Improvement of older-person-specific QOL after hearing aid fitting and its relation to social interaction

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ABSTRACT

Purpose: This study aimed to investigate whether hearing aids use is associated with improvement of older-person-specific QOL and whether social interactions modify the association.

Methods: The WHOQOL-OLD questionnaire was answered by 105 older adults aged 60 to 90 years who were newly fitted hearing aids on the day of fitting and at 2–6 months afterward. The associations between the daily hours of hearing aid usage and social relations with changes in the WHOQOL-OLD total score after hearing aids fitting were estimated adjusting for possible confounders.

Results: Older persons with hearing loss experienced significant increases in WHOQOL-OLD total score after hearing aid fitting. Regular use of hearing aid was associated with a greater increase in the total score. The combined categorical variable of social relations and hearing aid usage revealed no separate effects of these two variables, but a combined effect; only those with frequent social interactions who used their hearing aid regularly had a significantly greater increase in WHOQOL-OLD total score.

Conclusion: This study’s findings indicate that hearing aid fitting may be associated with a subsequent improvement in older-person-specific QOL by improvements in hearing due to the hearing aid, and possibly enhanced communication opportunities.

1. Introduction

Age-related hearing loss (presbyacusis) is the most common type of hearing loss in older adults (Pacala & Yueh, 2012), and the third leading cause of disability worldwide (Gaylor et al., 2013). The impact of hearing loss may be profound, with consequences for cognitive (Deal et al., 2015; Lin et al., 2013) and functional (Chen et al., 2015; Gispen, Chen, Genther, & Lin, 2014; Li, Simonsick, Ferrucci, & Lin, 2013) decline, as well as diminished psychological well-being (Gopinath et al., 2009; Nachtegaal et al., 2009). The severity of hearing loss has been shown to be associated with a reduced quality of life (QOL; (Dalton et al., 2003; Tomioka et al., 2013).

A hearing aid is an electroacoustic medical device designed to amplify audibility and mitigate the effects of hearing loss. While very few randomized controlled trials (RCTs) have been conducted involving hearing aids, it is generally acknowledged that hearing aids reduce the psychological, social, and emotional effects of hearing loss (Chisolm et al., 2007; Ciorba, Bianchini, Pelucchi, & Pastore, 2012; Mondelli & Souza, 2012). In adults with acquired hearing loss, hearing aid fitting has reportedly led to improvements in both generic and disease-specific QOL (Appollonio, Carabellise, Frattola, & Trabucchi, 1996; Joore, Potjewijd, Timmerman, & Anteunis, 2002; Joore, Brunenberg, Chenault, & Anteunis, 2003; Kelly-Campbell & Atcherson, 2012; McArdle,
Chisolm, Abrams, Wilson, & Doyle, 2005; Mulrow et al., 1990; Stark & Hickson, 2004). A number of studies have also demonstrated benefits of hearing aids in terms of depression (Od & Teixeira, 2015), caregiver burden (Boi et al., 2012), and social function (Chisolm et al., 2007; Ciorba et al., 2012; Mondelli & Souza, 2012).

Despite the well-documented benefits of hearing aids, low compliance with their proper use is a consistent problem (Popelka et al., 1998). Some studies have found that 30%–50% of hearing aid owners do not use hearing aids regularly (i.e., they use the hearing aid ≤ 4 h/d; 16, 25). While dissatisfaction with performance across a range of sonic environments appears to be the most prominent barrier to use (Pacala & Yueh, 2012), psychosocial factors have also been identified. Hearing aid owners proactively use their device in response to personal resources and contextual demands (Williger & Lang, 2015). In contrast, social context has long been regarded as an important factor in keeping older adults healthy. The mechanisms linking the social context with the individual health effects are generally considered from the following two perspectives: 1) the social contexts in which we live that shape individual behavior; and 2) social interactions that promote feelings of competence and perceived control that regulate behavior, including health improving behavior (Mendes de Leon, 2005). Both of these perspectives are considered to have a direct, causal effect on physical and mental health (Berkman, Glass, Brissette, & Seeman, 2000). Social contexts in which communication opportunities are available may therefore synergistically affect the association between hearing aid usage and improved QOL.

Social relationships have often been included in analyses involving hearing aids use as one of the outcomes (i.e., the hearing aid improves social relationships; 12–14) or one of the factors affecting hearing aid use (i.e., people with social relationships use hearing aids more often; 29–31); however, the potential modifying effect of social relationships (i.e., longer hearing aid use is associated with a greater improvement in QOL among people living in an interactive social setting, but not among people who are socially isolated) has yet to be investigated. The aims of this study were to investigate whether or not older person-specific QOL improves after hearing aids are fitted for older people with hearing loss, and to determine whether or not social relationships modify the association between hearing aid use and improvement in QOL.

2. Material and methods

2.1. Participants

This study was conducted at the University Hospital in Olomouc, Czech Republic (CR). Outpatients ≥ 60 years of age who were fitted with hearing aids for the first time during routine medical care in the Department of Otolaryngology between May and July 2014 were offered to participate in the study. Of the 131 outpatients with a newly prescribed hearing aid during the first visit, 107 (82%) agreed to participate in the study and gave informed consent. Of the 107 patients, 105 returned for a second visit and were included in the study. The mean age of the 105 patients was 74.8 years (standard deviation [SD] = 8.2 years; range, 60–90 years). The age criteria was selected because ≥ 60 years is generally considered the beginning of old age for health and social benefits in the CR. The sample size was calculated to be 110 based on 80% power to detect a difference in a change in the World Health Organization Quality of Life (WHOQOL)-OLD total score of 5.0.

2.2. Hearing aid fitting in CR

In the CR, where a patient can visit a specialist physician without a referral from a primary care physician, a hearing aid is prescribed by a physician specializing in audiology and phoniatrics (separate specializing in audiology does not exist in CR) on the basis of an audiologic examination (tone and speech audiometry), tympanometry, and/or other examinations (e.g. Fowler test [ABLB = Alternate Binaural Loudness Balance]). The physician offers the patient at least three hearing aids from different companies in an effort to find the most efficient and comfortable hearing aid. In the CR, patients > 18 years of age are granted allowance by the health insurance company for one hearing aid in 5 years, with a maximum cost of 5100 CZK (approximately 200 EUR), depending on the degree of hearing impairment. Therefore, the majority of older Czech adults choose a monaural correction. The physician programs three different types of hearing aids on the PC according to the patient’s hearing threshold. All the hearing aids are tested with the patient and speech audiometry is done using the hearing aids during which the physician detects improvement in speech comprehension, i.e. SRT (speech reception threshold) with the hearing aid. The hearing aid that is best suited for the patient is further adjusted on the PC according to the patient’s requirements. A check-up visit is generally scheduled 3 months after the first visit for audiometry and re-adjustment of the hearing aid. During this visit a specialist physician examines how the patient has adapted to the hearing aid. He connects the hearing aid to a PC, checks the settings, and if needed, adjusts the hearing aid according to the patient’s requirements. The real-ear measures are not used to guide the hearing aid fitting.

2.3. Procedure

Once the hearing aid was chosen by an eligible patient, a research nurse explained the purpose of the study to the patient, and after obtaining informed consent, the patient was asked to complete a questionnaire (first visit). At the check-up visit, the study participants were asked to complete the same questionnaire (second visit). The participants completed most of the questionnaire independently, although the research nurse assisted when necessary by explaining the context of the questions. Proxy answers provided by a family member or friend were not accepted. The study was approved by the Ethics Committee of the Faculty of Health Sciences, Palacky University, Olomouc.
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