The Impact of Music on the PACU Patient's Perception of Discomfort

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Pain is a normal finding in the postoperative patient, and noise can accentuate one's perception of discomfort. In this study, physiological measurements, intravenous (IV) opioid administration, length of stay, and satisfaction for postoperative patients who listened to music were compared with patients not provided music during their PACU stay. Of the 213 subjects enrolled, 163 experienced postoperative pain. The mean change in experimental subjects' respiratory rate was significantly lower than the controls. Decreases in heart rate and blood pressure from admission to discharge were similar between the two groups. On average, peripheral oxygen saturation and opioid pain control were not significantly different between control and experimental subjects. Subjects provided with music reported acceptable noise levels and increased satisfaction with their PACU experience. Music intervention is therefore a viable, minimal cost, and alternative therapy that PACU nurses can use to assist patients coping with postoperative pain.

Keywords: *music intervention, postoperative pain, patient satisfaction, nonpharmacological intervention, vital signs.*

POSTOPERATIVE PATIENTS experience varying degrees of pain and generalized discomfort.[1,2] Anxiety, loss of control, and sensitivity to unfamiliar noises may increase a patient's restlessness and perception of pain.[3] The stress of surgery has been shown to produce physiological changes in blood pressure, heart rate, and respiratory rate.[4] In 1859, Florence Nightingale stated "Unnecessary noise, or noise that creates an expectation in the mind, is that which hurts a patient. It is rarely the loudness of the noise, the effect upon the organ of the ear itself, which appears to affect the sick … But intermittent noise, or sudden and sharp noise … affects far more than continuous noise."[5]

Nurses have a responsibility to promote comfort and well-being by therapeutically manipulating the environment and recognizing pain as a priority in the care they provide.[4,6] ASPAN issued a clinical guideline on pain and comfort in 2003[7] with assessment, interventions, and expected outcomes. Music is among the cognitive behavioral interventions delineated.

As patient satisfaction becomes more important for reimbursement, patient flow must become even more efficient. Despite new time constraints, patient pain management will continue to be a primary concern.[8,9] The sedating effects of opioids and benzodiazepines may delay the flow of patients through recovery.[9] Assessment of pain levels in postanesthesia care unit (PACU) patients is often challenging if they are too sedated from anesthetics, remain intubated, are receiving neuromuscular blocking agents, or are too ill to report their pain.[10] Although traditional modalities of pain treatment continue

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Betty Easter, RN, CPAN was awarded a $500 Walmart community grant with which CD headsets and music CDs were purchased. A "talk light" noise meter was purchased for the PACU by the Catawba Medical Foundation in response to a written request by Laura DeBoer, RN, CAPA.

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1089-9472/10/2502-0004$36.00/0
doi:10.1016/j.jopan.2010.01.017

to be used, common side effects of respiratory depression, nausea, hemodynamic changes, or ineffective pain relief may increase PACU length of stay or necessitate a hospital admission. Therefore, alternatives to traditional pharmacological interventions should be explored and used. Complimentary and holistic approaches are often underused in the Western medical acute care setting including the PACU.

Across the centuries, music has been used as a calming agent. In Biblical times, David played his harp to soothe King Saul. During the Middle Ages and Renaissance, there was recognition of music's healing ability. However, in today's technologically advanced practice, the use of music in medicine has declined. Inclusion of music in the health care environment encourages an individualized holistic approach to patient care and allows the nurse to manipulate the environment.[4,11] Music intervention is inexpensive, requires minimal nursing time, and has little to not any risk of harmful side effects.

Music has been shown to foster therapeutic relationships that address physical, psychological, cognitive, and social functioning for all ages, and to improve patient satisfaction.[4,8,12,13] Research has revealed the patient's music preference to be a contributing factor in reducing anxiety and tension.[14,15] Moreover, in a study by O'Neill[4] and another by McCaffrey,[11] music preference was identified as an important factor mediating the beneficial effects of music. Published research studies investigating the effects of music on the physiological and psychological indices of PACU patients are inconclusive.

Shertzer and Keck[8] investigated the effect of soothing music and lowering noise levels on the pain experience of 97 subjects during a PACU stay. The experimental group experienced a significant reduction in pain from admission to discharge. The authors reported that music in the PACU lowered blood pressure and heart rate, improved cardiac output, and decreased muscle tension, pain, and nausea of subjects. In addition, patients' comments about the effect of music on the PACU experience supported the perception that music helped them relax and reduced their anxiety.[8]

To examine whether self-selected music was beneficial to PACU patients as measured by the physiological measures of pulse, blood pressure, and respiratory rate, orthopedic patients were studied by O'Neill.[4] The reported findings showed that the experimental group had a significant reduction in stress and a reduction in pulse and respiratory rate, but no significant reduction in systolic or diastolic blood pressure.[4] Mok and Wong[3] assessed the effectiveness of music as a relaxation modality by measuring patients' vital signs and self-reported anxiety before and after surgery. Study results indicated that 40 patients who listened to their choice of music during surgery experienced significantly lower anxiety levels, heart rates, and blood pressure than the 40 patients who did not listen to music. Nilsson et al[16] studied 75 subjects to evaluate whether intra- or postoperative music therapy could influence the stress and immune response during and after general anesthesia, and whether there was a different response between patients exposed to music intra- versus postoperatively. In contrast to Mok and Wong, they found that music did not lower blood pressure, heart rate, or oxygen saturation values compared with control subjects. However, the postoperative music group had less anxiety and pain and required less morphine after one hour compared with the control group. The Nilsson et al study[16] design was more rigorous than Mok and Wong's study[3] in that subjects were randomized into experimental and control groups.

Allen[15] studied day surgery patients (N = 60) in a randomized trial to examine the role of music therapy in reducing stress as measured by changes in plasma levels of cortisol and natural killer lymphocytes. In this study, the investigator also sought to determine the effect of different types of music on stress. The findings showed that perioperative music decreased stress as measured by cortisol level and natural killer lymphocyte count. Also, patient-selected music style appeared to be more effective in reducing stress.

In 2008, *The Anxiety and Pain-Reducing Effects of Music Interventions: A Systematic Review* was published by Nilsson.[17] The search of English-language articles published between January 1995 and January 2007 resulted in author review of 72 research articles. These addressed adult, recorded music intervention studies limited to the pre-, intra-, and postoperative environments. A comprehensive review of 42 randomized controlled trials (RCTs) meeting inclusion criteria involving 3,936 subjects highlights the inconsistent findings in perioperative music intervention research. In 13 of 22 trials (59%), music intervention was shown to have a significant pain-reducing effect, reflected by decreased pain scores. In 15 RCTs, where analgesic use was measured as an outcome of pain, the use of analgesics in music subjects was significantly lower. In 57% of the trials, the impact of music on a patient's vital signs was evaluated. In 22 of the studies, heart rate and blood pressure were tracked, whereas eight studies tracked respiratory rate and only three studies measured oxygen saturation levels. Mathematically significant findings of lowered heart rates and blood pressure values were shown in only six of the 22 studies. Reduced respiratory rates were reported in three of the eight articles in which researchers evaluated respirations in subjects. In two of the three studies that evaluated oxygen saturation, the investigators observed improvements in subjects provided with music. Therefore, among the more than 40 studies comprising the systematic review,[17] physiological