

## MELODY IN MEDICINE: CAN MUSIC ELEVATE EACH STAGE OF SURGERY?

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### Summary

Listening to music during surgery is a widespread phenomenon in healthcare institutions globally. Music can have both positive and negative impacts on the stressful and challenging surgical process. Scientific studies by Kahloul et al. (2017), Zybartaite and Gedrime (2021), and Ahmad (2017) confirm that music is an effective and economical tool to reduce stress. According to Boghadady and Kvist (2020), playing classical music at a moderate volume can enhance the speed and accuracy of surgical tasks. However, it's important to acknowledge that music may hinder communication and concentration (Narayanan & Gray 2018; Weldon et al. 2015; Shambo, Umadhay & Pedoto 2015), and contribute to time inefficiencies arising from the selection of music types (Sarla 2022). This qualitative study, conducted through semi-structured interviews, aimed to analyze how music influences teamwork during the perioperative stages. The study anticipates contributing to patient safety, work efficiency, team satisfaction, and cost reduction in the healthcare system. Results and conclusions: All participants had a positive view of listening to music during surgery, with preferences varying across perioperative stages. Anesthesiologists and operating room nurses often choose the type of music, while sometimes no specific team member is assigned to this role. Steady rhythm genres don't disrupt communication and can alleviate emotional tension. High-rhythm genres may increase tension and fatigue, disrupting concentration. Fast-paced genres can improve mood, and different genres don't necessarily affect surgical duration. Slow-tempo genres may reduce emotional fatigue. High music volume can impair communication and concentration. An ideal music source in operating theaters should be compact, easily disinfected, and simple to control.

### Introduction

Collaboration among various healthcare professionals, including surgical staff members, plays a crucial role in delivering healthcare services. The quality of communication not only impacts surgical outcomes but can also contribute to medical errors (Kumar, Dash & Chawla, 2013). Surgical teams often experience stress in the operating room, which can adversely affect overall performance (Sonoda et al., 2017; Sonoda, Onozuka & Hagihara, 2017; Kumar, Dash & Chawla, 2013; Anton et al., 2015). Therefore, enhancing teamwork among healthcare professionals in operating theatres is vital for achieving positive healthcare outcomes. This involves promoting effective communication and implementing measures to mitigate stress during work. As highlighted by Zybartaite and Gedrime (2021), "Music is one such tool" (p. 5).

Listening to music during surgeries is a widespread practice in healthcare facilities globally. This topic is actively researched and sparks controversy within the global scientific community. It is approached from two perspectives, with both positive (Zybartaite & Gedrime 2021; Fu et al. 2021; Yamasaki et al. 2016; Kumar, Dash & Chawla 2013; Narayanan & Gray 2018; Ahmad 2017) and negative (Morris & Linos 2013; Narayanan & Gray 2018; Weldon et al. 2015; Shambo, Umadhay & Pedoto 2015; Lies and Zhang 2015; Han et al. 2021; Sarla 2022) effects observed.

While music can enhance the psychological atmosphere of the operating theatre, creating a more positive and calming ambiance (Zybartaite & Gedrime 2021; Ahmad 2017; Kahloul et al. 2017), it's crucial to note that the loudness and genre of the music impact surgical task performance (Yang et al. 2022). Consequently, there is a necessity to establish guidelines for music played during surgery in healthcare settings. These guidelines should outline when music is appropriate or not during surgery, the optimal volume for playing it, and ensure the selection of effective genres for the best outcomes.

**Aim:** To analyze the influence of music on teamwork during the stages of the perioperative period.

### Methodology

**Research Method and its Validity.** A qualitative study was conducted using semi-structured interviews. This research method was chosen to thoroughly explore the diverse attitudes and experiences of the subjects (Gaižauskaitė and Valavičienė 2016). Specific objectives included: 1) identifying the attitudes of the surgical team members towards listening to music during surgical procedures. 2) determining the team leader responsible for choosing the genre of music; and 3) assessing the impact of music genre on teamwork during surgical procedures.

**The Sample.** The research encompassed individuals from various medical roles, including surgeons, anesthesiologists, anesthetists, operating room nurses, and nursing assistants. Employing the purposive sampling method, participants were chosen based on specific criteria: 1. Those actively working in the operating rooms of Lithuanian healthcare institutions during the data collection period. 2. Individuals who experienced occasional or regular exposure to music in the operating room during their professional duties. 3. Respondents who willingly provided written consent to partake in the study. No restrictions were imposed on the age, gender, education, or experience of the subjects.

**The Instrument.** The research data collection utilized a semi-structured interview approach, chosen for its capacity to pose supplementary questions that could elucidate responses during the interviews. Remote communication with participants was established, with calls scheduled at mutually agreeable times via mobile devices, affording subjects the flexibility to select an appropriate environment for the interview. Interviews typically lasted for an average of 20 minutes. Each session commenced with a notification to the participants regarding audio recording, and only after securing their consent were the interviews recorded on an audio recorder through a personal mobile device, and subsequently transcribed. The study's questionnaire, originally crafted by the authors based on scrutinized scientific literature, encompassed 16 questions distributed across 4 sections. Demographic inquiries constituted the first part, the second segment focused on discerning the surgical team members' perspectives on music throughout various stages of the surgical process, the third segment delved into the team leader's role in selecting music genres for surgical operations, and the fourth segment aimed to unravel the impact of diverse music genres during surgery.

**Ethical Considerations.** Approval for conducting this study was granted under Permission No. KT-122 from the

Research Ethics Committee at Vilnius University's Faculty of Medicine. All interviewees provided informed consent, ensuring their voluntary involvement in the study. Participants were briefed on the study's topic, purpose, and objectives, and were informed of their right to decline participation at any stage without providing reasons. Additionally, the confidentiality of personal data was assured.

**Data Processing and Analysis.** The researchers adhered to impartiality principles while analyzing the research data. They analyzed the content of conducted interviews by transcribing audio recordings and thoroughly reviewing the text. Significant words from participants' answers were gathered until no new information emerged. These words were then organized into subcategories, further grouped into broader categories, and accompanied by exact quotes from the participants.

### Results and Discussion

**Demographic Characteristics.** The sample comprised 6 interviewees from different surgical teams, resulting in a diverse range of operations in which the subjects typically participated. The operating team was consistently composed of various professions and specialties, including a surgeon, two operating room nurses, an anesthesiologist, an anesthetist, and support staff, specifically an operating room nursing assistant. The subjects' ages ranged from 30 to 56 years, their experience in the operating theatre spanned from 2 months to 31 years, and their overall experience in the healthcare system ranged from 2 months to 39 years. The majority of subjects were employed in tertiary care institutions, and their workload varied from half-time to one-and-a-half-time.

*The Effect of Music During Different Stages of the Perioperative Period.* All participants were positive about listening to music but at different stages of surgery. In the preoperative phases - the first operating room nurse and the nursing assistant reported experiencing calming and mood-enhancing effects of music, one of the surgical nurses reported calming and mood-enhancing effects of music, and the second surgical nurse reported only the calming effect. The anesthetist noted the mood-enhancing effect of music. In the intraoperative phases, the surgeon reported experiencing the calming effect of music, the nursing assistant reported that music helps to perform tasks more efficiently, and the anesthesiologist and the anesthetist reported experiencing a mood-enhancing effect of music. It is important to mention that one of the operating room nurses identified that the high volume of music during surgery can interfere with concentration. In the postoperative phases, one of the operating room nurses and the nursing assistant reported more efficient task performance, and both surgical nurses and the nursing

assistant also reported the mood-enhancing effect of music.

Positive attitudes toward listening to music among surgeons, but without distinguishing between different phases of the perioperative period, have been demonstrated in studies conducted in the Netherlands (Fu et al. 2021), Australia (Yamasaki et al. (2016), India (Kumar, Dash & Chawla 2013), New Zealand (Narayanan & Gray 2018), and Israel (Ullmann et al. 2008).

*The Team Member Who Chooses the Genre of Music.*

The choice of music genre during surgery is typically made by anesthesiologists, who are often away from the sterile field, or by surgical nurses, who have insight into the team members' and patients' needs. Sometimes, the responsibility for music selection isn't assigned to a specific team member. Instead, typically the collective needs of the collaborating team members are considered. Upon request, surgeons, anesthesiologists, and anesthetists may choose either to refrain from listening to music altogether during surgery or to opt for a specific genre. A comparison with studies conducted in Israel (Ullmann et al. 2008), the United Kingdom (Weldon et al. 2015), the United States (Butler 2022), Pakistan (Ahmad 2017), and New Zealand (Narayanan & Gray 2018) reveals that the decision to play music during surgical procedures is most commonly determined by the operating surgeons.

The majority of study participants expressed a positive view regarding the current allocation of the music selection responsibility, or they did not perceive it as a problem.

*The Impact of Music Genres on Teamwork.* While participants commonly preferred a variety of music genres, with classical genres being less common and rock/pop genres even less so, it was observed that pop music was the most frequently played genre in the operating rooms during the workday. Following pop music, a variety of genres were played, and classical music was less frequently chosen. In a study conducted in New Zealand by Narayanan and Gray (2018), the majority of operating theatre team members indicated a preference for a variety of easy-listening music genres. There were fewer mentions of classical genres, and even less frequent preferences for 1980s music, as well as pop, rock, jazz, or blues. On the other hand, the most commonly played genres during surgery included a mix of easy-listening music, pop, and classical music, with rock being less frequent. Contrasting results were noted by Ullmann and colleagues (2008), where classical music was the most frequently played during surgery, followed by less frequent occurrences of folk, rock, jazz, and blues.

Most respondents in the study were positive about the genre of music most frequently listened to in the operating theatre - they found pop music to be suitable for a wide audience, and effective in relieving the emotional stress during

surgery. The classical genre listened to during the work was also evaluated positively, being described as non-distracting and harmonious, fitting to the surgical process. The different genres of music listened to were rated neutral.

When evaluating the impact of different music genres on teamwork, it was observed that genres with a consistent rhythm, such as classical music, don't disrupt communication and can alleviate emotional tension. Bohdady and Kvist (2020) assert that classical music positively influences the surgical process. Our study indicates that high rhythmic genres may heighten emotional tension and fatigue, affecting healthcare specialists' concentration, in line with Bohdady and Kvist's (2020) findings on the adverse effects of loud, high-pitched music on surgical staff concentration. Fast-paced music may enhance the mood of surgical team members, though our research suggests it doesn't significantly impact surgery duration. In contrast, Lies et al. (2015) reported in a US study that fast-paced genres lead to faster surgical task performance, and El Bohdady and Kvist (2020) found that classical music reduces surgical time. Slow-tempo music, according to our study, reduces emotional fatigue during labor, aligning with Ahmad's (2017) research in Pakistan on its anxiety-reducing effects. While our study didn't explore music volume, interviewees emphasized its importance during surgery—high volume negatively affects communication and concentration, corroborated by Yang et al. (2022) in a German study. A New Zealand study by Narayanan and Gray (2018) supports moderate music volume as most appropriate during surgery.

**Music Sources in Operating Rooms:** The choice of a suitable music source in operating rooms may include a sound system, a radio, or a CD player. However, the crucial factor is that the device should be easy to disinfect, operate, and compact. According to a study by Narayanan and Gray (2018), members of operating theatre teams identified CD and MP3 players as the most suitable music sources in these settings. In our study, all participants expressed a negative view towards individuals using headphones during surgery. They emphasized the importance of communication, teamwork, and the potential for sterility violations.

*Work Limitations:* This study is limited by a small sample size, consisting of opinions and experiences from only 6 individuals across various operational teams. Additionally, the study lacks objective measurements of the impact of music and music genres on teamwork during surgery. While the findings allow for an analysis of these influences based on the perceptions of surgical staff, the absence of objective measurements is a constraint.

*Suggestions for Future Research:* To enhance the study's robustness, future research should consider expanding the

sample size and focusing on respondents within the same teams. This would provide a more comprehensive understanding of the subject matter.

### Recommendations

This study provides recommendations for healthcare professionals engaged in surgical procedures and administrators overseeing surgical departments. The following suggestions aim to enhance the use of music in the perioperative setting:

Thoughtful consideration should be given to the selection of music genre and volume throughout the perioperative period. It is advisable to establish guidelines for music in the operating theatre in the future. Meanwhile, it is crucial to take into account each team member's preference for or against music during work.

The music-listening device used in operating theatres should not impede communication and should be straightforward to operate, compact, and easy to disinfect.

### Conclusions

1. Music positively impacted the entire operating theatre team, albeit at different perioperative stages. It benefited theatre nurses in the pre- and post-operative phases, anaesthetist pre- and intra-operatively, and the operating surgeon and anaesthesiologist during the intra-operative phase. Nurse assistant experienced a positive effect at all stages.

2. The choice of the most common music genre during surgery is influenced by anaesthesiologists, who are absent from the sterile field, and operating room nurses, who understand the needs of both - team members and patients. Alternatively, this responsibility may not be assigned to a specific team member. However, the selection of music is often based on the collaborative needs of the team members working together.

3. Music genres with a consistent beat do not impede communication and can alleviate emotional tension. High-pitched genres may heighten emotional tension, fatigue, and disrupt concentration, while fast-paced genres can enhance mood. Slow-tempo genres can reduce feelings of emotional fatigue during work. The choice of music genres does not necessarily impact the duration of the surgical process differently. The diversity of music can foster communication among operating team members, thereby enhancing collegiality.

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### MUZIKOS POVEIKIS KOMANDINIAM DARBUI SKIRTINGAIS PERIOPERACINIO LAIKOTARPIO ETAPAIS

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Raktažodžiai: muzika, įtaka, komandinis darbas, chirurginė operacija, operacinė.

Santrauka

Muzikos klausymasis chirurginių operacijų metu yra plačiai paplitęs reiškinys viso pasaulio sveikatos priežiūros įstaigose. Muzika gali teigiamai ir neigiamai veikti įtemptą, sudėtingą darbo procesą chirurginių operacijų metu. Mokslo bendruomenės narių atlikti tyrimai patvirtino, kad muzika operacinėse gali būti ekonomiškai prie-

monė mažinti sveikatos priežiūros specialistų patiriamą stresą ir nerimą. Pasak M. Boghadady ir B. Kvist (2020), nedidelio ar vidutinio garsumo klasikinė muzika operacijų metu gali pagerinti chirurginių užduočių tikslumą ir greitį, tačiau trikdyti komunikaciją, mažinti dėmesio koncentraciją, tapti laiko gaišimo priežastimi, parenkant tinkamą muziką. Šis kokybinis tyrimas buvo įgyvendintas pusiau struktūruoto interviu būdu. Juo siekta išanalizuoti muzikos įtaką komandiniam darbui skirtingais perioperacinio periodo etapais. Šio tyrimo rezultatai galėtų prisidėti prie pacientų saugumo, darbo našumo, chirurginės komandos narių pasitenkinimo gerinimo bei sveikatos priežiūros sistemos išlaidų mažinimo.

Rezultatai ir išvados. Visi tyrimo dalyviai teigiamai vertino muzikos klausymąsi operacijos metu, tačiau skirtingais perioperacinio laikotarpio etapais. Muzikos žanrą, kurio klausomasi chirurginių operacijų metu, dažniausiai parenka anesteziologai ir operacinės slaugytojos arba muzikos parinkimo funkcija apskritai nepriskirta konkrečiam komandos nariui. Tolygaus ritmo muzikos žanrai netrikdo komunikacijos ir gali mažinti emocinės įtampos jausmą. Aukšto ritmo muzikos žanrai gali didinti emocinę įtampą, nuovargį ir trikdyti dėmesio koncentraciją. Spartaus tempo muzikos žanrai gali gerinti nusiteikimą. Lėto tempo muzikos žanrai gali mažinti darbo metu patiriamą emocinio nuovargio jausmą. Skirtingi muzikos žanrai negali skirtingai paveikti chirurginių operacijų proceso trukmės. Muzikos įvairumas gali skatinti operacinių komandų narių bendravimą, gerindamas kolegiškumą. Didelis muzikos garsumas gali pabloginti darbuotojų komunikaciją bei dėmesio koncentraciją. Idealus muzikos šaltinis operacinėse turėtų būti kompaktiškas, lengvai dezinfekuojamas ir paprastai valdomas.

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