

CADTH Reference List

# Noise Reducing Headphones for Post- Traumatic Stress Disorder

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## Key Messages

- We did not find any studies on the clinical effectiveness of noise reducing headphones for post-traumatic stress disorder or other mental health conditions that met our criteria for this review.
- We did not find any studies on the cost-effectiveness of noise reducing headphones for post-traumatic stress disorder or other mental health conditions that met our criteria for this review.
- We did not find any evidence-based guidelines regarding the use of noise reducing headphones for post-traumatic stress disorder or other mental health conditions that met our criteria for this review.
- We identified other references on this topic that may be of interest, which are listed in the appendix.

## Research Questions

1. What is the clinical effectiveness of noise reducing headphones for post-traumatic stress disorder or other mental health conditions?
2. What is the cost-effectiveness of noise reducing headphones for post-traumatic stress disorder or other mental health conditions?
3. What are the evidence-based guidelines regarding the use of noise reducing headphones for post-traumatic stress disorder or other mental health conditions?

## Methods

### Literature Search Methods

A limited literature search was conducted by an information specialist on key resources including MEDLINE, PsycInfo, the Cochrane Database of Systematic Reviews, the International HTA Database, the websites of Canadian and major international health technology agencies, as well as a focused internet search. The search strategy comprised both controlled vocabulary, such as the National Library of Medicine's MeSH (Medical Subject Headings), and keywords. The main search concepts were noise reducing headphones and mental health conditions, including post-traumatic stress disorder, anxiety disorders, depression, and sleep disorders. No filters were applied to limit the retrieval by study type. Where possible, retrieval was limited to humans. The search was completed on January 10, 2023, and limited to English-language documents published since January 1, 2013. Internet links were provided, where available.

### Selection Criteria

One reviewer screened literature search results (titles and abstracts) and selected publications according to the inclusion criteria presented in [Table 1](#). Full texts of study

**Table 1: Selection Criteria**

| Criteria             | Description  |
|----------------------|--|
| <b>Population</b>    | Adults with post-traumatic stress disorder or other mental health conditions   |
| <b>Intervention</b>  | Headphones, earbuds, or earplugs that reduce ambient noise (e.g., noise eliminating, noise cancelling, or white noise)   |
| <b>Comparator</b>    | Q1 and Q2: No headphones, earbuds, or earplugs; standard headphones; other types of noise reducing headphones; no comparator<br>Q3: Not applicable   |
| <b>Outcomes</b>      | Q1: Clinical benefits (e.g., improvement in mental health symptoms, improvement in sleep quality, health-related quality of life) and harms (e.g., adverse effects)<br>Q2: Cost-effectiveness (e.g., cost per quality-adjusted life-year gained, incremental cost-effectiveness ratio)<br>Q3: Recommendations regarding the use of noise reducing hearing aids (e.g., best practices, contraindications) |
| <b>Study designs</b> | Health technology assessments, systematic reviews, randomized controlled trials, non-randomized studies, economic evaluations, evidence-based guidelines   |

publications were not reviewed. Open access full-text versions of evidence-based guidelines were reviewed when available.

## Results

No health technology assessments, systematic reviews, randomized controlled trials, or non-randomized studies were identified regarding the clinical effectiveness of noise reducing headphones for post-traumatic stress disorder or other mental health conditions. No economic evaluations were identified regarding the cost-effectiveness of noise reducing headphones for post-traumatic stress disorder or other mental health conditions. Additionally, no evidence-based guidelines were identified regarding the use of noise reducing headphones for post-traumatic stress disorder or other mental health conditions.

References of potential interest that did not meet the inclusion criteria are provided in [Appendix 1](#).

## References

### Health Technology Assessments

No literature identified.

### Systematic Reviews

No literature identified.

### Randomized Controlled Trials

No literature identified.

### Non-Randomized Studies

No literature identified.

### Economic Evaluations

No literature identified.

### Guidelines and Recommendations

No literature identified.

## Appendix 1: References of Potential Interest

### Systematic Reviews

#### *Not Specific to Adults With Mental Health Condition*

Capezuti E, Pain K, Alamag E, Chen X, Philibert V, Krieger AC. Systematic review: auditory stimulation and sleep. *J Clin Sleep Med*. 06 01 2022;18(6):1697-1709. [PubMed](#)

Riedy SM, Smith MG, Rocha S, Basner M. Noise as a sleep aid: A systematic review. *Sleep Med Rev*. 02 2021;55:101385. [PubMed](#)

#### *Alternative Population*

Litton E, Carnegie V, Elliott R, Webb SA. The Efficacy of Earplugs as a Sleep Hygiene Strategy for Reducing Delirium in the ICU: A Systematic Review and Meta-Analysis. *Crit Care Med*. May 2016;44(5):992-9. [PubMed](#)

Hu RF, Jiang XY, Chen J, et al. Non-pharmacological interventions for sleep promotion in the intensive care unit. *Cochrane Database Syst Rev*. Oct 06 2015;(10):CD008808. [PubMed](#)

### Randomized Controlled Trials

#### *Alternative Population*

Garcia Guerra G, Joffe AR, Sheppard C, et al. Music Use for Sedation in Critically ill Children (MUSIC trial): a pilot randomized controlled trial. *J Intensive Care*. Jan 12 2021;9(1):7. [PubMed](#)

Townsend CB, Bravo D, Jones C, Matzon JL, Ilyas AM. Noise-Canceling Headphones and Music Decrease Intraoperative Patient Anxiety During Wide-Awake Hand Surgery: A Randomized Controlled Trial. *J Hand Surg Glob Online*. Sep 2021;3(5):254-259. [PubMed](#)

Ghezalje TN, Nasari M, Haghani H, Rezaei Loieh H. The effect of nature sounds on physiological indicators among patients in the cardiac care unit. *Complement Ther Clin Pract*. Nov 2017;29:147-152. [PubMed](#)

Mahan ST, Harris MS, Lierhaus AM, Miller PE, DiFazio RL. Noise Reduction to Reduce Patient Anxiety During Cast Removal: Can We Decrease Patient Anxiety With Cast Removal by Wearing Noise Reduction Headphones During Cast Saw Use?. *Orthop Nurs*. Jul/Aug 2017;36(4):271-278. [PubMed](#)

Czaplik M, Rossaint R, Kaliciak J, et al. Psychoacoustic analysis of noise and the application of earplugs in an ICU: A randomised controlled clinical trial. *Eur J Anaesthesiol*. Jan 2016;33(1):14-21. [PubMed](#)

Chlan LL, Engeland WC, Savik K. Does music influence stress in mechanically ventilated patients?. *Intensive Crit Care Nurs*. Jun 2013;29(3):121-7. [PubMed](#)

Chlan LL, Weinert CR, Heiderscheid A, et al. Effects of patient-directed music intervention on anxiety and sedative exposure in critically ill patients receiving mechanical ventilatory support: a randomized clinical trial. *JAMA*. Jun 12 2013;309(22):2335-44. [PubMed](#)

#### *Alternative Comparator*

Mallik A, Russo FA. The effects of music & auditory beat stimulation on anxiety: A randomized clinical trial. *PLoS ONE*. 2022;17(3):e0259312. [PubMed](#)

### Non-Randomized Studies

#### *Not Specific to Adults With a Mental Health Condition*

Ebben MR, Yan P, Krieger AC. The effects of white noise on sleep and duration in individuals living in a high noise environment in New York City. *Sleep Med*. 07 2021;83:256-259. [PubMed](#)

#### *Alternative Population*

Warjri E, Dsilva F, Sanal TS, Kumar A. Impact of a white noise app on sleep quality among critically ill patients. *Nurs Crit Care*. Nov 2022;27(6):815-823. [PubMed](#)

Lin LW, Weng SC, Wu HS, Tsai LJ, Lin YL, Yeh SH. The Effects of White Noise on Agitated Behaviors, Mental Status, and Activities of Daily Living in Older Adults With Dementia. *J Nurs Res*. Feb 2018;26(1):2-9. [PubMed](#)