Content available at: https://www.ipinnovative.com/open-access-journals

Indian Journal of Clinical Anaesthesia

Journal homepage: www.ijca.in

Original Research Article

Effect of music therapy in the perioperative anaesthesia requirement in patients undergoing laparoscopic cholecystectomy

Kirti N Saxena[1]*, Devika Mishra[2], Moushumi Saha[1], Bharti Wadhwa[1]

[1]*Dept. of Anaesthesia & Intensive Care, Maulana Azad Medical College and Lok Nayak Hospital, New Delhi, India*
[2]*Dept. of Neuroanesthesia, MaxSuperspeciality Hospital, Dehradun, Uttarakhand, India*

ARTICLE INFO

Article history:
Received 08-05-2024
Accepted 18-09-2024
Available online 20-01-2025

Keywords:
Music therapy
Anaesthetic requirement
Stress response
General anaesthesia
Laparoscopic surgery

ABSTRACT

Background: Music can create conditioned relaxation and helps in reducing stress levels. In clinical practice, music therapy can be combined with pharmacological treatment modalities to achieve additive or synergistic effects and to minimize the side effects associated with polypharmacy.
Materials and Methods: 70 patients of American Society of Anaesthesiologists (ASA) classification I–II, age between 18 and 50 years with body mass index (BMI) ≤30 kg/m2 who underwent laparoscopic cholecystectomy under general anaesthesia were randomly assigned to two groups (n = 35): the music group (M) and the no-music group (NM). Intraoperative hemodynamic stability, occurrence of awareness, postoperative pain and anxiety level and patient satisfaction were evaluated and compared between two groups.
Results: The patients in the music therapy group had better awakening quality (3.76 ± 1.64 vs. 5.11 ± 2.13; $p < 0.001$) and lower level of pain according to a VAS (visual analogue scale) (2.73 ± 1.28 vs. 3.61 ± 1.40; $p < 0.001$), and higher patient satisfaction rates (73.3 vs. 36.6, $p < 0.001$). Incidence of intraoperative awareness, and intraoperative hemodynamic parameters like HR (heart rate), SAP (systolic arterial pressure), DAP (diastolic arterial pressure) and MAP (mean arterial pressure) were lower but not statistically significant.
Conclusion: Intraoperative music therapy can be an effective method to decrease perioperative pain, anxiety and incidence of intraoperative awareness with better intraoperative hemodynamic stability and less perioperative analgesic consumption. In addition, it also showed a positive effect on postoperative parameters and level of sedation.

1. Introduction

Music has proven to show its positive influence on mood, behaviour and the psychology of the patient. Listening to music alters the pain perception by releasing endorphins.[1] Thus music therapy helps in decreasing pain and analgesic requirements which have been reported in some studies.[2–4] The neural interconnections of the auditory pathway and the limbic system modulate emotional responses that are associated with the listening of music. Auditory interconnections with the hypothalamus, hippocampus, and the reticular activating system are presumed to attenuate the release of excitatory neurotransmitters, thus providing relaxation and the sedative effects of music which can have therapeutic beneficial effects on postoperative recovery.[1,4] Music therapy is a simple, inexpensive, and non-invasive intervention that can be applied advantageously during perioperative care. Laparoscopic surgeries represent an anaesthetic challenge

* *Corresponding author*.
E-mail address: kirtinath@gmail.com (K. N. Saxena).

https://doi.org/10.18231/j.ijca.2025.020

as the creation of pneumoperitoneum is associated with hemodynamic changes such as tachycardia, increased blood pressure, increased airway pressures, and effectively increased anaesthetic requirement. Intraoperative music therapy can be a non-pharmacological method that can be administered to the surgical patient undergoing laparoscopic surgery to decrease the above responses of pneumoperitonium. We studied the impact of intraoperative music therapy on the anaesthetic requirement and stress response in laparoscopic cholecystectomy performed under general anaesthesia.

2. Materials and Methods

After obtaining institutional ethical committee approval and written informed consent from the patients, this prospective, randomised, double-blinded study was conducted at our intitution on 70 patients of American Society of Anaesthesiologists (ASA) classification I–II, age between 18 and 50 years with body mass index (BMI) ≤30 kg/m2 who underwent elective laparoscopic cholecystectomy under general anaesthesia with intubation, over a year. Patients with profound mental illness, developmental disability, significant hearing loss, and those currently taking narcotics were excluded from the study.

A total of 85 patients were assessed for eligibility and finally, 70 patients were enrolled who were randomly assigned to two groups of 35 patients (n = 35) each, using a computer-generated random list (Epi info software, Centre for Disease Control and Prevention (CDC) in Atlanta, Georgia, USA, version 7.1.14): the music group (M) (n = 35) and the no-music group (NM) (n = 35). (Diagram 1) The primary aim of our study was to evaluate the patient satisfaction after surgery, while our secondary objective was to analyse intraoperative hemodynamic stability, intraoperative awareness occurrence, and postoperative pain and anxiety.

On arrival to the operation theatre (OT), all the ASA standard monitors such as electrocardiogram (ECG), pulse oximetry, non-invasive blood pressure (NIBP) and skin temperature probe were attached and baseline values were noted. In addition to these, bispectral index (BIS) and train of four (TOF-Watch) monitoring devices were also attached. All patients were given occlusive headsets connected to a CD player. The patients in group M were made to listen to classical, instrumental music (Raag Darbaari at 65-70 decibels), which was played as soon as the patient was on table and all essential monitors were attached until extubation, whereas patients in group NM were not played any music. The CD player was covered for observer blinding. After securing an intravenous (i.v.) line and starting the i.v. fluid through that, a standard general anaesthesia protocol was followed. Premedication was carried out with intravenous injection (inj.) of glycopyrrolate 0.2mg i.v and inj. fentanyl 2 mcg/kg lean body mass (LBM) in both groups. General anaesthesia was induced with inj. propofol up to 2.5 mg/kg total body weight (TBW) i.v titrated to loss of verbal response and muscle relaxation with inj. vecuronium 0.1mg/kg LBM i.v to facilitate intubation with an appropriate size cuffed endotracheal tube.Anaesthesia was maintained with controlled ventilation targeting end-tidal carbon dioxide (EtCO2) of 32-36 mmHg and with desflurane ≤ 6% and O2:N2O (oxygen: nitrous oxide) in 1:2 ratio in medium fresh gas flow targeting BIS value between 40 -60. Fentanyl infusion was started at 1mcg/kg/hour and stopped 15 minutes before the anticipated conclusion of surgery. Neuromuscular blockade was monitored with peripheral nerve stimulator and vecuronium doses were given accordingly. Residual neuromuscular blockade was reversed with neostigmine 0.05 mg/kg and glycopyrrolate 0.008 mg/kg. At the end of wound closure, the CD player was stopped and the headset was removed. The patient was extubated after return of consciousness and protective airway reflexes.

Response to pneumoperitoneum (changes in heart rate, mean arterial pressure, BSL) was documented. Requirement of additional bolus doses of fentanyl and desflurane end-tidal concentration was noted. The aim was to maintain BIS value between 40 and 60. The hemodynamic parameters, end-tidal desflurane concentration, fentanyl doses, BIS value, were recorded at following times: T1- immediately after intubation, T2- 5 min after creating pneumoperitoneum, T3- at skin closure and T4- 30 min after arrival to the recovery room. Mean arterial pressure and heart rate were also recorded.

For postoperative analgesia, aqueous diclofenac sodium was added in 100 ml normal saline and given intravenously over 30 min. At 24 hours after the surgery, patients were interviewed to determine any recall of intraoperative use of music.Sedation scores were recorded at 0, 5, 15, 30 min according to six-grade Riker sedation-agitation scale (RSAS)[4,5] (Table 1) with peripheral oxygen saturation, SBP, DBP, MAP measurements. Postoperative pain severity was assessed by a visual analogue scale (VAS: 0–10) before departing the RSAS room. According to visual analogue scale (VAS), if the patient's pain were 5 or more. Postoperative nausea and vomiting were recorded as "yes" or "no". One day after the surgery, we also evaluated the patient wake-up satisfaction using the EVAN-G scale[4,6] and the data about intraoperative awareness.

The sample size was estimated from the data of previous studies,[1] using an a level of 0.05 and a b level of 0.90 to establish a desired power of 0.80. Statistical analysis was performed using Primer of Biostatistics Statistical Software (McGraw Hill Global Education Holdings, LLC). The parameters were presented as mean ± SD and the unpaired t-test was used for comparing the demographic and clinical data. For the comparisons, P value of 0.05 or less was

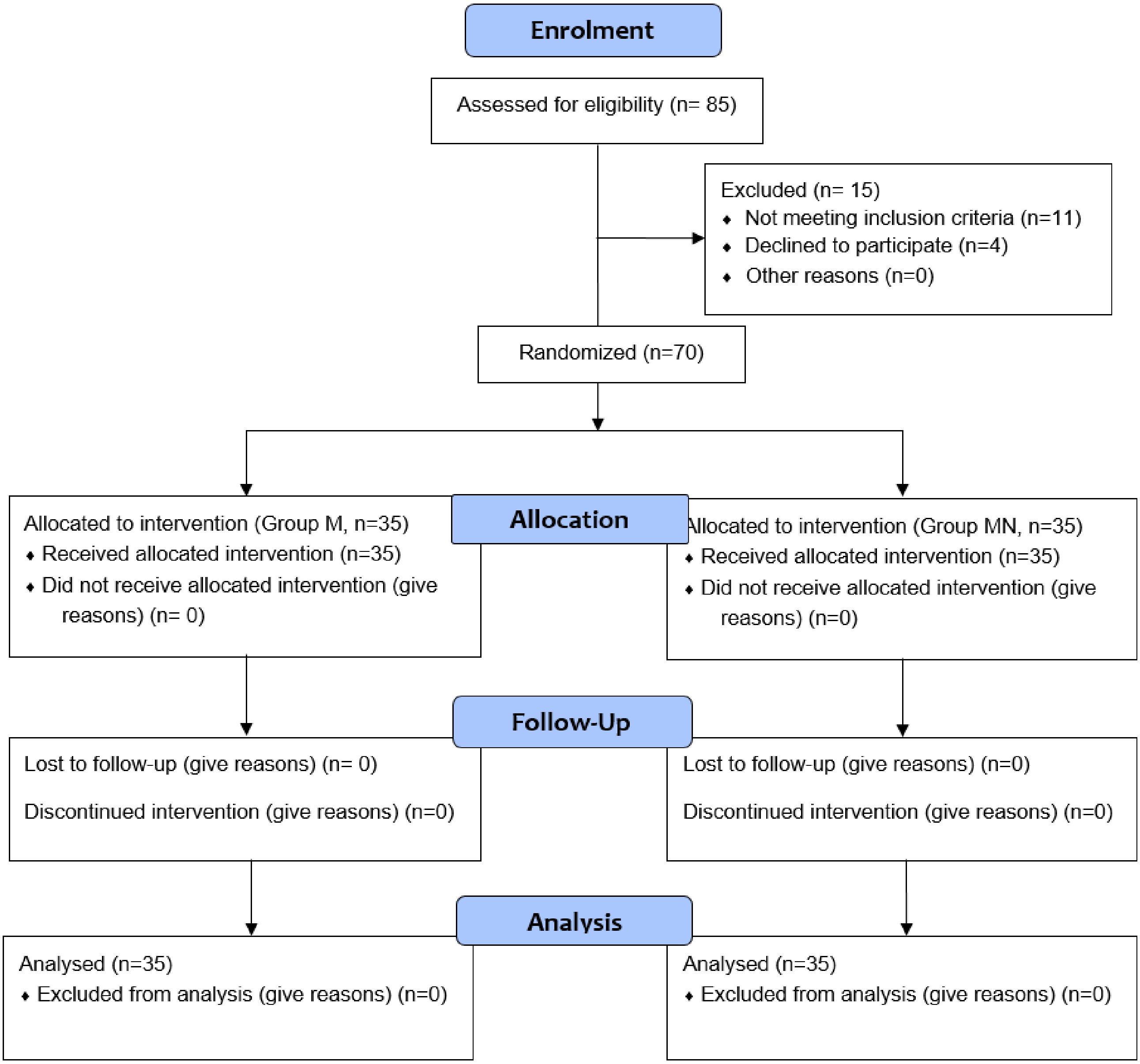

Diagram 1: Consort flow diagram- Group M: Music, Group MN: No-music

considered as statistically significant. The sample size was calculated using the a priori power analysis, setting a to 0.05 and power to 0.8. Statistical analysis was carried out using Statistical Package for Social Sciences (SPSS) standard software version 22.0. (Chicago, IL, USA). In this study, the results of a descriptive analysis of the demographic data (age, weight, height, and BMI), gender and ASA classifications were used. The data was summarized using the mean and standard deviation. The Shapiro–Wilk test was used for the assumption of normal distribution of continuous variables. If variables were normally distributed, central tendency was expressed as the mean (SD). Means were compared using independent or paired Student's t-test. Spearman correlation analysis was used to find out a correlation between non-normally distributed independent variables. Fisher exact test was used for categorical data and expressed in count, percentages. The level of statistical significance was taken as P value of ≤0.05.

3. Results

This study was carried out with 70 patients divided in two groups: the music group (M) (n = 35) and the no-music group (NM) (n = 35).

There was no statistically significant difference between groups in terms of demographic characteristics (age, BMI,

Table 1: Riker sedation-agitation scale (RSAS)

Score	Term	Description
7	Dangerous Agitation	Pulling at ET tube, trying to remove catheters, climbing over bedrail, striking at staff, thrashing side-to-side.
6	Very Agitated	Requiring restraint and frequent verbal reminding of limits, biting ETT.
5	Agitated	Anxious or physically agitated, calms to verbal instructions
4	Calm and Cooperative	Calm, easily arousable, follows commands
3	Sedated	Difficult to arouse but awakens to verbal stimuli or gentle shaking, follows simple commands but drifts off again.
2	Very Sedated	Arouses to physical stimuli but does not communicate or follow commands, may move spontaneously.
1	Unarousable	Minimal or no response to noxious stimuli, does not communicate or follow commands.

gender, ASA) ($p > 0.05$). The operation periods of the groups were similar ($p > 0.05$). (Table 2)

When the values of MAP, SAP and DAP were compared, the differences between the two groups were not statistically significant ($p > 0.05$), although the general results were lower in the music group. (Table 3)

When both groups were evaluated with RSAS, the results were lower in the music group (3.76 ± 1.64 vs. 5.11 ± 2.13), which means that the patients in the music group had a better awakening quality ($p < 0.001$). The mean VAS score for pain was lower in the music group, showing statistical significance (2.73 ± 1.28 vs. 3.61 ± 1.40) ($p < 0.001$). Patients with severe postoperative pain (VAS $\geq$ 5) were medicated with 0.5 mg/kg i.v fentanyl (4 patients of the music group vs. 9 of the control group). Patient satisfaction rate was significantly higher in the music group (73.3% vs. 36.6%) than the control group ($p < 0.001$) (Table 2). The incidence of intraoperative awareness was higher in the control group (4 cases vs. 9 cases), but the difference was not statistically significant ($p = 0.14$). (Table 4)

4. Discussion

Music therapy is has caught attention of everyone as one of the most effective simple, inexpensive, non-invasive and non-pharmacological therapeutic method that can be administered easily to the surgical patient to effectively reduce the intraoperative anaesthetic requirement and neurohumoral stress response under general anaesthesia.[1,2] If two audible stimuli at different frequencies (1–30 Hz) are applied to both ears at the same time, they are perceived as single warning in as a brainstem reaction which originates from the superior olivary nucleus in both cerebral hemispheres. This response creates a hemispheric synchronization which can be used to control of pain, stress and anxiety.[7,8]

Bondoc et al. investigated the effect of hemispheric sound on perioperative analgesic requirement in patients undergoing general anaesthesia. In this study, patients were randomized into 3 groups (n=20) : a treatment group that received Hemisync sounds, a music group that received music and a control group that had a blank cassette tape. All subjects underwent a standard general anaesthesia with propofol-nitrous-oxygen-vecuronium and fentanyl infusion. They found that the use of Hemisync sounds before and during general anaesthesia reduces intraoperative analgesic requirements, postoperative pain scores, and discharge time.However, there was no difference between the groups in terms of intraoperative hemodynamic parameters (heart rate, blood pressure levels) and postoperative nausea, vomiting.[7] In our study, we too administered fentanyl infusion for intraoperative analgesia and we concluded that fentanyl consumption was significantly reduced in the music group, similarly to the study of Bondoc et al.

Allen et al. reported that perioperative music therapy reduced the stress-induced hypertensive response in a group of geriatric patients who underwent ophthalmic surgeries under local anaesthesia. The heart rates, systolic and diastolic blood pressures of the patients listening to the music were found to be similar to those measured one week before surgery. This positive effect of music was thought because of its ability to redirect the attention of the patient to the music from surgery. In addition, music seems to increase the feeling of personal control in postoperative period which ultimately leads to a general feeling of well-being.[9] In our study, it was observed that intraoperative musical stimulation reduced the levels of HR, SBP, DBP, MAP but it was not statistically significant compared to the control group. Similarly to our study, there are other studies showing that music therapy has no effect on hemodynamic parameters.[1,10,11]

In contrast to above, the music showed to reduce blood pressure in hypertensive rats. Here, music-therapy applied to rats showed to increase blood calcium levels which caused consequent increase of dopamine synthesis in the brain via a calmodulin-dependent system. This increase in dopamine level is thought to decrease blood pressure by inhibiting sympathetic activity. So, music therapy may effectively help in relieving the symptoms in diseases with dopaminergic dysfunction.[12,13]

Table 2: Demographic characteristics

Variable		Group M (n = 35)	Group NM (n = 35)	p -Value
Age(years) mean ± SD a		51.93 ± 18.68	51.56 ± 18.05	0.81
Gender (Male/Female)		29/31	27/33	0.71
BMI(kg/m^2) mean ± SD [a]		25.47 ± 3.98	26.81 ± 4.76	0.98
ASA-PS class [b]	**Class I**	23 (38.3%)	28 (46.6%)	0.14
	Class II	37 (61.6%)	32 (53.8%)	

[a] SD: Standard deviation; [b] ASA-PS: American Society of Anaesthesiologist Physical Status

Table 3: Comparison of intraoperative parameters

Variable	Group M (n = 35)	Group NM (n = 35)	p -Value
Duration of surgery mean ± SD	139.75 ± 9.65	141.03 ± 10.8	0.49
Duration of anaesthesia mean ± SD	159.58 ± 8.88	150.60 ± 9.17	0.53
MAP[c] (mmHg)[d] mean ± SD	85.13 ± 10.42	86.66 ± 10.73	0.568
HR[e] (beat/minute) mean ± SD	77.56 ± 9.66	79.63 ± 13.84	0.730

[c] MAP: Mean arterial pressure; [d] mmHg: Millimetre of mercury; [e] HR: Heart rate

Table 4: Effects of music therapy on recovery quality, VAS during recovery, patient satisfaction and intraoperative awareness

Parameters	Group M(n = 35)	Group NM(n = 35)	P value
Riker scale (quality of recovery)	3.76 ± 1.65	5.11 ± 2.13	<0.001
<5	44 (73.3%)	25 (41.6%)	
≥5	16 (26.6%)	35 (58.3%)	
VAS[f] during recovery	2.73 ± 1.28	3.61 ± 1.40	<0.001
<5	56 (93.3%	51 (85%)	
≥5	4 (6.6%)	9 (15%)	
Patient satisfaction	44 (73.4%)	22 (37.6%)	<0.001
Intraoperative awareness	4 (6.6%)	9 (15%)	0.14

[f] VAS: Visual analogue scale

Anxiolytic effects of music were also studied as a treatment modality in eliminating preoperative anxiety. Minimizing anxiety in the preoperative period prevents undesired reflex cardiovascular response and also reduces anaesthetic consumption.[14,15] Wang et al. studied effect of music on anxiety in the preoperative period on 99 patients undergoing day surgery. No preoperative sedation was given to any of the patients. On the day of the surgery, music of patient's own choice was played for 30 min in preoperatively. The anxiety levels of the patients were evaluated with the 40 item State/Trait Anxiety Inventory before and after this application. In addition, measurements of serum cortisol and catecholamine levels (neuroendocrine variables of anxiety) and blood pressures and heart rate (physiological indicators of anxiety) were also performed simultaneously. They concluded that music therapy effectively reduced anxiety, but did not affect hemodynamic parameters such as blood pressure, heart rate, and serum cortisol and catecholamine levels.[10] We evaluated the preoperative or postoperative anxiety in our study by using a 5 point questionnaire and found out that patients in music group had less postoperative anxiety as compared to non-music group. We also used the Riker sedation agitation scale (RSAS), a commonly used scale, to measure the level of postoperative sedation and concluded that the sedation scores of the patients in the music group were higher than those of the control group, similar to other studies.[4]

Koçh et al. found that music therapy significantly reduces anxiety and BIS values and sedative drugs requirement during regional anaesthesia.[13] In their previous study they showed that music therapy also decreased the requirement of propofol to provide for adequate sedation in patients with controlled sedation undergoing urological surgery under spinal anaesthesia. The author also reported that opioid consumption in patient controlled analgesia was decreased by 44% in music therapy group.[16] Similarly, Nilsson et al. found that music therapy reduced the pain and analgesic drugs requirement. They studied 90 patients who underwent abdominal hysterectomy under general anaesthesia. They were randomly divided into three groups- music, therapeutic suggestion with music and control group. They reported that patients in the music group presented less pain and analgesic requirements, and recovered earlier than the others. In addition, fatigue sensation at discharge was less frequently observed in the groups of music and therapeutic suggestion with music. However; music therapy did not reduce postoperative nausea and vomiting.[17] In this study, as in our study, patient-controlled analgesia was used as a routine technique in the treatment of pain, and similarly, the amount of analgesic consumed in the music group was found to be lower. In addition, postoperative nausea and vomiting in our study did not differ between the music and control groups. Also, we observed that in the music group, early postoperative parameters and sedation scores were positively affected.

Music therapy has also been studied on patients undergoing bronchoscopy by Dubois et al and they concluded that the rate of satisfaction was higher in the music group.[18] Another similar study by 20. Bechtold et al. patients who underwent colonoscopy under general anaesthesia were studied and they showed the rate of satisfaction in the music group was higher than in the control group (96.3% vs. 56.1%, respectively) $p < 0.0001$.[19] Later, in a meta-analysis published in 2009 by the same author on 8 randomized trials involving 712 patients under general anaesthesia, satisfaction was found significantly higher in the music group.[20] Several other studies have followed confirming that music has positive effects on patient satisfaction.[21,22]

In our study, we examined the incidence of intraoperative awareness with music therapy. Kahloul et al. examined 140 patients who underwent abdominal surgery under general anaesthesia and they reported significantly more episodes of intraoperative awareness in patients without music therapy.[23] Similarly, in our study, the incidence of intraoperative awareness was higher in the control group (4 patients in the music group vs. 9 patients in the control group) but not statistically significant ($p > 0.05$).

The use of specific Raga music was used as ragas of Indian classical music have been shown to cause specific effects on the mood of a person. Raga Darbari helps settle mental activity, supports head comfort, mental ease and calmness and normal breathing resulting in restful quality of sleep and has been used as a cure for insomnia and inducing sleep.[24]

5. Conclusion

Thus to conclude we would like to state that music therapy is a non-pharmacological method with practically no costs, easy-to-apply, without side effects, that increases the sedation and reduces perioperative pain levels, as observed in previous clinical trials. Music therapy can be accepted as an effective method intraoperatively and postoperatively when applied to the patients undergoing laparoscopic cholecystectomy under general anaesthesia. It has shown to decrease perioperative pain level, anxiety level, may provide better intraoperative hemodynamic stability with less incidence of intraoperative awareness and also effectively reduces perioperative analgesic consumption. In addition, we showed that it has positive effects on postoperative parameters and level of sedation. However, the experience on this subject is still very limited despite the increasing number of trials. More efforts are needed to ensure that music therapy gains a more respectable and distinct place in the modern health care system. There is also a need for prospective multi-centered, double-blinded, randomized controlled clinical trials involving more patients with blood tests investigation. We also think that human and animal studies would be useful to define the different mechanisms of action that would explain the positive effects of music therapy.

6. Sources of Funding

None.

7. Conflict of Interest

None.

References

1. Kalyani NP, Poonam GG, Shalini KT. Impact of intraoperative music therapy on the anesthetic requirement and stress response in laparoscopic surgeries under general anesthesia. *Ain-Shams J Anaesthesiol*. 2015;8:580–4.
2. Thakare A, Jallapally A, Agrawal A, Salkar P, Agrawal A, Sutar R, et al. Music Therapy and Its Role in Pain Control. In: Agrawal A, Sutar R, Jallapally A, editors. Music in Health and Diseases. London: IntechOpen; 2022. doi:10.5772/intechopen.102617.
3. Flanagan DA, Kerin A. How Is Intraoperative Music Therapy Beneficial to Adult Patients Undergoing General Anesthesia? A Systematic Review. *Anesth eJ*. 2017;5(2):5–13.
4. Gökçek E, Kaydu A. The effects of music therapy in patients undergoing septorhinoplasty surgery under general anesthesia. *Braz J Otorhinolaryngol*. 2020;86(4):419–26.
5. Riker RR, Picard JT, Fraser GL. Prospective evaluation of the Sedation-Agitation Scale for adult critically ill patients. *Crit Care Med*. 1999;27(7):1325–9.
6. Auquier P, Pernoud N, Bruder N, Simeoni MC, Auffray JP, Colavolpe C, et al. Development and validation of a perioperative satisfaction questionnaire. *Anesthesiology*. 2005;102(6):1116–23.
7. Dabu-Bondoc S, Nadivelu N, Benson J, Perret DKZ. Hemispheric synchronized sounds and perioperative analgesic requirements. *Anesth Analg*. 2010;110(1):208–10.
8. Dabu-Bondoc S, Drummond-Lewis J, Gaal D, Mcginn M, Caldwell-Andrews AA, Kain ZN, et al. Hemispheric synchronized sounds and intraoperative anesthetic requirements. *Anesth Analg*. 2003;97(3):772–5.
9. Allen K, Golden LH, Izzo JL, Ching MI, Forrest A, Niles CR. Normalization of hypertensive responses during ambulatory surgical stress by perioperative music. *Psychosom Med*. 2001;63(3):487–92.
10. Wang SM, Kulkarni L, Dolev J, Kain ZN. Music and preoperative anxiety: a randomized, controlled study. *Anesth Analg*. 2002;94(6):1489–94.
11. Migneault B, Girard F, Albert C, Chouinard P, Boudreault D, Provencher D, et al. The effect of music on the neurohormonal stress response to surgery under general anesthesia. *Anesth Analg*. 2004;98(2):527–32.
12. Sutoo D, Akiyama K. Music improves dopaminergic neurotransmission: demonstration based on the effect of music on blood pressure regulation. *Brain Res*. 2004;1016(2):255–62.
13. Pacchetti C, Mancini F, Aglieri R, Fundarò C, Martignoni E, Nappi G. Active music therapy in Parkinson‘s disease: an integrative method for motor and emotional rehabilitation. *Psychosom Med*. 2000;62(3):386–93.
14. Twiss E, Seaver J, Mccaffrey R. The effect of music listening on older adults undergoing cardiovascular surgery. *Nurs Crit Care*. 2006;11(5):224–31.

15. Bringman H, Giesecke K, Thörne A, Bringman S. Relaxing music as pre-medication before surgery: a randomised controlled trial. *Acta Anaesthesiol Scand*. 2009;53(6):759–64.
16. Koch ME, Kain ZN, Ayoub C, Rosenbaum SH. The sedative and analgesic sparing effect of music. *Anesthesiology*. 1998;89(2):300–6.
17. Nilsson U, Rawal N, Uneståhl LE, Zetterberg C, Unosson M. Improved recovery after music and therapeutic suggestions during general anaesthesia: a double-blind randomised controlled trial. *Acta Anaesthesiol Scand*. 2001;45(7):812–7.
18. Dubois JM, Bartter T, Pratter MR. Music improves patient comfort level during outpatient bronchoscopy. *Chest*. 1995;108(1):129–30.
19. Bechtold ML, Perez RA, Puli SR, Marshall J. Effect of music on patients undergoing outpatient colonoscopy. *World J Gastroenterol*. 2006;12(45):7309–12.
20. Bechtold ML, Puli SR, Othman MO, Bartalos CR, Marshall JB, Roy PK. Effect of music on patients undergoing colonoscopy: a meta-analysis of randomized controlled trials. *Dig Dis Sci*. 2009;54(1):19–24.
21. Palmer JB, Lane D, Mayo D, Schluchter M, Leeming R. Effects of music therapy on anesthesia requirements and anxiety in women undergoing ambulatory breast surgery for cancer diagnosis and treatment: a randomized controlled trial. *J Clin Oncol*. 2015;33(28):3162–8.
22. Jayaraman L, Sharma S, Sethi N, Jayashree S, Kumra VP. Does intraoperative music therapy or positive therapeutic suggestions during general anesthesia affect the postoperative outcome? A double blind randomised controlled trial. *Indian J Anaesth*. 2006;50(4):258–61.
23. Kahloul M, Mhamdi S, Nakhli MS, Sfeyhi AN, Azzaza M, Chaouch A, et al. Effects of music therapy under general anesthesia in patients undergoing abdominal surgery. *Libyan J Med*. 2017;12(1):1260886.
24. Kulkarni SR, Shital PA. Antapurkar: Study of Darbari Kanada Raga as A Manso Anuguna Shabda Chikitsa In The Management of Nidranasha W.S.R. To Insomnia. *Int Ayurvedic Medl J*. 2017;5(11):3995–4002.

Author's biography

Kirti N Saxena, Director Professor https://orcid.org/0000-0002-2045-243X

Devika Mishra, Associate Consultant

Moushumi Saha, Ex- Senior Resident https://orcid.org/0000-0002-2851-763X

Bharti Wadhwa, Director Professor

Cite this article: Saxena KN, Mishra D, Saha M, Wadhwa B. Effect of music therapy in the perioperative anaesthesia requirement in patients undergoing laparascopic cholecystectomy. *Indian J Clin Anaesth* 2025;12(1):132-138.