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Hearing loss and satisfaction with healthcare: an unexplored relationship

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To the Editor:

Patient healthcare satisfaction has become increasingly important since Medicare's introduction of the Hospital Care Quality Information from the Consumer Perspective (HCAHPS) survey [1]. Greater satisfaction is associated with important healthcare outcomes including lower risk of 30-day readmission [2].

While many factors contribute to patient satisfaction, communication likely plays an underappreciated role [3,4]. Hearing loss (HL) is a barrier to effective communication and highly prevalent, affecting 38 million Americans and increasing with age such that two-thirds of adults over the age of 70 have HL [5]. An emerging body of literature has found HL associated with poorer healthcare outcomes, including increased healthcare costs [6], and increased risk of hospitalization [7].

Hearing loss strains communication and may increase cognitive load via degraded auditory encoding, thereby further inhibiting the ability to process and comprehend speech. However, despite its role in communication, there is a paucity of research exploring the impact of HL on satisfaction with care. Notably, a limitation of current research is a use of self-report hearing, which is known to differ from objective measures by important characteristics (e.g.

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Author Contributions

Study concept and design; critical revision of the manuscript for important intellectual content; administrative, technical, or material support: all authors. Acquisition, analysis, or interpretation of data: NSR, JFB, JAD. Drafting of the manuscript: NSR, JAD. Statistical analysis: NSR, JFB, JAD.

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sex, race) that may be related to satisfaction [8]. Given its high prevalence, exploring HL's impact on patient satisfaction has implications for public health and clinical care planning.

METHODS

Study population

A hearing pilot study was conducted in Washington County, MD in the Atherosclerosis Risk in Communities (ARIC) Study in 2013. 256 participants (mean age = 77.4 years) completed audiometric hearing measurements. Due to small numbers, we excluded non-white (n=3) and Medicaid (n=3) participants, as well as those missing outcome (n=3) and/or covariate (n=2) measures, resulting in an analytic sample of 248 Medicare beneficiaries.

Outcome measure

Participants were asked: "Overall, how satisfied are you with the quality of care you received from your healthcare providers over the past 12 months?" – "very dissatisfied", "somewhat dissatisfied", "somewhat satisfied" or "very satisfied". We defined satisfaction with care as a binary outcome: less than optimally satisfied (somewhat satisfied, somewhat dissatisfied, or very dissatisfied) vs. optimally satisfied (very satisfied).

Hearing

Pure-tone air conduction hearing thresholds at the 500, 1000, 2000, and 4000 Hertz frequencies were obtained using clinically-accepted testing methods in a sound-attenuating booth with a calibrated audiometer. A pure-tone average (PTA) of the four frequencies in decibels hearing level (dB HL) was calculated to identify normal (<25 dB HL), mild (25–40 dB HL), and moderate (>40 dB HL) HL in the better-hearing ear.

Statistical analysis

The association between HL (modeled continuously as the better-hearing ear PTA) and satisfaction with care was modeled using logistic regression, adjusting for age, sex, cognition [9] (a global composite z-score of 3 tests measuring 3 domains), and count of comorbidities. We explored for interactions between HL and demographic variables (age, sex). A sensitivity analysis also adjusted for self-reported perceived health compared to peers of the same age.

RESULTS

70 (28%) participants had normal, 95 (38%) had mild, and 83 (34%) had moderate or greater HL. 178 (72%) reported being very satisfied, 55 (22%) somewhat satisfied, 8 (3%) somewhat dissatisfied, and 7 (3%) very dissatisfied with their medical care over the past 12 months.

In multivariable-adjusted analyses, there was a significant (p=.033) interaction between HL and age such that HL had a greater impact on odds of being less than optimally satisfied among older adults (figure 1). For example, in a 75-year-old participant, for every 10 dB increase in HL, the odds of being less than optimally satisfied increased .94 (95%

Confidence Interval [CI]:0.74–1.20). However, in an 85-year-old participant, for every 10 dB increase in HL, the odds of being less than optimally satisfied increased 1.33 (95% CI:0.96–1.83). Sensitivity analysis did not alter inference.

CONCLUSIONS

In this pilot study of 248 Medicare beneficiaries (67–89 years), HL is associated with being less than optimally satisfied with healthcare over the past year among older individuals. However, HL did not impact satisfaction with care among younger participants. To our knowledge, this is the first analysis to quantify the association of objective (i.e., audiometric) HL and healthcare satisfaction.

Our findings support a previous study indicating self-reported communication problems are associated with reduced healthcare satisfaction [3]. Hearing loss' negative impact on patient-provider communication may contribute to this relationship. Our findings suggest an interaction between age and HL. It may be that younger adults are better able to cope with HL' impact on their cognitive load. Future studies are needed to replicate these findings.

Our study is limited by demographic homogeneity and modest sample size. These results lend support for recent calls to address HL via screening and intervention techniques to improve patient-provider communication in the healthcare system [10].

Acknowledgments

Conflict of Interest

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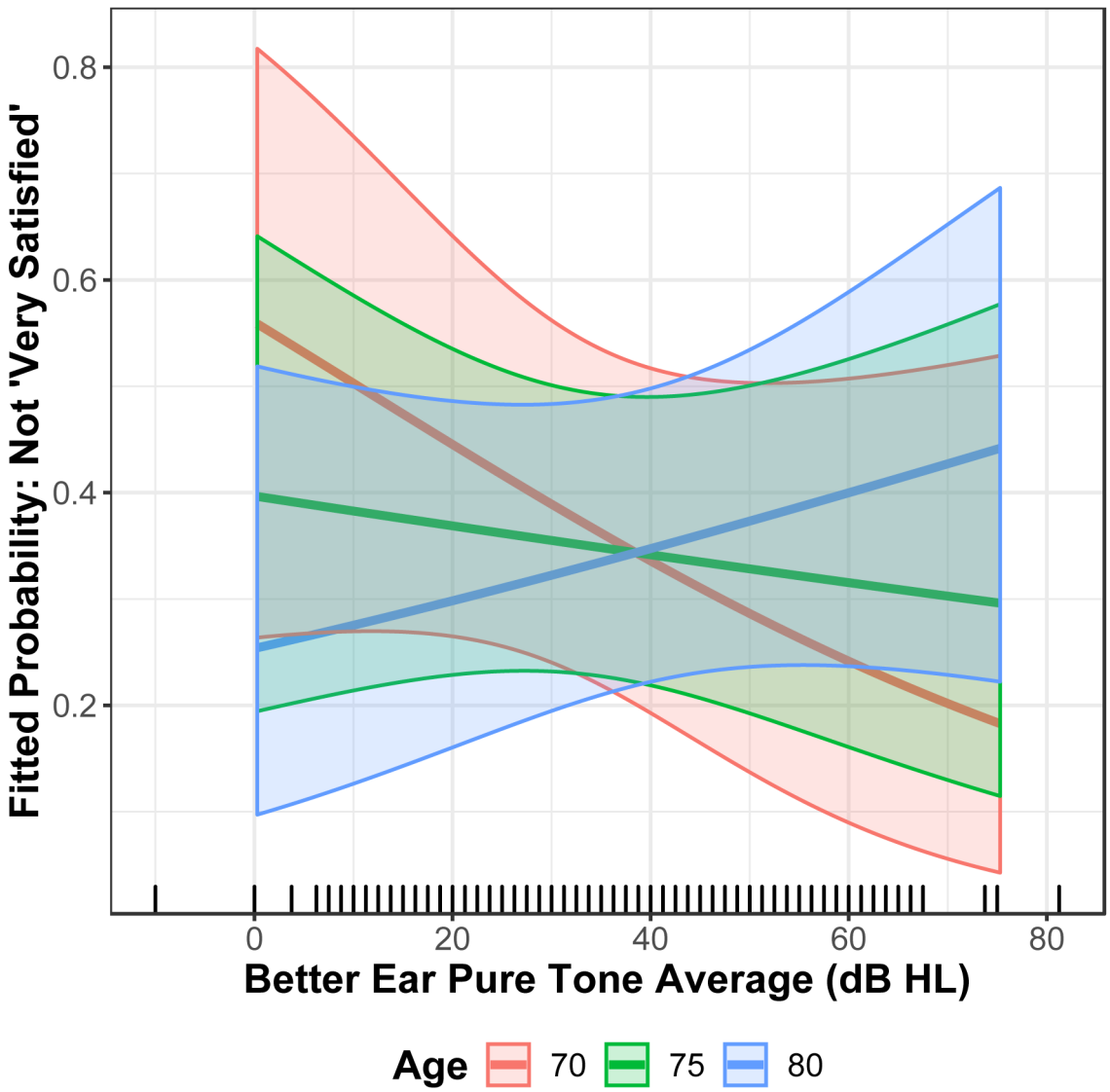

Figure 1.

The Probability of Being Less than Optimally Satisfied (not 'Very Satisfied') by Hearing Loss for a 70-, 75-, and 80-year old. Logistic regression model for odds of less than optimal satisfaction and hearing loss adjusted for age, sex, global cognitive score, comorbidity count (diabetes, hypertension, myocardial infarction, asthma, cancer, stroke, and hospital stay).