

Can listening to music reduce pain and anxiety after lung cancer surgery?

Submission date 15/09/2026	Recruitment status No longer recruiting	☐ Prospectively registered ☐ Protocol
Registration date 16/09/2026	Overall study status Completed	☐ Statistical analysis plan ☐ Results
Last Edited 15/09/2026	Condition category Cancer	☐ Individual participant data ☒ Record updated in last year

Plain English summary of protocol

Background and study aims

Surgery is a common treatment for lung cancer, but many patients experience pain, anxiety, and stress during their recovery. Medicines can help manage these symptoms, but additional non-drug approaches may also be beneficial. Listening to music has been suggested as a simple and inexpensive way to improve wellbeing and reduce discomfort in patients undergoing medical treatment. This study aims to investigate whether listening to relaxing music after thoracic surgery can reduce pain and anxiety in patients with lung cancer. The study also examines the effects of music on stress levels, vital signs, the need for additional pain medication, and levels of a substance involved in pain signalling called Substance P.

Who can participate?

Adults aged 18 to 75 years with lung cancer who are undergoing thoracic surgery and are able to speak Greek can take part.

What does the study involve?

Participants are allocated to one of two groups. Both groups receive standard postoperative care and medication. In addition, participants in the intervention group listen to 30 minutes of pre-recorded relaxing instrumental music through headphones once a day during their hospital stay, starting on the first day after surgery. Participants in the control group rest during the same period but do not listen to music. Researchers assess pain, anxiety, stress levels, blood pressure, heart rate, and the use of additional pain medication. Levels of Substance P are also measured in participants receiving the music intervention. The results are compared to determine whether music listening improves recovery after surgery.

What are the possible benefits and risks of participating?

Participants who listen to music may experience reduced pain, anxiety, or stress during their recovery. The findings may help improve supportive care for patients recovering from lung cancer surgery. Risks are expected to be minimal, although some participants may find listening to music through headphones uncomfortable or may not enjoy the selected music. Participants in the intervention group also undergo blood sampling to measure Substance P levels.

Where is the study run from?

The study is run at the Theagenio Cancer Hospital of Thessaloniki – Thoracic Oncology Surgery Department, Thessaloniki, Greece.

When is the study starting and how long is it expected to run for?

The study started recruiting participants in December 2025 and recruitment ended in March 2026. The study was completed in March 2026.

Who is funding the study?

The study is investigator-initiated and investigator-funded. The sponsor is Cyprus University of Technology.

Who is the main contact?

Dr Maria Chochou, mariachochou@gmail.com.

Contact information

Type(s)

Public, Scientific, Principal investigator

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Study information

Scientific Title

The effect of Music Medicine on postoperative pain and anxiety in patients with lung cancer undergoing thoracic surgery

Study objectives

The aim of the study was to investigate the effect of music listening (Music Medicine) on postoperative pain and anxiety in patients with lung cancer undergoing thoracic surgery. Secondary objectives were to investigate its effects on perceived stress, vital signs, additional analgesic use and Substance P levels.

Ethics approval required

Ethics approval required

Ethics approval(s)

Approved 29/05/2025, Scientific Council and Board of Directors of Theagenio Cancer Hospital of Thessaloniki (2 Alexandrou Simeonidi Street, Thessaloniki, 54639, Greece; +30 2313301848; theagenio@otenet.gr), ref: 16/29.05.2025

Primary study design

Interventional

Allocation

Non-randomized controlled trial

Masking

Open (masking not used)

Control

Active

Assignment

Parallel

Purpose

Supportive care

Study type(s)

Health condition(s) or problem(s) studied

Postoperative pain and anxiety in patients with lung cancer undergoing thoracic surgery

Interventions

Participants were allocated to either an intervention group or a control group using a non-randomized design. Both groups received standard postoperative care and pharmacological treatment.

Participants in the intervention group additionally listened to 30 minutes of pre-recorded classical, soft, relaxing instrumental music without vocals, with a tempo of 60–80 beats per minute. Music listening was conducted once daily between 15:30 and 16:30, starting on the first postoperative day and continuing until the day before hospital discharge. Participants listened through headphones and were allowed to adjust the volume.

Participants in the control group received standard postoperative care without music listening. During the corresponding assessment period, they followed the same resting conditions as the intervention group but did not listen to music and did not undergo blood sampling for Substance P measurement. Outcomes were assessed before and after the intervention/rest period during the postoperative period.

Intervention Type

Behavioural

Primary outcome(s)

1. Postoperative pain measured using a Visual Analogue Scale (VAS) at baseline preoperatively and daily at 15:30 and 16:30 from postoperative day 1 until the day before hospital discharge

2. Postoperative state anxiety measured using State subscale of the State-Trait Anxiety Inventory (STAI-S) at Baseline preoperatively and daily between 15:30 and 16:30 from postoperative day 1 until the day before hospital discharge

Key secondary outcome(s)

1. Perceived stress measured using the Perceived Stress Scale (PSS-10) at baseline preoperatively and on the day of hospital discharge
2. Additional postoperative analgesic use measured using data recording of whether each participant received at least one additional dose of analgesic medication at the postoperative period until hospital discharge
3. Vital signs, including systolic blood pressure (SBP), diastolic blood pressure (DBP) and heart rate (pulse), measured using standard methods at baseline preoperatively and daily between 15:30 and 16:30 from postoperative day 1 until the day before hospital discharge
4. Serum Substance P levels measured using Enzyme-linked immunosorbent assay (ELISA) in the intervention group at a daily time points before and after the music listening intervention from postoperative day 1 until the day before hospital discharge

Completion date

22/03/2026

Eligibility

Key inclusion criteria

1. Patients diagnosed with lung cancer
2. Patients undergoing thoracic surgery via thoracotomy or video-assisted thoracoscopic surgery (VATS)
3. Aged 18 to 75 years
4. Able to speak Greek

Healthy volunteers allowed

No

Age group

Mixed

Lower age limit

18 Years

Upper age limit

75 Years

Sex

All

Total final enrolment

30

Key exclusion criteria

1. Hearing impairment (e.g. requiring the use of a hearing aid)
2. Unwillingness to participate in the study
3. Postoperative complications requiring repeat surgery

Date of first enrolment

05/12/2025

Date of final enrolment

18/03/2026

Locations**Countries of recruitment**

Greece

Study participating centre

Theagenio Cancer Hospital of Thessaloniki – Thoracic Oncology Surgery Department

2 Alexandrou Simeonidi Street

Thessaloniki

Greece

54639

Sponsor information**Organisation**

Cyprus University of Technology

ROR

<https://ror.org/05qt8tf94>

Funder(s)**Funder type****Funder Name**

Investigator initiated and funded

Results and Publications

Individual participant data (IPD) sharing plan

IPD sharing plan summary

Not expected to be made available