TINNITUS, INSOMNIA & SUICIDE

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Presentation Title : Tinnitus, Insomnia & Suicide

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Learning Objectives:

The participant will be able to describe the symptoms of tinnitus

The participant will be able to understand the basic anatomy of the ear (inner, middle, inner) and the vestibulocochlear nerve.

The participant will be able to identify the directional relationship between tinnitus and insomnia.

The participant will be able to identify types of tinnitus that warrant further evaluation and sub -specialty co -management.

The participant will become further familiar with the Tinnitus Functional Rating Scale.

Questions

Tinnitus is a perception of sound in one or both ears when there is no external source of the sound.

- True or False

(Answer: True)

Tinnitus is always associated with hearing loss.

- True or False

(Answer: False)

Tinnitus warrants further evaluation when accompanied by:

(check the most appropriate answer)

1. Pulsatile Tinnitus
2. Drop Attacks
3. Vertigo
4. Unilateral Tinnitus
5. Sudden Hearing Loss
6. Severe Insomnia
7. Suicidal Ideation
8. Bothersome Tinnitus
9. New Onset Headaches
10. All of above
11. None of the above

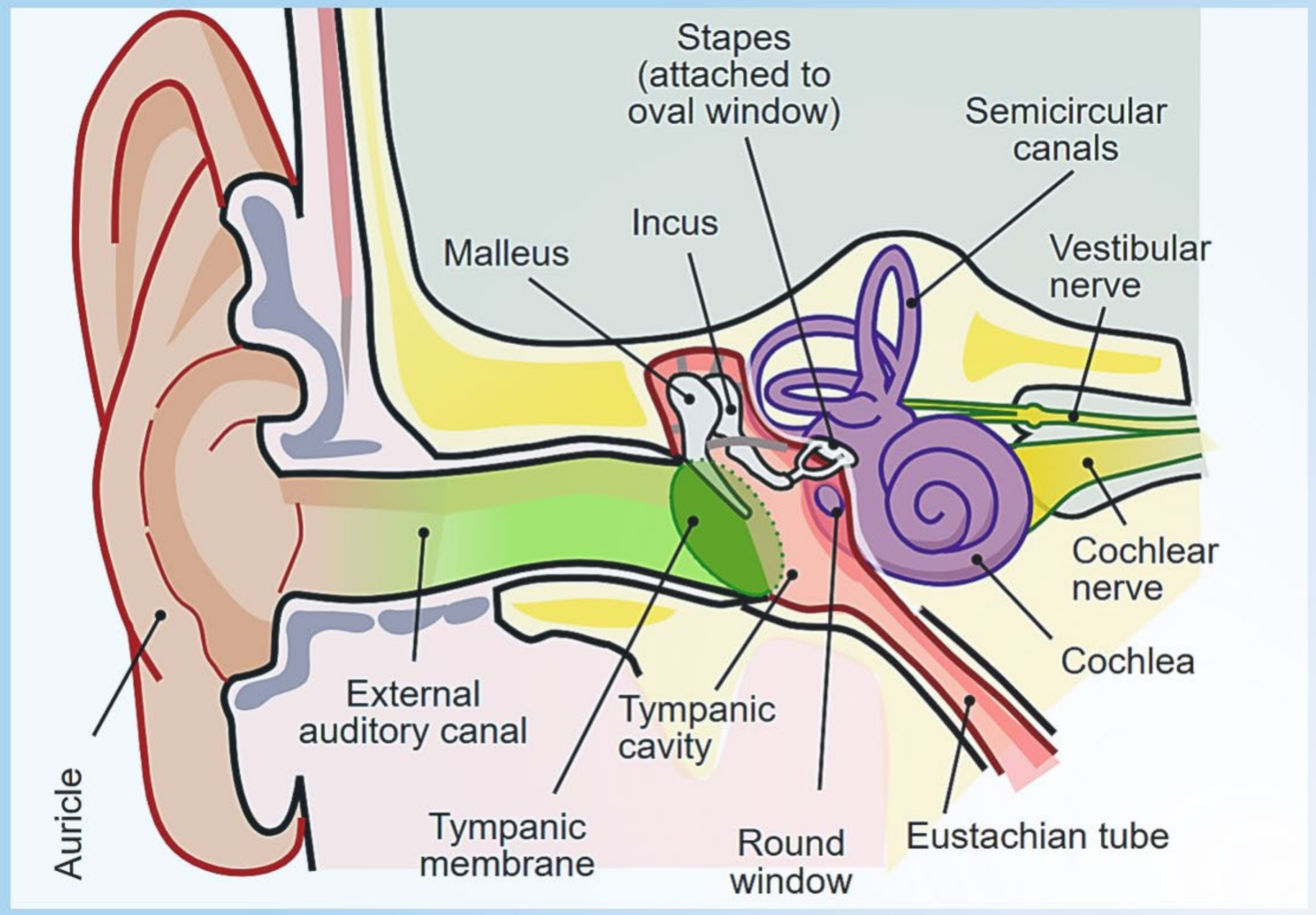
(Answer: All of the Above)

Interest In Tinnitus

How did this happen?

1) CASE 1

2) Personal Event



Lars Chittka; Axel Brockmann - Perception Space—The Final Frontier, A PLoS Biology Vol. 3, No. 4, e137 doi:10.1371/journal.pbio.0030137 (Fig. 1A/Large version), vectorised by Inductiveload

Tinnitus

A phantom perception of sound in one or both ears when there is no external source of sound (“ringing in the ears”)

Tinnitus Sound

- Ringing
- Whistling
- Mosquito (High pitched) screeching
- Cicadas
- Hissing
- Buzzing
- Whooshing
- Rustling
- Wind -blowing
- Machine -mechanical

Tinnitus Frequency

- Low Frequency (LF)
- High Frequency (HF)

Tinnitus

Gender Associations

M=F

Inconsistent

- M>F Need to control thoughts
- F>M Depression, Anxiety, Worries, Hyperacusis, Headaches Suicide attempts ,

Referrals to Psychiatry

- 55% M
- 45% F

Laryngoscope 2025 Mar 11. doi: 10.1002/lary.32118. Online ahead of print.

Suicidal Ideation and Behaviors in Adults With Tinnitus: A Systematic Review and Meta-Analysis

Lauren R McCray[1,2], Megan K Scharner[1], Shaun A Nguyen[1], Habib G Rizk[1], Ted A Meyer[1], Robert F Labadie[1], Thomas W Uhde[3], Peter R Dixon[1]

Abstract

Objective: To assess relations between tinnitus and suicidality, measured by suicidal ideation and suicide attempts.

Data sources: CINAHL, Cochrane Library, PubMed, PsycINFO, and SCOPUS databases were searched from inception through June 14, 2024.

Results: Nine studies (n = 912,013) pertaining to suicidality and tinnitus in an adult population were included. The tinnitus group experienced a significantly higher prevalence of suicidal ideation (19.5% [95% CI: 12.9%-27.1%] versus 9.9% [95% CI: 7.1%-13.2%]) and suicide attempts (1.9% [95% CI: 0.1%-5.7%] versus 0.9% [95% CI: 0.0%-3.9%]) than the control population ($p < 0.0001$). The tinnitus group had a significantly ($p < 0.001$) higher risk of suicidal ideation (RR = 2.1, 95% CI: 1.6-2.8) and suicide attempts (RR = 1.8, 95% CI: 1.3-2.4) than the control group.

Conclusion: Nearly one in five people with tinnitus will experience suicidal ideation, and nearly 2% will attempt suicide. Thus, otolaryngologists should be mindful of the increased risk of suicidality in patients with tinnitus.

Attempted Treatments

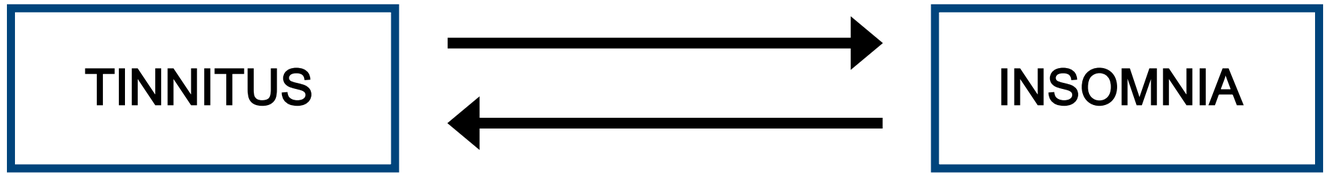
- Lenire Tinnitus Device
  - Bimodal Neuromodulation
    - Audio: Ear
    - Electrostimulation: Tongue
  - Goal: Pay less attention to tinnitus
- Transcranial Magnetic Stimulation(TMS)
- Cannabinoids
- Bioflavonoids
- NAC
- SSRI’s
- SNRI
- Anti -psychotics
- Anxiolytics

Lenire Tinnitus Technology

Lenire *(Len-ear)*, which is Latin for *'soothe'*, is the only commercially available, clinically trialed, dual mode tinnitus treatment device approved by the US FDA.

- Safety and effectiveness trialed with 600+ patients. [4]
- Successfully trialed with real-world patients.
- Technology with over 136 worldwide patents.
- More effective than sound for moderate or worse tinnitus. [3]
- At-home customized tinnitus treatment device.
- Backed and guided by healthcare professionals.
- Wireless headphones, Tonguetip and Controller included.

Bi-Directional Relationship



Tinnitus

- Peak: 60 -70 Age
- Most Common: > 40 y/o
- Children: Rare

AL-Swiahb J, Park SN
Noise Health. July -Aug 18(83): 214-219, 2016

TREATMENT

Tinnitus

Differential Diagnosis

Medications

- ASA/Ibuprofen
- Antibiotics
  - Azithromycin
- Diuretics
  - LASIX
- Hydrochlorothiazide (Plaquenil)
  - Mycophenolate

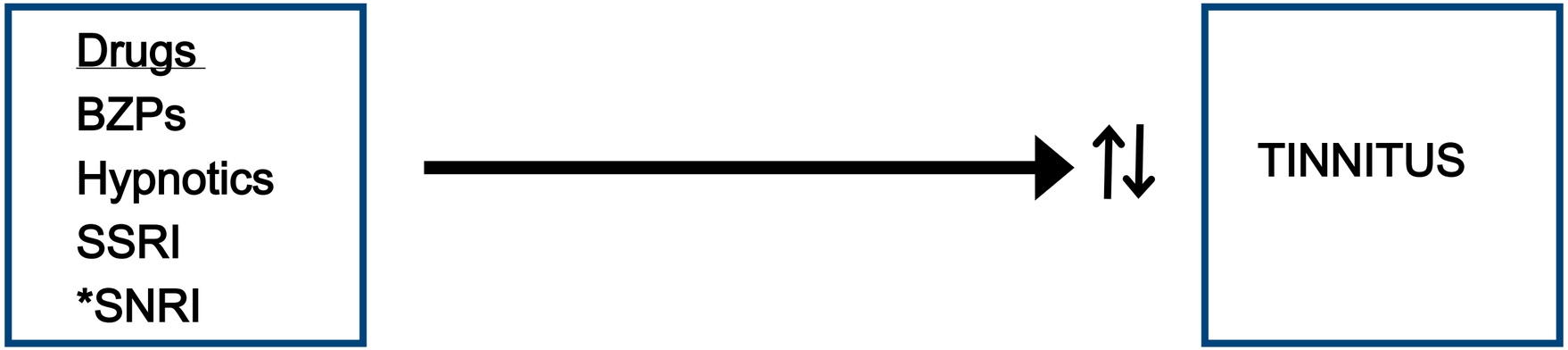
Disorders

- Sjogren’s
- TMJ
- Meniere's Disease
- AV Malformation
- Acoustic Neuromas
- Sound Trauma

Tinnitus Treatment Seeking Clients

(Target Priorities)

- Tinnitus
- Sleep Problems
- Pain (including migraine)
- Hearing
- Dizziness - Vertigo
- Anxiety - Worry
- Depression
- Energy
- Appetite - Weight
- Sexual



*Venlafaxine

Survey Instrument

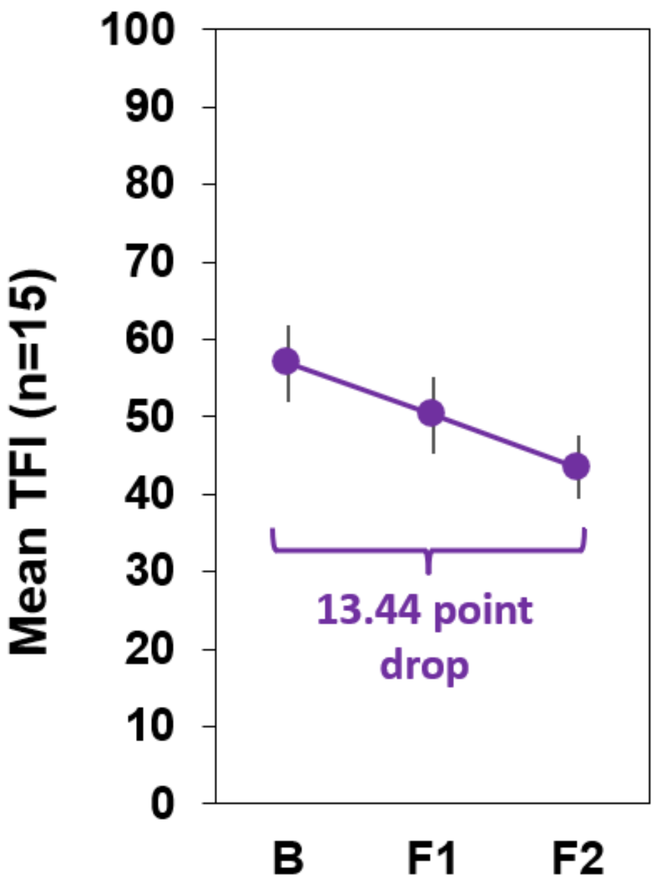
- Tinnitus Functional Index (TFI; Meikle et al. 2012)
  - 25 questions, 0-100 score.
  - an aggregate measure of all the negative impacts of tinnitus on various aspects of life
  - 8 Subscales: Intrusiveness, Sense of control, Cognition, Sleep, Auditory, Relaxation, Quality of life, Emotional
  - Meikle et al proposed for the aggregate score: Mild: <25; Significant Problem ("Moderate"): 26-50 points; Severe: >50 points
  - Suggested that a 13-point reduction in TFI score was meaningful (did not use the term "significant")

Tinnitus Clinic Data

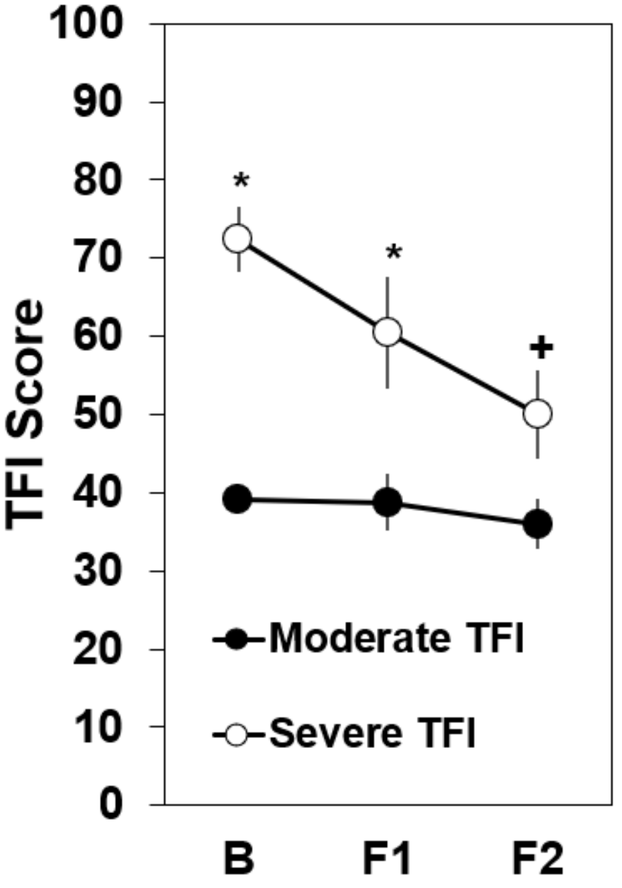
- Surveys in REDCap (pulled 12/11/23).
- 68 entries with at least baseline data
- 27 entries with at least one follow up

Metric	All	Drug X	Other
Group N	27	15	12
Average Age	56.75	57.8	55.4
No. >65	5	3	2
No. Females	11	4	7

Drug X reduces tinnitus impairment in the most severe cases.

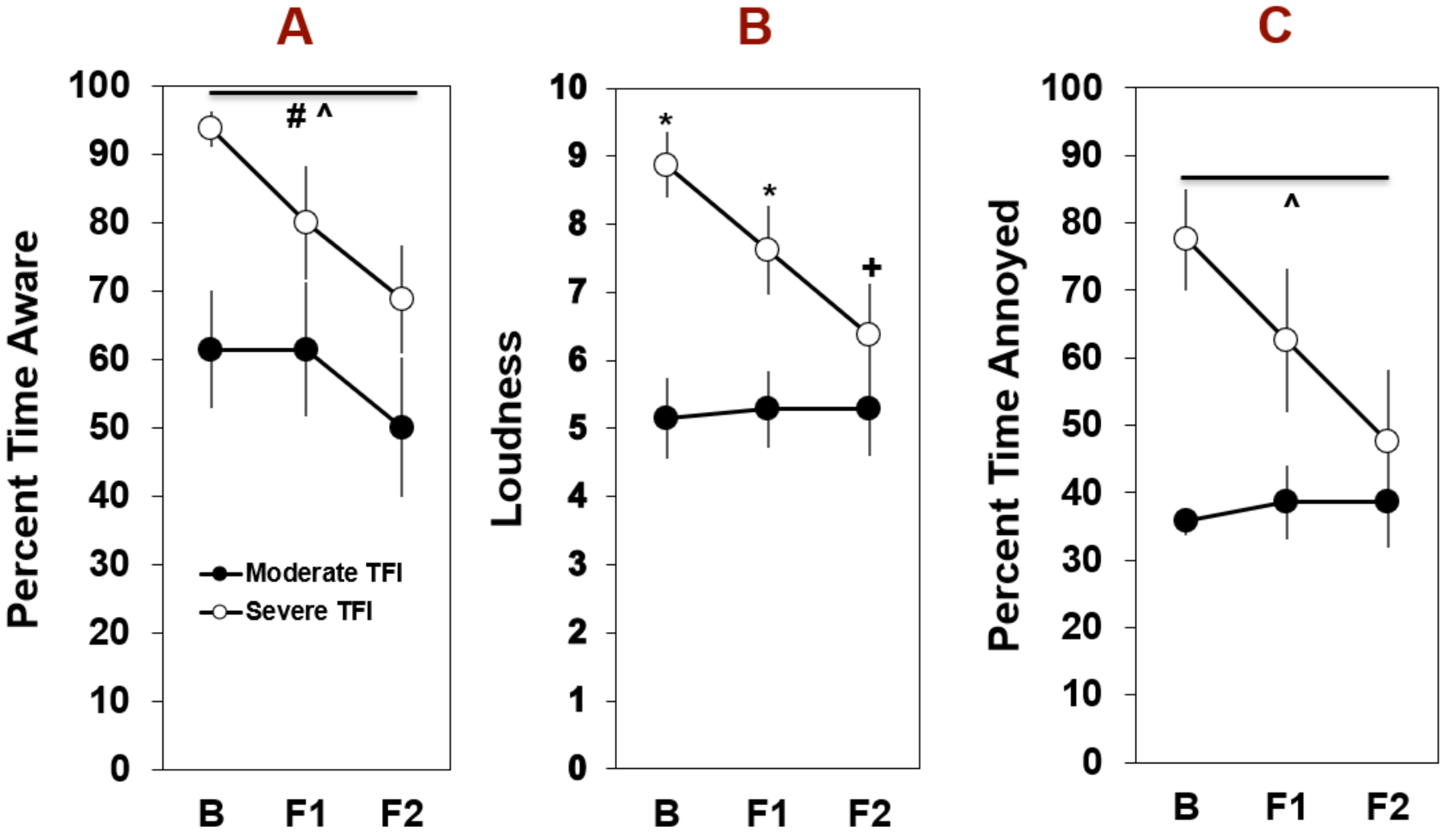


Median split

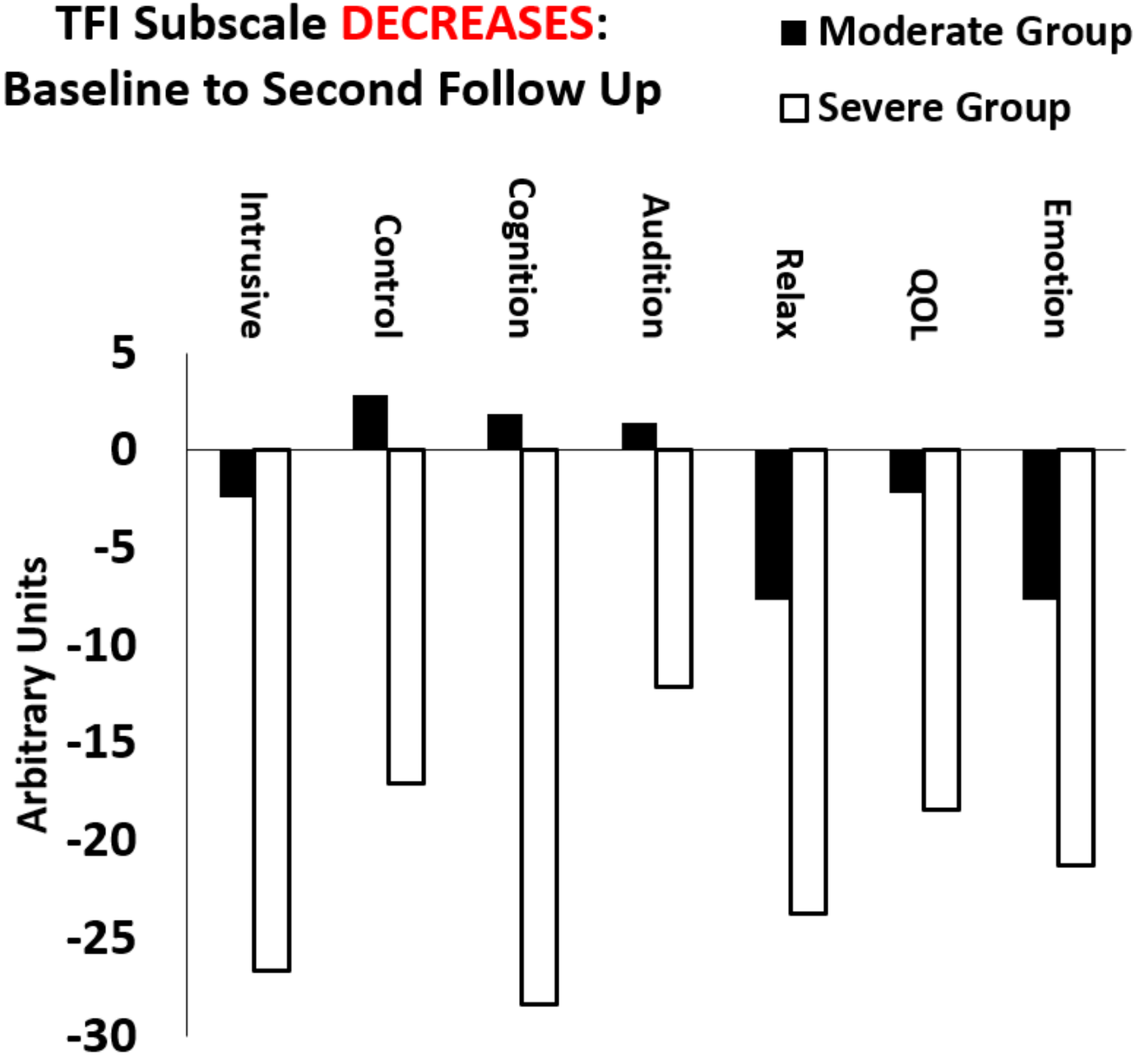


Data are means +/- SEM. **p<0.05 within time point; +p<0.05 from baseline.*

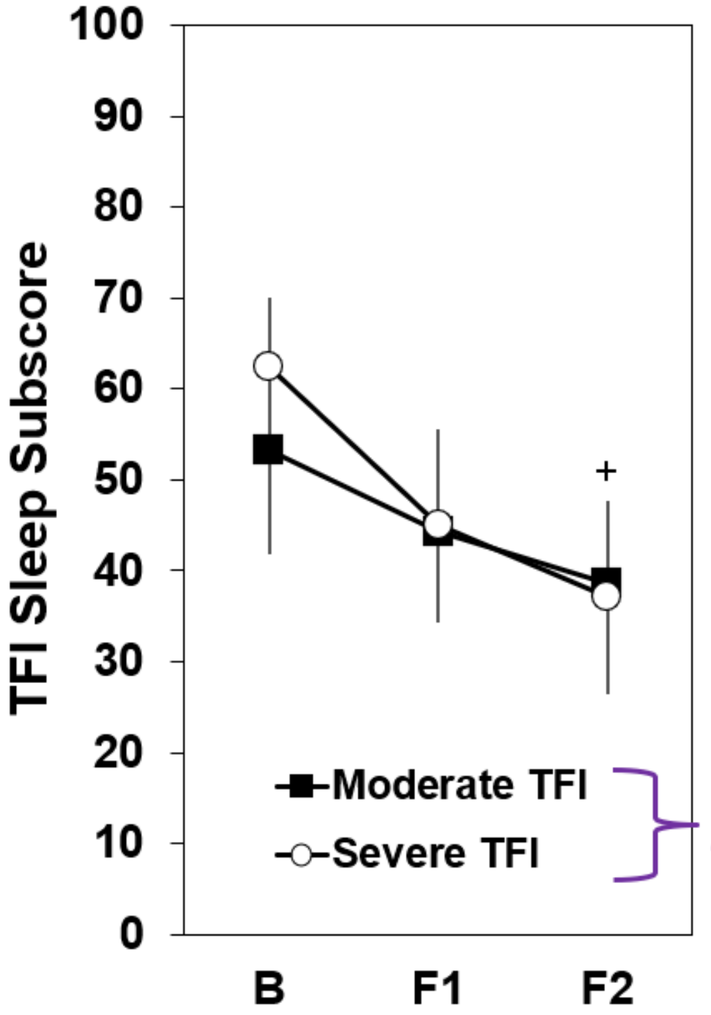
Drug X reduces the intrusiveness of tinnitus.



#main effect of group; ^main effect of time; *p<0.05 between groups, within time point; +p<0.05 from baseline.


TFI Subscale DECREASES:
Baseline to Second Follow Up
Moderate Group
Severe Group
Intrusive
Control
Cognition
Audition
Relax
QOL
Emotion
Arbitrary Units
5
0
-5
-10
-15
-20
-25
-30

TFI sleep subscale –both groups improved



~15 point decline

~25 point decline

+p<0.05 vs Baseline

Summary

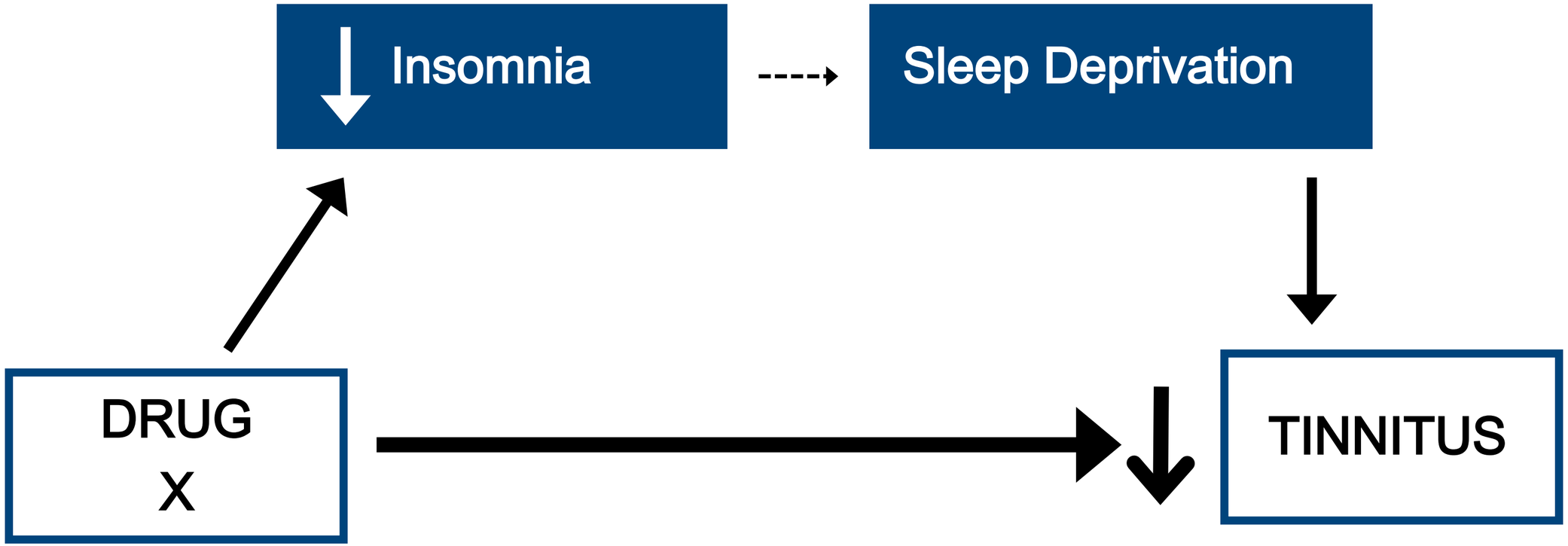
- Drug X appears to improve TFI scores in those with the highest TFI scores

- TFI Sleep Subscale improves regardless of TFI category

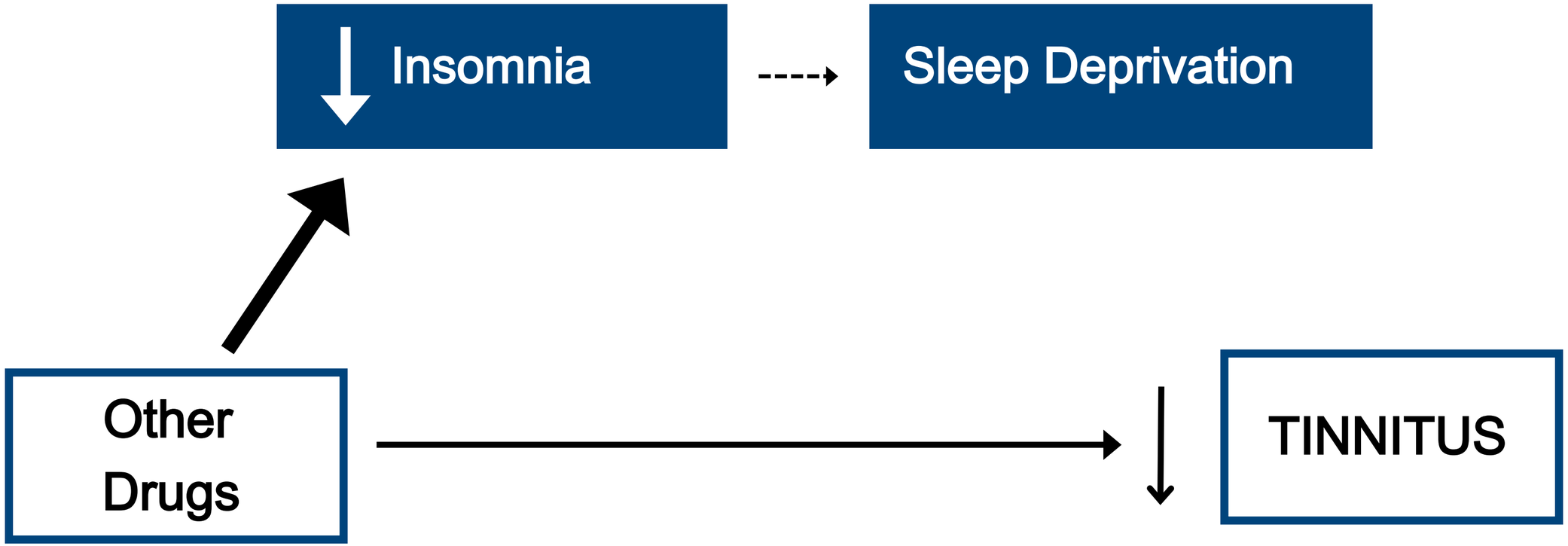
Conclusion

Drug X may be helpful in treating those suffering from bothersome tinnitus

Drug X
Theoretical Model



Other Drugs
Theoretical Model



Identifying Co -Morbid Psychiatric Symptoms

Improving Quality of Life

Anxiety Sensitivity Index (ASI)

Total Score + 3 Subscales

1) Physical
2) Cognitive
3) Social

Sensory Processing Sensitivity Scale (SPS)

Tinnitus & Auditory Hallucinations

Tinnitus

Perception of sound
in absence of external
source stimulus

Auditory Hallucinations

Sensory perceptions
of having noises
without an external
stimulus

1.Eggermont JJ & Roberts LE.
The Neuroscience of Tinnitus.
Trends Neurosci 27: 676 -682, 2004

2. Thakur T, Gupta V. In: StatePearls.
Treasure Island (EI) : StatePearls
Pub; 2025

Sulpiride plus hydroxyzine decrease tinnitus perception

Table 1. Subjective Grading of Tinnitus Perception after treatment

Subjective sensation of tinnitus perception	Placebo (n = 38) N (% of total)	Sulpiride (n = 41) N (% of total)	Sulpiride + hydroxyzine (n = 43) N (% of total)
INCREASE (the patient hears tinnitus more and is distressed)	0	0	0
SIMILAR (the patient hears the same tinnitus and is distressed)	30 (79%)	18 (44%)	8 (19%)
DECREASE (the patient hears tinnitus less and is distressed)	8 (21%)	21 (51%)	31 (72%)
HABITUATION (the patient hears tinnitus less but is not distressed)	0	2 (5%)	4 (9%)
DISAPPEARANCE (the patient does not hear tinnitus)	0	0	0

Chi-square at $P<0.001$.

Auris Nasus Larynx 34 (2007) 23 -27
M.A. Lopez-Gonwlez et al.I Auris Nasus Larynx 34 (2007) 23 -27

Treatment “Do Not”

“You need to learn to live with it.”

“There are no treatments.”

“I’m going to refer you to a shrink.”

“We could send you to psychiatry if you really think that could help.”

“Tinnitus is really no big deal.”

“Tinnitus is what happens when you get old.”

Treatment “Do”

ALL MEDS

- Start low
- Go slow

PharmCo Rx

- Venlafaxine
- Drug X

Psycho Rx

- Acceptance Commitment Rx
- Exposure Rx (sensorimotor OCD)

HOPE

Partner with patient to find a solution

When to Refer

- Pulsatile Tinnitus
- Unilateral tinnitus
- Childhood Tinnitus
- Sudden Hearing Loss
- Sever Insomnia
- Bothersome Tinnitus
- New Onset Headaches
- Vertigo
- Drop Attacks
- Suicidal Ideation

For Tinnitus Referrals

Please Contact:

Dr. Josh Tutek

tutek@musc.edu

or

Call 843 -792-9162

Acknowledgements

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