballet . . . the music let me choreograph a dance . . . a different dance to each piece . . .". Lauren said that she learnt ballet and had choreographed a dance for her school before the surgery. She talked about how she missed the chance to enter a ballet competition and also the opportunity to choreograph a jazz dance sequence for another event at school. She spoke with determination, expressing her desire to get better quickly, so that she could dance again.

The music helped distract and divert Lauren's attention away from her discomfort. It helped Lauren to verbalize her feelings.

Music comprising slow tempi and constant rhythmic patterns may facilitate physical and mental relaxation process (Brown et. al., 1989). In a study of paediatric burn patients undergoing surgical procedure, Robb, Nichols, Rutan, Bishop and Parker (1995) found that music assisted relaxation decreased perceived anxiety, increased relaxation and increased coping strategies. Rudenberg and Royka (1989) stated that a progressive muscle relaxation technique and age-appropriate guided imagery were used with paediatric burn patients in coping with painful and invasive procedures. It was found that with music, levels of pain decreased and levels of no pain increased.

Godley (1987) used relaxation, music and imagery, and biofeedback, to treat patients with chronic pain. She reported that these patients learned to have "auditory image" of the music used during sessions. When feeling tensed, these patients would activate the image and would then feel their bodies relax. This confirms Brown et al's (1989) belief that by actively listening to music, patients may learn a cognitive strategy to re-conceptualize a painful experience into one that they can control. In addition, Godley (1987) reported a decrease in the use of medication, with patients often choosing to listen to a tape, as a substitute for pain medication. Cowan; Doody, Smith and Webb; and Fried (as cited in Robb et al., 1995) found that prior to the pre-operative intervention, talking to patients and allowing them to choose and describe the imagery to be used, provided the patient with the opportunity to gain a sense of control and enabled the patient to take on an active role in treatment.

> Jane, a fourteen-year-old girl, suffered from *Fibromatosis*. Surgery had been performed to remove fibrous tumours in her right thigh. As a result of heavy bleeding, a tube was inserted externally to drain the blood. The tube was to be removed without anaesthetic. Through talking to Jane, the music therapist found her trying to be quite calm about the pending procedure and pain. When the therapist asked if she knew and understood what was going to happen, Jane explained that the tube was going to be "pulled out". Her facial expression changed and tears began to flow. Jane became distressed about the procedure, expressing that she was "sick of it all . . . just want to get it over and done with".
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> After the therapist explained that music has been known to help ease pain, Jane agreed to listen to music to "take her mind off things". She was informed that she would need to close her eyes, and would be guided through some deep breathing and relaxation exercises with soft and gentle music, and then through some visualization.
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> As the nurse began to prepare the procedure, progressive relaxation was utilized together with deep breathing. Jane's attention was brought to different parts of her body, from her head to her feet. As the nurse began the procedure, Jane was asked to imagine herself lying in a white, fluffy and very comfortable cloud; feeling the cool breeze blowing gently across her face and body. The therapist talked throughout the music, guiding Jane

through sensory awareness in her visualization, e.g. smell and breathe in the fresh air in the blue sky; feel the softness of the cloud.

The music therapist noticed that Jane was not aware of the exact moment when the tube was "pulled out" as she did not stir. Jane seemed to be deeply involved in the music and imagery. Her facial expression revealed a relaxed state. However, when the nurse said, "Now, that did not hurt a bit, did it?", Jane opened her eyes, looked at the direction of the tube and smiled to the nurse, then verbally agreed that it did not hurt.

As the procedure was not thoroughly completed yet, the therapist advised Jane to close her eyes and concentrate on the music. Some guidance in deep breathing was given. Tears began to flow from the corners of Jane's eyes as the nurse completed her task. The tears gradually stopped as the relaxation process began and further visualization proceeded. Then Jane was allowed and encouraged to freely explore her imagination to the music.

Much later, Jane reported that the music helped take her mind off the painful procedure. At the point when she finally opened her eyes, Jane expressed how she felt, saying that she was "sleepy . . . and relaxed". She said that she did not feel the pain at the time when the tube was removed, but, felt the pain for a short time afterwards. Jane described her imagery, saying that she was with her friends, swimming at the beach, on a sunny day. She reported that she felt the warmth of the sun and smelt the sea water.

The music and imagery provided Jane with a focus, a diversion from the pain, an escape from the on-going procedure. Jane was deeply involved in the relaxation and visualization process during the painful procedure, until the nurse alerted her attention. Jane felt pain after she was made aware of it. Her tears subsided as she began to be absorbed by the relaxation and visualization.

According to Brown et al. (1989), when a person who is suffering pain, words may not be effective for communicating the emotions and feelings that surround the pain experience. Furthermore, if these emotions and feelings are not dealt with, they may only exacerbate the situation and hinder therapy and relief. For a child who cannot speak of his/her pain, personal involvement with the music may bring about catharsis.

Andrew, a twelve-year-old boy, was hospitalized for a *Spondylolysis repair*. This involved a surgical procedure on his back. The music therapist was informed that Andrew was "feeling very sore and very miserable". The hot weather was an added discomfort. Andrew chose to "have a go at the keyboard". The keyboard was placed on the bed, on his right side. His left hand was intravenously connected to a machinery that provided the analgesic.

Andrew experimented with special sound effects on the keyboard. He chose "Waves". The therapist asked him to close his eyes. While depressing the keys with his right arm, Andrew verbalized that he was thinking about the beach, as he could hear the waves. He reported that he could feel the waves and the sea breeze; and that it felt "nice". With the "Waterdrops" sound effect, Andrew said that it reminded him of rain, that he "saw and felt the

rain", and it felt cool. When he opened his eyes, he tried to make the raindrops come quicker to make more rain, thus to feel cooler.

When experimenting with the "Gunshot" sound effect, and asked how the sound made him feel, Andrew smiled and giggled in response. When asked if he felt like "shooting" anything, Andrew giggled and depressed the corresponding button quicker, to make faster shooting sounds. With the "Ow" sound effect, when the therapist asked if that was how he felt, Andrew replied with a nod and a smile. He depressed the keys at the higher end of the keyboard.

The sound effects provided a means of acknowledging Andrew's feelings of discomfort and pain. It presented an escape from the reality of his soreness and his uncomfortable experience. The "Gunshot" sound effect may have provided a means of controlling or dealing with his perceived source of pain. The "Ow" sound effect may have been a way of communicating the intensity of his pain as he chose to express it through the higher registers of the keyboard.

Summary

Pain is a significant area of concern for patients and caregivers, and new avenues of reducing pain experiences are being explored. Through analysis of research material, it seems that there is a link between music and pain and the case studies presented support the hypothesis that music can effect pain perception.

The elements of music that soothe and calm, present a form of sedation. The rich harmonies may provide a sense of security and being nurtured, a sense that is safe enough to allow oneself to be lulled to sleep. When sleep occurs, the body and the mind are at rest. With the body fully relaxed in sleep, the sensations of pain is not cognitively processed and the brain does not register such stimulus, thus no pain is consciously felt. Listening and relaxing to music can help alleviate pain and discomfort. Active participation in music activities can help a child break the attention-anxiety-fear-pain cycle, forgetting the pain by concentrating on the musical activities, providing an escape from the reality of pain. Total involvement in instrumental playing can help a child release emotions and tensed up energy that relate to his/her pain experience.

Songs that enhance familiarity with home and the added benefits of family participation in music therapy sessions, may be effective. Music can also provide an opportunity for a child to express the intensity of the pain, and therefore, having their painful experience acknowledged. Music and imagery may be used as an "analgesic" by focusing a child's attention on visualization as a distractor.

For a disabled child, enduring pain may be a more traumatic experience. Where verbal communication is a challenge, crying may be the only means of expression. Sound, music and song can provide a connection, creating an atmosphere that is familiar and may bring about feelings of safety and nurturing.

Families of ethnic background may sometimes find more difficulties in dealing with the hospital experience. Music can provide a valuable link between the hospital, the parents and their hospitalized child. It can act as a bridge that can break the

language barrier, providing a common ground, and therefore reducing the anxiety, and thus, the anxiety-fear-pain cycle.

In the author's experience, it was observed that younger children tend to be more easily distracted from pain by active participation in musical activities. Older children tended to benefit from receptive listening to music, and music and imagery, to divert their attention away from pain. It was found that explaining the use of music and its benefits was important. However, more importantly, there was a need for *assurance* that music has helped other patients in easing their pain.

Through the use of Music Therapy, the need for drugs may be decreased, and therefore possible side-effects may be reduced. The use of music may aid the physiological and psychological coping processes. This in turn may help and perhaps speed up the recovery/healing process so that patients may be able to return home to their families sooner.

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