

# Epidemiology of Tinnitus and Population Studies in 2025

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## A Global Picture of Risk, Vulnerability and Multisystem Interaction

Between November 2024 and October 2025, 146 publications examined tinnitus through an epidemiological lens, revealing a condition shaped by far more than auditory factors alone. These studies leveraged some of the most comprehensive datasets available, including national health surveys, biobank repositories, occupational health databases, military cohorts, and insurance registries. Their collective findings situate tinnitus within a wider network of metabolic, psychological, demographic, and environmental influences, reinforcing its status as a multisystem population health issue.

## Cardiometabolic and Systemic Health Links

*“TINNITUS IS A MULTISYSTEM, POPULATION-LEVEL HEALTH CONDITION SHAPED BY METABOLIC, PSYCHOLOGICAL, DEMOGRAPHIC AND ENVIRONMENTAL FACTORS.”*

Cardiometabolic investigations formed a major component of the literature. Multiple cross-sectional and cohort analyses concluded that tinnitus is associated with diabetes, metabolic syndrome, obesity-related indices, and specific lipid markers such as the triglyceride–glucose index and the atherogenic index of plasma. Elevated fasting glucose, haemoglobin A1c, and hypertension also showed consistent associations in mid-life and older adults.

A parallel group of studies examined systemic inflammatory and medical factors. Gastro-oesophageal reflux disease, obstructive sleep apnoea, and headache disorders were each associated with increased tinnitus prevalence or severity. A smaller number of datasets reported weak or null associations between tinnitus and cardiovascular morbidity or mortality, underscoring population heterogeneity.

# Psychiatric and Psychological Determinants

The evidence base continues to confirm that psychological factors are central to tinnitus burden. Numerous cohort studies concluded that tinnitus co-occurs with anxiety, depression, and sleep disturbance, with psychiatric symptoms outperforming audiological variables in predicting distress levels. Longitudinal and cross-lagged models demonstrated that these relationships are bidirectional: pre-existing distress increases the likelihood of tinnitus onset, and tinnitus in turn elevates later distress. Anxiety, in particular, often precedes subsequent tinnitus worsening.

Findings relating to suicidality remained consistent with prior research: suicidal ideation and behaviour were more common among individuals with severe tinnitus, especially when accompanied by insomnia or depressive symptoms.

## Demographic, Lifestyle and Occupational Influences



Across population surveys, tinnitus prevalence increased with age but plateaued in the oldest age groups. While several studies reported higher prevalence in males, this difference narrowed after accounting for occupational noise. Lifestyle evidence was mixed, although certain dietary patterns showed small but measurable effects in either protective or contributory directions. Work-related outcomes suggested that tinnitus, particularly when accompanied by hyperacusis, can impair employment capacity and contribute to sickness absence.

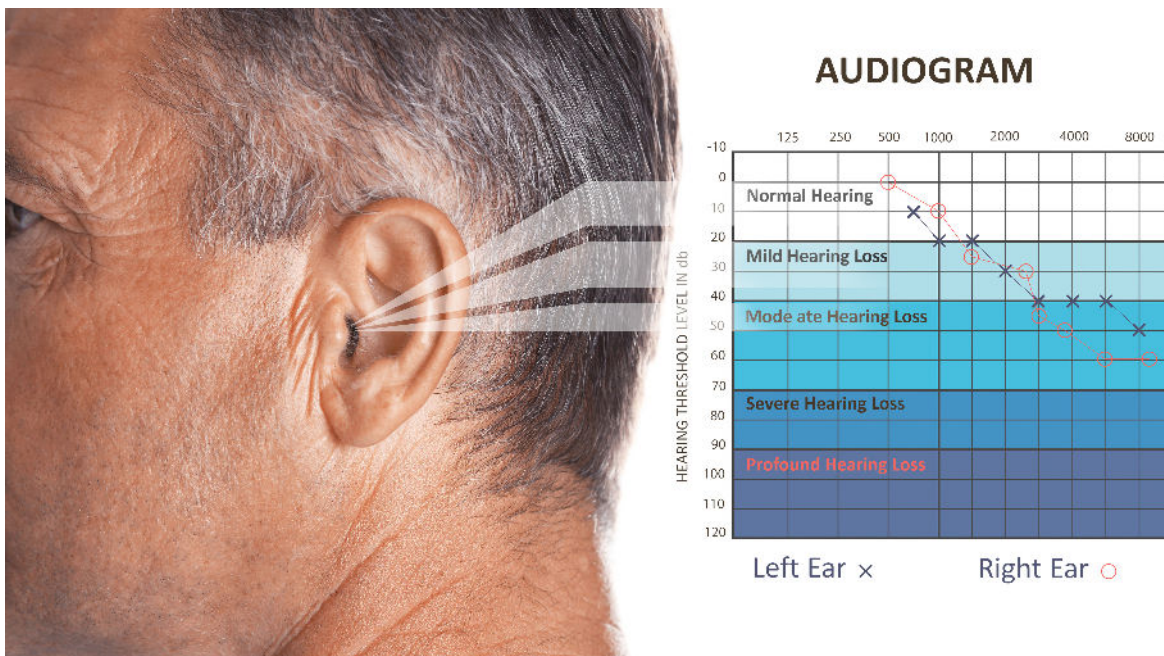
Occupational and environmental noise exposure remained one of the strongest epidemiological findings. Both civilian and military datasets consistently concluded that high-intensity occupational noise significantly increases tinnitus risk. Prospective analyses demonstrated that tinnitus frequently persists long after blast exposure or acoustic trauma. Studies in musicians, dental professionals, and industrial workers added further support, highlighting elevated prevalence and distress in chronically exposed groups.

# Auditory Function and “Hidden” Dysfunction

Several population-level studies examined auditory physiology beyond pure tone audiometry. Alterations in auditory brainstem responses, otoacoustic emissions, and masked speech perception were documented in individuals with tinnitus even when audiograms were clinically normal. These findings support the role of subclinical cochlear dysfunction—or “hidden hearing loss”—as a relevant factor in certain subgroups.

## Course, Progression and Predictors of Change

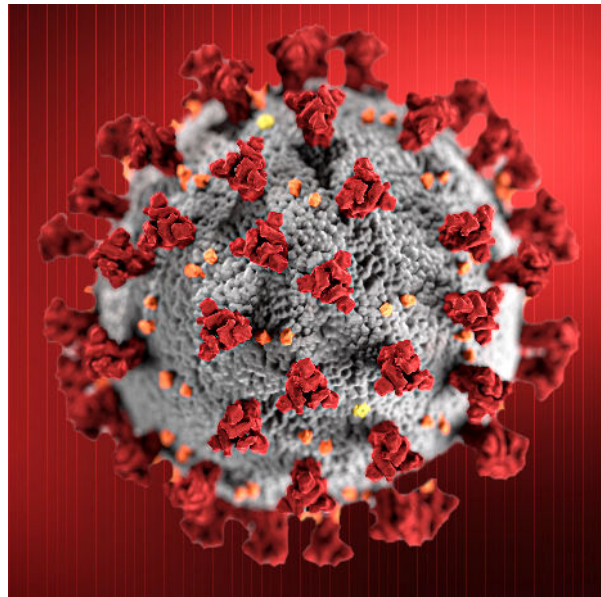
Longitudinal cohort designs provided valuable insight into symptom trajectory. While tinnitus severity is stable for most individuals, a meaningful minority experience gradual deterioration. Predictors of worsening included sleep disruption, psychiatric distress, and cardiometabolic burden. Studies on day–night hyperarousal highlighted persistent physiological activation as a potential maintaining factor. Ecological momentary assessment further demonstrated that tinnitus loudness and distress fluctuate dynamically across the day and are strongly modulated by emotional and contextual cues.





# COVID-19 and Pandemic-Related Effects

COVID-19-related research concluded that SARS-CoV-2 infection or vaccination can precede tinnitus onset for a small number of individuals, but the overall absolute risk is low. Psychological factors—stress, social isolation, lifestyle disruption—were more influential drivers of worsening symptoms during the pandemic. Individuals with pre-existing anxiety, sleep difficulties, or high tinnitus distress were most susceptible.



## Cognition, Ageing and Neurodegeneration

Studies examining cognitive decline and dementia yielded mixed results. Large biobank analyses found associations between tinnitus and cognitive impairment, but these were generally mediated by hearing loss and depression rather than tinnitus itself. Other analyses reported minimal or no independent relationship after adjusting for confounders. Overall, the evidence suggests that tinnitus functions more as a marker of multisystem vulnerability than as an independent causal factor in neurodegenerative processes.

## Overall Interpretation

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Across the 146 epidemiological studies published in 2024–2025, tinnitus emerges as a population-level phenomenon shaped by interacting metabolic, psychological, lifestyle and environmental factors. These findings argue against narrow, single-mechanism models and highlight the need for multidisciplinary approaches grounded in cardiometabolic, mental health, occupational health and auditory science perspectives

# Key New Epidemiological Learnings 2025

## **TINNITUS HAS A METABOLIC SIGNATURE**

Across multiple cohorts, tinnitus clusters with metabolic dysregulation, including glucose imbalance, lipid abnormalities and hypertension.

*“New learning: tinnitus may represent part of a broader systemic metabolic profile rather than a purely auditory disorder.”*

## **ANXIETY IS A LEADING PREDICTOR OF TINNITUS WORSENING**

Longitudinal analyses showed that anxiety frequently precedes later deterioration in tinnitus severity.

*“New learning: stabilising anxiety early may interrupt the pathway to escalating tinnitus distress.”*

## **HIDDEN HEARING DYSFUNCTION MATTERS**

ABR and otoacoustic studies demonstrated auditory dysfunction even when pure tone audiometry appears normal.

*“New learning: epidemiological definitions of “normal hearing” need to expand beyond the audiogram.”*

## **COVID-19 ACTED PRIMARILY AS AN AMPLIFIER OF VULNERABILITY**

Most pandemic-related worsening of tinnitus arose from psychological and contextual stressors rather than direct viral effects.

*“New learning: pandemic-era spikes in tinnitus burden reflect vulnerability, not widespread viral causation.”*

## **A MINORITY FOLLOW A PREDICTABLE WORSENING TRAJECTORY**

Sleep disturbance, psychiatric comorbidity and cardiovascular burden reliably identify individuals at risk of long-term deterioration.

*“New learning: early identification enables preventative, targeted interventions.”*

## **OCCUPATIONAL NOISE REMAINS THE MOST POWERFUL MODIFIABLE RISK FACTOR**

Chronic high-intensity noise exposure is consistently the strongest predictor of tinnitus across civilian and military populations.

*“New learning: prevention belongs in public health and workplace policy, not only in audiology services.”*