Handicap Versus Impairment: An Important Distinction

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Abstract
In this era of spiraling health care costs, audiologists are being held accountable for the rehabilitative interventions that they are uniquely qualified to deliver. Accountability data in the rehabilitative arena should address the efficacy of short- and long-term treatment. If a treatment such as a hearing aid is dispensed for the purpose of reducing the communicative and psychosocial handicap associated with hearing loss, efficacy data should demonstrate whether such a goal has been attained. Increased attention has been focused on the value of self-assessment questionnaires as instruments that are predictive of candidacy for hearing aids, intent to purchase hearing aids, and outcomes with a given hearing aid treatment. Case studies demonstrate the advantage of engaging the client in the rehabilitative process through the use of responses to self-assessment questionnaires. It is evident that the client's appraisal of the handicapping effect of a given impairment is associated with treatment efficacy.

Key Words: Efficacy, handicap, impairment, outcome

Studies on the relationship between impairment and handicap in adults consistently reveal an imperfect relationship between impairment as measured audiometrically and self-report data that quantify disability or handicap (Weinstein and Ventry, 1983). The consistent finding that audiometric data merely accounts for 20 to 30 percent of the variability in self-reported communication difficulties and declines in psychosocial functioning has led clinical researchers to advocate supplementing the traditional test battery with an estimate of self-reported handicap/disability (Weinstein and Ventry, 1983; Weinstein, 1984). However, a recent survey of the status of audiological rehabilitation services provided by ASHA-certified audiologists revealed that the majority of audiologists have not yet incorporated self-assessment questionnaires into their practice (Schow et al, 1993). Overall, only 33 percent of clinically active audiologists reported using self-assessment questionnaires.

In this paper, we present two case studies highlighting the role of self-assessment questionnaires in audioling rehabilitation. The cases demonstrate how placing the focus of audioling care on the person and on the complaints voiced by the hearing impaired influences outcomes with intervention.

CASE REPORTS

Case 1

DD, a 38-year-old female, was referred for an audioling evaluation to determine hearing status for eligibility for support services while pursuing her baccalaureate degree. DD first noted a hearing loss at the age of 9 when she suffered from a viral infection accompanied by a high fever. She obtained a behind-the-ear hearing aid for her left ear at 11 or 12 years of age and has been wearing a hearing aid on and off ever since. At the time of the evaluation, she was wearing a 12-year-old Oticon E12C in her left ear. Electroacoustic analysis revealed that the hearing aid was malfunctioning and the earmold was loosely fitting; however, she was unable to afford a replacement unit. DD reported that she felt significantly handicapped by her hearing loss as it interferes with college studies, child rearing, and performance at work.
The score of 74 percent on the Hearing Handicap Inventory for Adults (HHIA) (see the Appendix) confirmed her personal appraisal of the significance of the hearing impairment. Pure-tone test results revealed an essentially moderate to moderately severe sensorineural hearing loss bilaterally (Fig. 1). Speech thresholds were in agreement with three-frequency pure-tone averages. Word recognition ability using NU-6 word lists presented at MCL (75 dB HL) was fair in the right (74%) and left (76%) ears. Auditory-visual word recognition ability was excellent in the left ear and good in the right ear using NU-6 monosyllabic word lists presented at MCL. DD received a donation of binaural Argosy Passport I-T-E hearing aids soon after the initial audiologic evaluation. High-frequency average full-on gain of the units was 33 to 34 dB SPL with an SSPL-90 of 111 dB SPL and a frequency range of 500 to 5000 Hz. Soundfield unaided and aided warble tone thresholds (0° azimuth) are displayed in Figure 2. It is apparent that DD was deriving adequate functional gain from her hearing aids.

Responses to the HHIA were obtained at the 3-week check to determine the perceived impact of the hearing aids on her self-reported psychosocial handicap (Newman et al, 1990). A reduction in the HHIA score from 74 percent to 0 percent suggested that DD had derived clinically and statistically significant benefit from the binaural hearing aids in the social and emotional domains of function (i.e., change score exceeded 95% confidence interval for significant difference) (Newman and Weinstein, 1989). She indicated that the hearing aids had changed her personal and professional life dramatically. She also reported that responding to the items on the questionnaire helped her to understand that much of her depression was associated with the auditory deprivation from which she had suffered for so long. The HHIA was readministered at 3 months and 5 months after the initial hearing aid check in an attempt to determine long-term benefit. As the scores remained stable, we inferred that DD remained satisfied with the hearing aids. The HHIA scores of 0 and 2 obtained following 3 weeks, 3 and 5 months of hearing aid use provided powerful evidence that hearing aid technology actually resolved the communicative difficulties and adjustment problems that DD had perceived (Fig. 3).

Responses to the HHIA were used as a means of demonstrating how integral properly fit hearing aids are to the academic and vocational success of hard-of-hearing students pursuing undergraduate and graduate degrees. The college administration was most impressed by the self-report data that documented objectively the personal significance of audiologic intervention for an individual whose hearing impairment they “could not relate to” (Erdman, 1993). The college administration has requested additional evidence of the value of hearing aids and FM systems for post-secondary school students. As a result of documented outcomes with a handful of students, it is likely that support services available to eligible hard-of-hearing students
will be expanded to include a variety of amplification technologies. DD has become a student advocate for amplification among students, staff, and faculty, as the significant gains in communicative and psychosocial function she achieved in such a brief time period were so dramatic and convincing. It is worthwhile noting that DD declared herself an audiology major because of her fascination and enthusiasm for the work of audiologists.

Case 2

This case demonstrates how an individual's appraisal of the significance of the psychosocial and communicative problems associated with hearing loss may influence compliance with and the effectiveness of a given clinical intervention (Erdman, 1993). EP, a 72-year-old editor of a nationally published magazine, was hospitalized with a diagnosis of sudden sensorineural hearing loss. Hearing status reportedly deteriorated over a period of 48 to 72 hours, during which time she experienced vertigo, nausea, and vomiting accompanied by a rash on her extremities. Associated symptoms subsided within a 5-day period, with the exception of the hearing loss, which has remained stable over the past 3½ years. While hospitalized at the medical center, EP was placed on a course of steroid treatment and underwent a series of laboratory, radiologic, and audioligic examinations. Laboratory and radiologic diagnostic tests were inconclusive, leading to a diagnosis of sudden idiopathic deafness of viral origin.

Pure-tone test results shown in Figure 4 revealed a profound sensorineural hearing loss bilaterally, with no measurable spondee thresholds or word recognition scores. Threshold ABR confirmed the presence of a profound hearing loss with no response at the limits of the equipment bilaterally. EP underwent four audioligic re-examinations while hospitalized, each showing the presence of a bilateral, profound hearing loss. Behavioral test results 1 year later were consistent with a profound sensorineural hearing loss bilaterally.

Approximately 6 weeks after the onset of the hearing loss, EP was referred by her physician for audioligic rehabilitation. She was counseled regarding the advantages and disadvantages of cochlear implantation, hearing aids, and a variety of assistive listening devices including FM technology. She informed the audiologist that the "deafness" was not problematic, given her lifestyle and her "visual orientation" to the environment. EP reported that she rarely uses the telephone as she communicates through letters with her daughter in Minnesota. She indicated that the only television she views is sporting events, which she can continue to enjoy as scores are constantly flashed across the screen. She did admit that she would probably miss going to concerts; however, the ballet would remain a viable option. Given her self-perceived communication needs, she initially rejected all forms of amplification, as well as the recommendation to purchase a text telephone or closed captioned television. She did, however, choose to purchase a FAX machine for home and work to enable her to continue to work effectively as a magazine editor. EP also expressed an interest in speechreading lessons to enhance her ability to derive
information from facial expressions, gestures, and situational information. EP's apparent adjustment to the hearing loss was most surprising to the audiologist, as was her acceptance of the fact that her hearing was unlikely to return and her rejection of amplification technology.

EP returned for a speechreading evaluation approximately 2 weeks following the initial rehabilitation consultation. The Hearing Handicap Inventory for the Elderly (HHIE) was administered to quantify objectively the self-perceived emotional and social consequences of the hearing impairment and to assist in setting treatment goals (see the Appendix). A score of 16 was obtained on the social/situational subscale and a score of 2 on the emotional subscale of the HHIE. The total HHIE score of 18 percent suggested that the profound hearing impairment was not handicapping in the social and emotional domains of function. EP's appraisal of her problems was inconsistent with the sudden nature and extent of hearing loss, but it was apparent that her perceptions were to set the stage for the success or failure of audiolinguistic intervention.

EP's speechreading performance was measured using the Utley Speechreading Test and the CHABA videotaped CID everyday sentences (Utley, 1946). A score of 45 percent was obtained with auditory-visual presentation of the Utley and a score of 24 percent on videotaped presentation of the CHABA everyday sentence lists. Speechtracking word-per-minute score using paragraph materials from a children's book was 20 words per minute, which is suggestive of significant communication difficulties.

EP was enrolled in 4 months of speechreading/auditory training, which included speechtracking, communication strategies, identification of homophoneous sounds, and personal adjustment counseling. Speechreading performance was reassessed at the conclusion of audiolinguistic rehabilitation. Performance on the auditory-visual presentation of the Utley sentence lists improved to 77 percent, whereas visual recognition of the CHABA sentences improved to 36 percent. Speechtracking plateaued at approximately 34 words per minute, indicating some improvement in tracking from the start of therapy. Four months following initial administration of the HHIE, the score remained stable at 16 percent, indicating little absolute or relative change in self-perceived hearing handicap (Fig. 5). The consistency of responses to the HHIE over time was somewhat unexpected. Clinical experience suggests that EP's perceived psychosocial and communicative handicap would have increased, as she experienced more listening situations that posed a challenge or obstacle to communication access.

Approximately 8 months after audiolinguistic rehabilitation, EP was encouraged to purchase binaural behind-the-ear hearing aids to promote auditory-visual speech recognition ability and to enable her to monitor environmental sounds for the purposes of enhanced safety. EP reluctantly agreed to purchase binaural Rexton Selectra PP-6 behind-the-ear hearing aids. It is evident from Figure 4 that functional gain was adequate, ranging from 45 to 55 dB across the octave frequencies tested. An aided speech detection threshold was obtained at 55 dB HL. EP reported that the hearing aids enabled her to hear many of the environmental sounds that she had been missing; however, she was dissatisfied with sound quality and limited speech intelligibility. EP ultimately agreed to purchase the hearing aids for a trial period to "appease the audiologist!"

EP returned for frequent hearing aid checks and reported rarely using the hearing aids. She indicated that they were uncomfortable to wear and reiterated that the quality was unsatisfactory. At the 1-year check, functional gain was comparable to that obtained at the initial hearing aid fitting. Responses to the HHIE at the 1-year hearing aid check were in keeping with those obtained when EP first sustained the sudden hearing loss. The score of 18 percent on the HHIE was again consistent with minimal handicap and little or no benefit from hearing aids in the psychosocial or communicative domains of function. EP commented that she rarely used the hearing aids as they were more of a nuisance than a supplement to hearing.
During informal conversation, EP once again told the audiologist how fortunate she was to be living alone and to be employed as an editor. In her view, her lifestyle did not necessitate "auditory input," despite what others said! Her only regret was her inability to enjoy concerts. It is apparent from comments made by EP that her "unique psychological make-up and the psychosocial environment" in which she functions are integral to her adjustment to the hearing impairment and are central considerations in the approach to audioligic rehabilitation (Erdman, 1993, p. 305). Case 2 was initially managed according to the medical model in that decisions regarding rehabilitative intervention were made irrespective of EP's preferences and appraisal of the communicative and handicapping effects of hearing loss. Stated differently, the audiologist was convinced that the profound hearing loss had to interfere with goal attainment and psychosocial/communication function and that EP could benefit from a hearing aid, a TTY, an FM system, etc. However, EP did not perceive a handicap secondary to the impairment and thus was not interested in traditional devices that would enhance communication. She was convinced that speechreading sessions and a FAX machine were the only interventions necessary to her ability to perform routine activities. In fact, EP did not derive any benefit from amplification but was extremely responsive to the strategies offered for enhanced speechreading. Her post-intervention Utley and speechtracking word per minute scores indicated improved speechreading ability following intervention.

COMMENTS

The cases described above serve to remind clinicians of the importance of the helping process model of service delivery when working with individuals with chronic conditions. In the latter approach to rehabilitation, the professional is called upon to assist the client to manage the types of problems created by a chronic condition, such as hearing impairment (Erdman, 1993). Both cases highlight how responses to self-assessment questionnaires engage the client in the identification and management of their problems. Consideration of the client's viewpoint helps to establish realistic expectations regarding therapeutic outcomes, thereby enhancing treatment efficacy. For example, case 1 clarifies how responses to self-assessment questionnaires provide tangible evidence of the value of short- and long-term audioligic intervention.

Objective evidence of the impact of audioligic intervention from the client's perspective provided powerful ammunition to administrators making decisions about the cost-benefit of particular programs for disabled students. In case 2, the informal history and responses to HHIE revealed minimal perceived handicap and lack of interest and interest in pursuing or succeeding with amplification. EP's perceptions and preferences were disregarded. She purchased hearing aids and she ultimately rejected amplification after a long trial period and little change in HHIE score over time. Her speechreading ability did improve, which was her impetus for pursuing audioligic rehabilitation.

In conclusion, the aforementioned cases shed light on the relevance of self-assessment questionnaires to clinical practice. As Noble (1993), an early advocate of self-assessment, aptly stated, this approach "enables the perspective of the person affected to be appreciated" (p. 301). The very individuality of that perspective makes self-assessment an "invaluable part of the audioligic tool-kit" (Noble, 1993, p. 301). To practice audiology as a true rehabilitation profession, clinicians must acquire an interest in what the problems of living are for individuals with acquired hearing loss (Noble, 1993). Self-assessment tools provide audiologists with a window into the effect of hearing impairment on the communicative, social, and emotional status of the hearing-impaired client. They also provide audiologists and hearing-impaired clients with objective evidence of the positive impact of rehabilitative services. Documentation of the quality of life changes associated with hearing aid use can prove useful to the profession of audiology in this era of managed care and health care reform.

REFERENCES


**APPENDIX**

The Hearing Handicap Inventory for the Elderly (HHIE) and its companion version, the Hearing Handicap Inventory for Adults (HHIA), are questionnaires designed to assess the self-perceived emotional and social consequences of hearing loss. The HHIE was standardized on adults over 60 years of age while the normative data on the HHIA were gathered on a sample of younger hearing-impaired adults. Each questionnaire is comprised of 25 items. The 13-item emotional subscale assesses the self-perceived emotional correlates of hearing impairment, whereas the 13-item social/situational subscale quantifies the communicative effects of hearing loss in a variety of situations. The total score ranges from 0 to 100 percent, and a score in excess of 16 is indicative of a self-perceived hearing handicap (Ventry and Weinstein, 1982; Newman et al, 1990). Sample items comprising the HHIA and HHIE are listed below.

**Sample HHIA Items**

1. Does a hearing problem cause you difficulty hearing/understanding coworkers, clients, or customers?
2. Does a hearing problem cause you to feel frustrated when talking to coworkers, clients, or customers?
3. Does a hearing problem cause you difficulty in the movies or theatre?

**Sample HHIE Items**

1. Does a hearing problem cause you to feel “stupid” or “dumb”?
2. Do you have difficulty hearing when someone speaks in a whisper?
3. Does a hearing problem cause you to attend religious services less often than you would like?