The Value of Audiologists During the Hearing Aid Fitting Process: Real-Ear Measurement (REM)

Verifying a Hearing Aid Fitting with REM Administered by an Audiologist Improves Communication and Hearing Aid Outcomes.

**Speech Intelligibility**

Individuals who received a REM-verified fitting, compared to default settings, experienced improvement in:
- Speech intelligibility performance in quiet \( [\text{SMD} = 0.59] \),
- Speech recognition scores using CNC words \( (15\%) \) and phonemes \( (7.7\%) \), and
- The average signal-to-noise ratio \( (6.6 \text{ dB}) \).

**Self-Reported Listening Ability and Communication Experience**

Individuals who received a REM-verified fitting, compared to default settings, experienced increased:
- Self-perceived listening ability \( [\text{SMD} = 0.22, p = .0005] \),
- Overall communication outcomes \( [F(1, 21) = 4.69, p = .042] \), and
- Self-perceived understanding of speech in background noise \( (4.2\%) \).

**Patient Satisfaction and Perception**

With a REM-verified fitting, individuals reported:
- Significantly higher satisfaction with hearing aid services for both experienced \( [x^2 (1, N) = 8.33, p < .05] \) and first-time hearing aid users \( [x^2 (1) = 14.54, p < .001] \),
- A preference for verified hearing aid settings \( (67\%-79\% \text{ of patients}) \), and
- Increased patient perception that the professional services and hearing aids solved their problem or fulfilled their needs \( (1.8\text{-}3.3 \text{ point improvement in response ratings}) \).

**Tinnitus Symptoms**

- Individuals with REM-verified hearing aids experienced significantly reduced tinnitus distress \( [x^2 = 5.48, p = .02] \) and tinnitus loudness \( [x^2 = 21.5, p < .00001] \).

**Hearing Aid Fit and Acceptability**

- Devices verified using REM more closely matched prescriptive targets \( \text{(within } 1.5\text{-}2.5 \text{ dB)} \) compared to default levels \( \text{(underfit by 7-10 dB)} \).
- Individuals who received REM-verified hearing aids were more likely to keep their devices compared to those who received unverified hearing aids \( (81\%-83\% \text{ versus } 55\%) \).

Abbreviations: SMD: Standard Mean Difference
CNC: Consonant-nucleus-consonant

Why do audiologists perform REM?
- Considered best practice when fitting a hearing aid.
- Measures the loudness of the hearing aid within the ear canal.
- Confirms that the hearing aid is providing the maximum benefit (audibility, comfort, and effectiveness) to the user.


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