# Critical Review: What is the evidence to support the need for training individuals with hearing impairment to use their hearing aids with the telephone?

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This critical review examined the available literature regarding the instructional training that individuals with hearing impairment receive on how to successfully use their hearing aids with the telephone. Study designs include: survey research and within group comparison. Overall, the evidence from different studies can be synthesized to support the need for audiologists to directly train individuals with hearing-impairment to use their hearing aids with the telephone. Current research findings indicate that hearing impaired individuals are not satisfied with their present telephone solutions. The amount of time spent by the audiologist directly teaching the client, as well as the readability of the supporting instructional materials given to the client, are two areas of concern which are discussed. Recommendations to address these concerns are made.

## *Introduction*

In today's society the telephone plays an important role within our home, work, and community environments. The telephone provides a network to establish and maintain friendships, it provides feelings of safety and security, and it functions to sustain feelings of independence. The telephone has become an indispensable means of communication, and the ability to use it successfully has become a necessity virtually worldwide. Unfortunately, the majority of telephone communication requires total reliance on the auditory modality, and thereby eliminates the important visual cues that are often utilized by hearing impaired individuals for effective communication. Therefore, endeavours to provide an appropriate telephone solution for each client must be a high priority in audiological rehabilitation.

It is surprising given its importance, that research into the actual use of the telephone by individuals with hearing impairments and the improvement of their telephone communication strategies is currently a neglected area in the field of audiological rehabilitation (Erber, 1985). Many of the existing hearing handicap assessment tools do not cover telephone use or only ask one or two questions regarding telephone use. This apparent lack of research in the area of telephone rehabilitation is not however, a reflection of the perceived needs of the hearing impaired population (Holmes et al, 1998).

## *Objectives*

The purpose of this paper was to critically evaluate the existing literature regarding the training that hearing impaired individuals receive about telephone use in combination with their hearing instruments.

## *Methods*

Search Strategy:

Computerized databases including PubMed, MedLine and ComDisDome were searched using the following strategies: [(Success with amplification) OR (hearing aids) AND (hearing aids) OR (success with hearing aids)] AND [(telephone orientation) OR (telephone) OR (telecoil)].
This strategy was unsuccessful and an expert in aural rehabilitation was contacted for guidance, and provided relevant material. Other articles were discovered by article referencing.

Selection Criteria:

Research studies selected for inclusion in this critical review examined any information that hearing impaired individuals using personal amplification might be provided as a means to train telephone use. A limit on the demographics of the research participants was restricted to older adults over the age of forty-five years of age.

Data Collection:

A review of the literature yielded four studies which met the inclusion criterion: survey research (3), and within groups design (pre-post-post) (1). Of the survey research, two studies provided a grade III level of evidence, and one qualified as a

grade IV. The within groups design is categorized as a IIb in the grading of evidence levels.

### *Results*

Survey Research

Kepler et al (1992) administered a survey to 104 members of the Self Help for Hard of Hearing People organization (SHHH). The age distribution of the sampled population ranged from 18 years to over 75 years of age. Over 40% of the sample was greater than 64 years of age, which is not surprising because of the association between hearing impairment and the aging process.

One hundred and thirty-eight surveys were initially mailed. Four were returned from the post office as undeliverable, five were returned blank. Of the remaining 129 questionnaires, 104 (80.6%) were completed and returned. The forty-three item questionnaire was developed specifically for the study, and was used to determine what difficulties hearing impaired individuals experience when communicating on the telephone. Over 50% of the respondents reported using their hearing aids when engaged in telephone conversation. However, 70% of these hearing aid users reported that coupling the telephone to their hearing aid was problematic. The most frequently cited problems were adjusting the volume control, or appropriately positioning the phone to the ear, without missing portions of the conversation. Other areas of concern involved the telecoil as 57% of the respondents reported knowing that they had a telecoil in their hearing aid, although 49% of these individuals reported experiencing interference when using the telecoil, and 12% of people were unsure if they had a telecoil or not. Another 3% reported having a telecoil, but stated that they did not know how to use it. A majority of respondents in this study reported that difficulty on the telephone impacted their social lives, as well as their job performance. Sixty-six percent of respondents reported that speech over the phone was never clear, and a few individuals (18%) reported that they avoid using the telephone due to the difficulty they experience.

The final portion of the survey asked about a project which was underway in the Midwest. This project was looking at whether the telephone signal could be customized for each individuals specific hearing impairment. The survey found that if such a service were offered, 75% of the respondents indicated that they would be interested in this feature, and 50% reported that they would be willing to pay to have this service available to them. The authors concluded that, based on the surveyed population, hard of hearing individuals generally were dissatisfied with the telephone options which were currently available, and that serious consideration should be given to projects such as the one underway in the Midwest.

A limitation of this study involves the sample population. The Self Help for Hard of Hearing People organization is comprised of members who actively seek solutions to their communication problems and therefore they may not be representative of the population at large. It is likely however, that these individuals are putting a voice to the telephone difficulties commonly experienced by the hearing impaired population at large.

Holmes et al (1998) used an open-ended questionnaire to assess the telephone difficulties of 50 hard-of-hearing patients at a Veterans Administration medical facility. An age restriction of 55 to 70 years was used to be more representative of the typical adult clinic population. Participants had to have sensorineural hearing loss no greater than 60dB HL at 2000 Hz, and a pure tone average between 30 and 70 dB HL.

A letter was mailed to each subject and specifically requested the subject to note if he/she used the telephone, and any problems he/she had with the use of the telephone. Of the 50 letters mailed, 22 were returned for a response rate of 49%. A further three were not usable, and therefore, 19 questionnaires were assessed.

Each completed questionnaire was read and evaluated for content and complaint areas independently by two audiologists who specialized in audiological rehabilitation. Inter-rater reliability was found to be high, and the only discrepancy was centred on the identification of the reported use of communication repair strategies.

A significant finding from the study, was that 26% of the respondents reported that they could not use the telephone with their hearing aids. Of the 50 participants, only 16% reported that they were satisfied with their ability to use the telephone with their hearing aids, and 21% reported avoiding using the telephone if possible. The two most frequently cited problems associated with telephone use were listening in background noise, and acoustic feedback when coupling the hearing aid with the telephone. Outcomes of the study suggest that hard of hearing individuals are not satisfied with their current telephone communication abilities, and these findings are in line with those of Kepler et al (1992).

Kelly, (1996) sent letters to hearing aid manufacturers requesting copies of the instructional material which is routinely provided to hearing aid consumers, to assess the readability of the hearing aid brochures – both informational and instructional. One hundred and eighty-one documents were submitted to the study. User instructional brochures that differed only in the hearing aid model were excluded, and subsequently, 109 were analyzed.

Estimates of readability were assessed with 3 formulas: The FOG index, Flesch's index, and Fry's index, which result in a number representing the approximate grade of schooling required to understand the material.
Outcomes of the study indicate that 58% of all the documents were classified as college level, 20% were at a high school level, 16% were at a junior high school level, and only 6% fell at a grade school reading level.

Within Groups Design (Pre-Post-Post)

Reese & Hnath-Chisolm (2005), examined the ability of first time hearing aid users to accurately recognize information presented to them during their hearing aid orientation (HAO).

Researchers took a convenience sample of 100 older adults, ranging in age from 56 to 88 years. All participants were recruited from two Veteran's Affairs medical centres in Tampa Bay Florida. Subjects had adult onset, sensorineural hearing loss, with a pure tone average of 30dB HL or more for 1000, 2000 and 4000 Hz in the better ear. These adults had never worn hearing instruments and were scheduled to be fit with hearing aids for the first time. Data was collected by using a non standardized subjective measure: the Hearing Aid Knowledge Inventory (HAKI), which measures recognition memory for hearing aid use and care information that is relayed during the HAO. Four of the thirty-five questions on the questionnaire were directly related to telephone use. This questionnaire was administered prior to the participants fitting appointment in order to see what level of knowledge participants had about hearing aids. Patients were then seen by the audiologist, and were fitted with amplification. The audiologist conducted a HAO that was standardized for the purpose of the study. Information given to the patient specific to the telephone included: a discussion on how to reposition the telephone if feedback occurs when using the phone, and how to use the telecoil switch on the hearing instrument. Participants were seen by the researchers immediately following the HAO, where the HAKI was re-administered. Participants returned for an appointment one month later, at which time, they were again re-administered the HAKI. Appropriate statistics were used to analyze the data. HAKI immediate and 1-month scores were subjected to a repeated measures analysis of covariance (ANCOVA), with prior knowledge scores used as the covariate. Corrections for guessing on the HAKI were applied to the results. Multiple regression analysis was performed to determine whether age and degree of hearing loss played a role in immediate recognition of HAO content. The relationship for hearing loss was negative indicating that audiologists need to ensure optimal hearing for patients during delivery of HAO information. Age did not emerge as a significant factor in the ability to recognize HAO information.

The outcome of this study indicated that time taken by the audiologist to educate new hearing aid users is well spent – participants were able to recognize correctly a majority of the information that was presented – 74% of information immediately following HAO and 78% at 1 month.
A limitation of this study is that it specifically tested recognition of hearing aid orientation content. In everyday situations, it is likely that patients will experience more difficulty remembering hearing aid use and care information because they will have to use free recall which is harder to access, compared to when simply recognizing information.

A further limitation to this study, is that they did not provide the subjects with a demonstration of how to use the telephone with their hearing instrument. They were simply provided verbal instructions.

### *Conclusions*

A review of the literature indicates that there is evidence to support the need for audiologists to train individuals with hearing impairment, to successfully use the telephone in conjunction with their hearing instruments. More research within this field is warranted as there is currently is a minimal amount of information pertaining to this specific topic.

Kepler et al,(1992) and Holmes et al (1998) demonstrated that hearing impaired individuals who use personal amplification are generally dissatisfied with the currently available telephone solutions. Results from Kepler et al's (1992) study indicated that clients may need instructions beyond the technicalities of the hearing instruments such as;

"you have a telecoil", and should include telephone specific practice such as in office training. Kelly's (1996) research showed that the majority of take-home reading materials (both instructional and informational brochures) are published at a college reading level, and therefore allow limited access to the information in them. This finding is important, because it shows that audiologists cannot simply assume that their patients can access the information within the instructional brochures if they didn't understand it, or if the audiologist didn't spend the time teaching them. Kelly's (1996) finding, in conjunction with the outcome of the study done by Reese & Hanath-Chisolm (2005), demonstrate that time taken by the audiologist to educate new hearing aid users on how to couple their hearing aid to the telephone is likely an effective means of information up-take on the part of the client, and effective teaching by the audiologist. Reading materials should not be given in place of instruction by the audiologist, but should act as a reference which can be readily accessed by the client should further information be required.

Every client that walks into our office has the right to have an appropriate telephone solution, and we do a disservice to our patients of all ages when telephone solutions are not included in the amplification plans.

### *Recommendations*

Audiologists need to work closely with each individual in order to meet their particular communication needs, and to help the clients remain active at work, in the community and in personal endeavours.

Therefore, the following recommendations regarding the need to train individuals with hearing loss to use their hearing aids with the telephone have been made:

First, audiologists need to spend time instructing the client on how to use their specific hearing aid with the telephone during the initial HAO. The client should be encouraged to practice using the telephone during this initial appointment as this allows for the greatest amount of information uptake. This will help the client train their recall memory which will be important for daily use. Second, printed instructional information regarding telephone use with their specific style of hearing instrument should be given during the HAO. Instructional material should be available in a variety of reading levels, and the appropriate reading level should be chosen for the client.

Third, to improve telephone communication, the following should be discussed on subsequent visits with the client: improved use of the current hearing aid fitting, practicing telephone specific communication strategies, and counselling individuals on different amplification options (ALD's) if coupling the hearing instrument to the telephone is not working.

Finally, guidelines need to be put in place for clinicians regarding appropriate telecoil verification techniques, as well as a standardized method for instructing clients to use the telephone. Future research should examine the current practice for telephone training amongst audiologists. This could be done by sending out a survey through a membership body such as the Canadian Academy of Audiology (CAA). A survey could also be sent out through the Canadian Hard of Hearing Association (CHHA), to ask hearing impaired individuals about the types of training with the telephone they received. Once we know the types of training that are currently used, and the perceived effectiveness of such training, then appropriate modifications to the techniques used to teach individuals with hearing impairment to have successful telephone communication can be made.

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