

Effects of Music on Pain and Opioid Analgesic Administration in Postoperative Orthopedic Patients

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Problem

Pain management is a critical part of postoperative procedure in patient care. Although opioid analgesics are highly effective due to their high potency, they pose serious side-effects including respiratory depression, decreased gastrointestinal motility and constipation, hypotension, and increased risk for falls. Furthermore, increased opioid analgesic administration is correlated with significant increases in non-medical opioid misuse following discharge. Due to the risks associated with increased opioid analgesic administration the following PICOT questions was utilized to guide the the review: Among post-operative orthopedic surgery patients, do opioid analgesics supplemented with music therapy, compared with opioid analgesics use alone for pain relief, affect pain levels and post-operative rates of opioid administration?

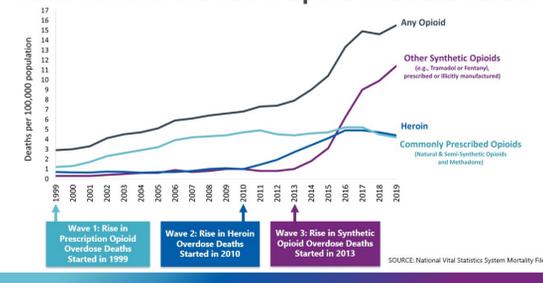
Background

The rise of opioid deaths has been categorized into three distinct waves

The Three Waves of Opioid Overdose Deaths¹

Wave	Description
First Wave	started in the 1990's with the increase of prescription opioids, with overdose deaths involving prescription opioids.
Second Wave	The second wave began in 2010, with rapid increases in overdose deaths involving heroin
Third Wave	Started in 2013 with significant increase in overdose deaths involving fentanyl

Three Waves of the Rise in Opioid Overdose Deaths



- The CDC reports that between the year 1999 to 2020, there were nearly 841,000 recorded overdose deaths in the United States¹.
- In 2019 there were 70,630 drug overdose deaths in the United States, a 4% increase in overdose death since 2018¹.
- Rate wise, 2019 was 21.6 per 100,000, while in 2018 it was 20.7 per 100,000 (CDC, 2021). Of the 70,630 overdose deaths in 2019, 70.6% of them were due to opioids, that is 49,860 overdose deaths¹.
- The most recent report in 2021 by the CDC reports that overdose death from opioids has increased from 56,064 in 2020 to 75,673 in 2021¹.

Methods

Databases: PUBMED and CINAHL databases were utilized

Keywords: Pain, Music, Postoperative surgery, Orthopedic surgery .

Exclusion criteria: Studies written before 2015 were eliminated, not written in English, nonrandomized control trials, not relevant to PICO

Results: Eight articles retrieved and five included in the review

Literature Review

Authors (Year)	Results	Level of Evidence	Quality Rating
Chen et al. (2015)	No statistically significant change was found in pain and opioid administration post operatively in postoperative recovery (P= 0.57), and in ward after surgery (p=0.89)	2	B
Gallagher et al. (2018)	Statistically significant findings. The mean difference of pain score was recorded at 1.03 (p<0.001), on average, there was a 1.25 pain score improvement in experiment group.	2	B
Hsu et al. (2017)	Music listeners had statistically significant decrease in pain levels (p < 0.05) and higher improvement of knee flexion (p<0.01)	3	B
Laframboise-Otto et al., (2021)	Intervention group reported significantly lower pain intensity on day of surgery post operation (p=0.02), and significant lower pain on two out of three measurements on postoperative day 1 (morning: p = .04; noon: p = .01). No statistically significant difference in opioid analgesic administration in the hospital or post discharge.	2	B
Leonard, H.,(2019)	no statistically significant change was found in pain. Exercise adherence measures using mixed ANOVA, no significant difference between control and intervention group.	2	C

- Gallagher et al. (2018) found that intervention group had an average improvement of 1.25 (1.02 to 1.55) points in numeric pain scale of 0 to 10 compared to 0.25 average (-.02 to 0.52) in the control group (mean difference 1.03. p < .001)³.
- Gallagher et al. (2018) similarly found that 41% of control patients reported improvement in pain pre-to post surgery, compared with 73% of intervention group (p < .001)³.
- Hsu et al. (2017) found that first day post-surgery pain levels were low for MT group with significant difference when compared to control group (p < .05). At the end of the last session, MT group pain level averaged at 0.06, compared with 2.14 for control group (p < 0.01)⁶.
- Laframboise-Otto et al. (2021) calculated statistically significant differences between MT group and control group pain levels in postop day one (p= 0.02), postop day two (p=.003), and post-discharge day two (p=.03)⁷.
- Chen et al. (2015) recorded pain scores of MT group (3.07) and control (2.87) following MT intervention (p=0.53). This suggested music has no effect on pain levels postoperatively².
- Chen et al. (2015) also found MT group standardized opioid unit administered (12.04) compared with control standardized opioid units administered (12.90) was not statistically different (p=0.89)².
- Leonard (2019), self-reported pain of control group was 6.66 and MT group was 6.50 (p=.86)⁸.

Acknowledgments

Dr. Luana Colloca (Reader)

Implication for Nursing Practice and CNL Role

Implication for Nursing Practice: reducing need for opioid use postoperatively may increase patient safety. Reducing the risk of possible opioid misuse due to postoperative opioid administration and home prescription, as well as adverse effects including respiratory depression, sedation, and hypotension in the hospital.

- Of approximately 50 million surgical procedures annually in the United States, about 50% to 75% inadequately manage pain.
- Two things are apparent, poor pain management is an issue, and indiscriminate opioid use may pose a risk for misuse.
- Music therapy is a simple and safe intervention that can be utilized by nurses as adjuvant to opioid analgesics.

Clinical Nurse Leader Role: Improved Pain management and reduced opioid analgesic administration is an outcome measure.

- Outcomes manager:** The CNL will synthesizes data, information, and knowledge related to non-pharmacological pain management in order to better manage pain and reduce adverse effects related to opioid analgesics.

Summary

Pain management is an important responsibility of the nurse and when managed well can improve patient outcomes and satisfaction. This project reviewed the effectiveness of music as adjuvant for opioid analgesic in post-operative arthroplasty pain management. Although the studies analyzed showed mixed results, music therapy is a simple intervention to implement in clinical settings. Further research is necessary to determine the effectiveness of music therapy for pain management and reduction of opioid analgesic in different settings, including post-discharge.

References

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