



The Effect of Music Therapy Intervention on Pain and Anxiety in Adult Patient Undergoing Total Shoulder Arthroplasty

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Introduction

- Despite multimodal pain management strategies for patients undergoing shoulder surgery, many patients still experience significant post-surgical pain following their procedures.
- Post-surgical pain has profound effects on patients’ recovery process and overall long-term outcomes.
- The purpose of this study was to investigate if music therapy interventions would reduce pre- and post-operative pain and anxiety in patients undergoing total shoulder arthroplasties as compared with patients who received standard of care without music therapy.

Methods

- Patients were prospectively identified from a list of scheduled elective shoulder surgeries.
- Consented patients were randomized into 3 groups— live music therapy, recorded music therapy, and control (no music therapy).
- All patients completed the PROMIS Emotional Distress-Anxiety-Short Form and Pain Scale Survey at:
 - Pre-operative visit (Visit 1)
 - Day of surgery before pre-surgical anesthesia (Visit 2)
 - Post-surgery in the post-anesthesia care unit (Visit 3),
 - 12-24 hours after surgery (Visit 4),
 - 2 weeks post-surgery (Visit 5),
 - 6 months post-surgery (Visit 6).

	Live music (N=35)	Recorded music (N=34)	Control (N=39)	P _{overall} -Value	P _{L-c} -Value	P _{R-c} -Value
Age						
Mean (SD)	68.1 (8.26)	68.9 (8.08)	65.0 (8.83)	0.115	0.118	0.056
Sex				0.707	0.650	0.407
Male	17 (48.6%)	15 (44.1%)	21 (53.8%)			
Female	18 (51.4%)	19 (55.9%)	18 (46.2%)			
Race*				0.646	0.495	>0.999
Non-white	0 (0%)	1 (2.9%)	2 (5.1%)			
White	35 (100%)	33 (97.1%)	37 (94.9%)			
BMI				0.115	0.100	0.064
Mean (SD)	31.0 (6.55)	30.5 (7.41)	33.7 (7.06)			
Hx of pain				0.239	0.290	0.105
No	28 (80.0%)	29 (85.3%)	27 (69.2%)			
Yes	7 (20.6%)	5 (14.7%)	12 (30.8%)			
Use of pain medication pre op				0.246	0.225	0.133
No	30 (85.7%)	30 (88.2%)	29 (74.4%)			
Yes	5 (14.7%)	4 (11.8%)	10 (25.6%)			
Hx of depression				0.490	0.807	0.249
No	26 (76.5%)	23 (67.6%)	31 (79.5%)			
Yes	8 (23.5%)	11 (32.4%)	8 (20.5%)			
Use of anti depressants				0.564	0.928	0.250
No	29 (82.9%)	25 (73.5%)	32 (82.1%)			
Yes	6 (17.6%)	9 (26.5%)	7 (17.9%)			
Hx of anxiety*				0.257	0.176	>0.999
No	28 (80.0%)	31 (91.2%)	36 (92.3%)			
Yes	7 (20.6%)	3 (8.8%)	3 (7.7%)			
Use of anxiolytics*				0.183	0.139	>0.999
No	29 (82.9%)	32 (94.1%)	37 (94.9%)			
Yes	6 (17.6%)	2 (5.9%)	2 (5.1%)			
Total morphine equivalents (mg)				0.099	0.384	0.071
Mean (SD)	0.769 (0.535)	1.01 (1.00)	0.676 (0.344)			
Total morphine equivalent PACU (mg/kg)				0.110	0.515	0.061
Mean (SD)	0.0960 (0.0823)	0.130 (0.119)	0.0830 (0.0886)			

Overall differences in Pain Score and Anxiety-T Score Across Six Visits				
	Groups	Visits	Score difference estimates	P Value
Pain Score	Live VS. Recorded	Visit 1 to 6	-0.1329	0.4663
	Live VS. Control	Visit 1 to 6	-0.5685	0.0013
	Recorded VS. Control	Visit 1 to 6	-0.4356	0.0142
Anxiety-T Score	Live VS. Recorded	Visit 1, 2, 4, 5, 6	-1.0064	0.1791
	Live VS. Control	Visit 1, 2, 4, 5, 6	-2.7220	0.0002
	Recorded VS. Control	Visit 1, 2, 4, 5, 6	-1.7156	0.0186

Results

- 108 patients were included in this study: 35 (live music), 34 (recorded music), 39 (control).
- Pain scores were significantly decreased in both the live music group (p=0.0013) and the recorded music group (p=0.0142) compared to the control group.
- Anxiety scores were significantly decreased in both the live music group (p=0.0002) and the recorded music group (p=0.0186) compared to the control group.
- There were no statistically significant differences in pain scores (p=0.4663) or anxiety scores (p=0.1791) between the live music and recorded music groups.
- There were no statistically significant differences in total morphine equivalents of narcotic medications given throughout the hospital stay between both the live music group (p=0.384) and record music therapy group (p=0.071).

Conclusions

- Patients who received music therapy had significantly lower pain and anxiety scores compared to patients who did not receive music therapy.
- When licensed music therapists are unavailable, recorded music alone may be effective in reducing pain and anxiety.
- This study demonstrates the potential benefits of incorporating music therapy in order to minimize anxiety and post-operative pain in patients undergoing total shoulder arthroplasty with minimal risk of side effects.
- Music therapy did not demonstrate any significant effect in reducing total amounts of narcotics used postoperatively.