The Current Status of Hearing Care: Can We Change the Status Quo?

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Abstract

The members of the profession of audiology often express concern that the services and products that have been developed to provide benefit to the hearing impaired are not sought after or delivered to the majority of those diagnosed with hearing loss. A critical look at the status quo of hearing care delivery in the United States is needed to verify this assumption and to develop strategies to improve the situation. A key concern is the lack of a comprehensive high-quality scientific database upon which to build continuous improvements in the effectiveness of the services and products that are provided to the hearing impaired.

Key Words: Evidence-based practice, hearing aids, hearing aid outcomes, hearing care, hearing loss, obstacles to provision of hearing care

Abbreviations: MarkeTrak = consumer-oriented tracking surveys of the hearing instrument market; NFO = National Family Opinion

Sumario

Los profesionales en audiología a menudo expresan su preocupación al respecto de los servicios y productos desarrollados para beneficiar a quienes padecen de trastornos auditivos, que no se orientan o dirigen a la mayoría de aquellos diagnosticados con hipoacusia. Se necesita una exploración crítica del status quo de la prestación de servicios de cuidados auditivos en los Estados Unidos, para verificar esta presunción y para desarrollar estrategias que mejoren la situación. Una preocupación clave es la falta de bases de datos científicas, integrales y de alta calidad, sobre las cuales construir mejoras continuas en la efectividad de los servicios y productos que se ofrecen a las personas con trastornos auditivos.

Palabras Clave: Práctica basado en evidencia, auxiliares auditivos, resultados con auxiliares auditivos, cuidados auditivos, pérdida auditiva, obstáculos para la prestación de cuidados auditivos

Abreviaturas: MarkeTrak = Cuestionarios de seguimiento orientados al consumidor del mercado de instrumentos auditivos; NFO = Opinión Familiar Nacional

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As a profession, audiologists express concern that there are many more individuals in the United States with admitted hearing loss than there are individuals who take action to alleviate the effects of the hearing loss. Is this really true? In MarkeTrak VI, Kochkin (2001) reports that of the estimated 28.6 million people in the United States reporting hearing difficulty to some degree, roughly 20% of that group has purchased hearing aids. Because of the nature of the difficulty in obtaining data on intervention for hearing loss, the status quo tends to be reported not so much on the services that are provided, but by the number of devices that are provided in the course of that intervention. The purpose of this paper is, in part, to offer a critical look at the status quo of nonmedical hearing care and the factors commonly cited to arrive at any conclusions.

**INDIVIDUALS WITH HEARING IMPAIRMENT IN THE UNITED STATES**

MarkeTrak uses the National Family Opinion (NFO) panel to sample the U.S. population and determine an estimation of the number of persons with hearing impairment and the products and services they have received. The NFO has been in existence since 1946 and pays volunteers to participate in a variety of surveys. Participants are selected by applying key census variables in an attempt to adequately represent the full adult population (National Family Opinion, 2005). Responses from individuals representing approximately 80,000 households were used in MarkeTrak VI. Respondents were asked questions such as “Does anyone in your household have a hearing difficulty in one or both ears without the use of a hearing aid?” Affirmative responses indicated 15,800 hearing-impaired adults from this group, the figure used to arrive at the estimated 28.6 million in the adult U.S. population (Kochkin, 2001).

Another approach to estimate the incidence of hearing loss in the population is to make use of the data published in “Summary Health Statistics: National Health Interview Survey” from the U.S. Centers for Disease Control and Prevention (Lucas et al, 2004). Individuals from representative households were chosen to participate in an interview process conducted by trained interviewers from the U.S. Census Bureau. (Hobbs and Stoops, 2002) The sample of households in 2001 consisted of data for 33,326 adults. Hearing loss in the survey was defined as “a little trouble,” “a lot of trouble,” or “deaf.” The data from this survey report an overall incidence of hearing loss of 17%. Applying this incidence to a rough estimate of the U.S. adult population in that year (220 million) yields 37.4 million hearing-impaired adults, a figure that exceeds the MarkeTrak VI estimate by 24%. However, of those with an affirmative response to the survey questions about hearing loss in the Census Bureau survey, about 75% reported their problem as “a little trouble.” These individuals may be candidates for hearing assessment and counseling services, but there is no accurate way to judge how many may be hearing aid candidates based on this information alone.

In summary, because of the nature of self-report surveys, it is difficult to precisely determine the number of individuals who are candidates for hearing services and even more difficult to determine the number who are candidates for hearing aids. A comparison of the MarkeTrak VI and National Health Interview Survey data suggests the 28.6 million reported by MarkeTrak VI to be a conservative number for the estimate of individuals with hearing loss. The data, however, do not provide a convincing estimate of the potential hearing aid candidates represented in these surveys of adults with reported hearing problems.

**HEARING AID USE BY THE POPULATION WITH HEARING IMPAIRMENT**

Estimating how many individuals with hearing impairment need and use hearing aids in the United States can be a complicated exercise. MarkeTrak III (Kochkin, 1992) reported an estimated 25.8 million individuals with hearing impairment, of whom 23% reported using hearing aids. Using data collected at about the same time, the 1994 National Health Interview Survey on Disability reported an estimated 4.2 million hearing aid users in the civilian, noninstitutionalized population (Russell et al,
Using the conservative MarkeTrak III estimate of 25.8 million persons with hearing impairment at that time, the percentage of hearing aid users in the population with hearing impairment calculates to about 16%. Although these estimates are contaminated by the fact that populations are defined somewhat differently in each of the data sets, the outcomes are similar to the MarkeTrak III estimates and reinforce the popular conclusion that, of the population with admitted hearing loss, only roughly 20% seek help through the use of hearing aids. Popelka et al (1998) reported data from 1629 adults participating in an epidemiology of hearing loss study. Findings revealed that hearing aid use was 14.6% in individuals with measurable hearing loss in one or both ears and reached only 55% among the most severely affected participants.

The “market penetration” (that is, the number of hearing aid users in the total population of hearing aid candidates) method of accounting for the use of hearing aids may not be the best choice for the monitoring of hearing aid ownership in the population (particularly when attempting to make comparisons with data from third-party payers or data from other countries). Hearing aid utilization per 1000 members of a population group may offer a better global picture of the consumption of hearing aids and the associated services. Repurchase cycles, binaural rates, and other factors, if different from one group to the other, will complicate the comparisons, but corrections may be factored in as they are known.

Using the 4.2 million hearing aid users as reported in the 1994 National Health Interview Survey on Disability (Russell et al, 1997) and an estimate of the U.S. adult population in 1994 of 262 million, the hearing aid ownership rate would have been about 16 per every 1000 adults. MarkeTrak VI reports a mean average age of hearing aids at 3.7 to 3.8 years for 1994 to 2000, suggesting a repurchase cycle on average of about four years. The binaural rate for new purchases in 1994 was 65% (Kochkin, 2001). Simply dividing the ownership by the repurchase cycle, the number of individuals estimated to obtain new hearing aids in 1994 would have been about 4 per 1000. Using the published binaural rate of 65%, the number of hearing aids dispensed or “utilized” would have been 6.6 per 1000 population, or about 1.7 million hearing aids in 1994. The Hearing Industries Association reported annual sales in 1994 to be about 1.5 million units (Kirkwood, 2004). Not all hearing aid manufacturers are Hearing Industries Association members, which leads to underreporting of hearing aid sales in the United States. Considering this, and the errors inherent in any estimation method, the estimated sales numbers are very close to the actual sales figures, supporting the estimate of 4 hearing aid users per 1000 population annual purchase rate, and hearing aid utilization at 6.6 per 1000 population in 1994.

More current figures reveal hearing aid sales of 2,078,280 in 2003 (Kirkwood, 2004) and an estimated population of 290,788,976 (U.S. Census Bureau, 2004). Utilization was, therefore, 7.15 hearing aids per 1000 population in 2003. The most recent MarkeTrak VI report for 2000 cites a binaural rate of 74.2% (Kochkin, 2001). Considering the 2003 sales data, the binaural rate, and assuming a four-year purchase cycle, the estimated number of hearing aid users in the United States was 4,777,652 in 2003, or about 16 per thousand, comparable to the 1994 figure.

Another source of utilization data for hearing aids is third-party payers for hearing aids. By virtue of the processes for reimbursement to providers for products and services, third-party payers are in a position to track hearing aid utilization accurately through their databases. A treatment that has costs partially or fully covered for an insurance plan participant, or member, is referred to as a “benefit.” Some insurance plans pay provider groups a certain amount per member based on projected utilization. The provider group is then responsible for providing the covered services agreed upon. These are referred to as “capitated” plans and often refer to the covered members as “lives.” Unpublished data obtained by personal communication from HearUSA (C.M. Beyer, Aug. 27, 2004) on Medicare capitated plans covering 600,000 lives reveal the following hearing aid utilization rates: <5/1000 for small benefit (<$250) or discount; 12–15/1000 for moderate benefit; and 48/1000 for fully covered benefit.

Hearing aids are not a benefit of Medicare, but the plan administrators chose to include hearing aids to their covered members as a value-added benefit. Clearly, the Medicare population does not represent...
the full spectrum of the population with hearing loss. However, 71% of those reporting the use of hearing aids in the U.S. National Health Interview Survey on Disability were age 65 or over, the typical qualifying age for Medicare (Russell et al, 1997).

Commercial third-party plans differ from Medicare plans in that the covered members include younger adults. Some member groups, such as steelworkers, are at a higher risk for hearing loss because of the conditions inherent in their industry. HearUSA reported the following utilization rates for two commercial fee-for-service plans:

- 8/1000 for high-risk (steelworkers) commercial population, including retirees, with a moderate hearing aid benefit
- <5/1000 for “average” commercial plan (electronics workers) with a moderate hearing aid benefit

In the examples noted above, the covered members with a fixed dollar amount benefit are liable for the balance of the hearing aid purchase price if it exceeds the benefit.

HEARING AID USE IN OTHER COUNTRIES

In the United Kingdom, the 2002 household survey reports an incidence of hearing loss in the adult population to be 16% (Office for National Statistics, 2004). Four percent of the adult population report wearing hearing aids. Using the 2001 census reported population of 58.8 million people in the United Kingdom, 4% calculates to about 2.4 million hearing aid owners, or 41 per 1000. Assuming a conservative five-year repurchase cycle, the annual purchase rate calculates to 8.2 per 1000 population. The United Kingdom is reported to have a binaural rate of 35% (Kochkin, 2003a). Factoring in the binaural rate, utilization can be estimated at 11 hearing aids per thousand population, or 646,800. This estimate compares favorably with the actual sales figures for the United Kingdom, which are reported to be between 500,000 and 600,000 units dispensed by the National Health Service, and 150,000 units dispensed privately (Taylor et al, 2001).

In Australia, the Bureau of Statistics reports an incidence of hearing loss at 11%. As of 2001, the Australian population was about 20 million (Australian Bureau of Statistics, 2002). About 250,000 hearing aids are dispensed through the government and private distribution systems per year, with a typical repurchase cycle of about five years, and a binaural rate of 70% (Harvey Dillon, Ph.D., Director of Research at National Acoustic Laboratories [NAL], Sydney, Australia, pers. comm., August 31, 2004). The National Acoustical Laboratory accounts for about 65% of the total hearing aid sales annually (Australian Government Public Service, 1990). Annual utilization calculates to about 12.5 hearing aids per 1000 population. Assuming a five-year repurchase cycle, and a 70% binaural rate, Australia has about 735,000 hearing aid users, or 37 per 1000 population.

Table 1 summarizes the estimated incidence of hearing loss, the number of hearing aid users per 1000 population, and the number of hearing aids dispensed per 1000 population in the United States, Great Britain, and Australia. Note that overall hearing aid ownership and number of hearing aids dispensed per 1000 population is far less in the United States. When hearing aids are partially or fully covered by a third-party payer in the United States, the annual utilization increases to a level that exceeds the utilization in the United Kingdom and Australia. The comparison suggests that there

| Table 1. Comparison of Population with Hearing Loss and Hearing Aids Dispensed in Australia, the United Kingdom, and the United States |
|----------------|----------------|----------------|----------------|
| Country       | Percent of population with hearing loss | Number of hearing aid users per 1000 population | Annual number of hearing aids sold per 1000 population | Third-party paid hearing aid utilization per 1000 population: moderate to fully covered benefit |
| USA           | 17             | 16             | 6.6 (1994) 7.15 (2003) | Ranges from 12 to 48 for select populations |
| UK            | 16             | 41             | 11           | Estimated @ >10.2 |
| AUS           | 11             | 37             | 12.5         | Estimated @ >8.1 |
is a direct relationship between third-party support, or the net out-of-pocket expense of hearing aids, and the utilization rate.

In summary, the status quo of hearing care is only indirectly defined by the number of hearing aids sold and used by individuals with an appropriate need. However, comparing hearing aid ownership in the United States to two nations with similar standards of living and similar incidences of hearing loss, it appears that the status quo of the portion of hearing care related to hearing aids is poorer in the United States than it is in the United Kingdom or Australia, indicating a need for improvement. The exercises above analyzing the number of hearing-impaired individuals and the number of hearing aid users in the population of the United States support the concern of many audiologists that there are many more individuals in the United States with admitted hearing loss than there are individuals who take action to alleviate the effects of the hearing loss.

Further, it appears that payment support for hearing aids may be strongly related to the seeking and obtaining of hearing aids. These data do not address nor necessarily imply that there is better care or satisfaction with hearing care in the United Kingdom and Australia as compared to the United States. Additionally, the data do not suggest that all persons who could benefit from hearing aids and related services in Australia and the United Kingdom seek out the services and products. By comparison, however, it appears that there are improvements that can be made in service delivery in the United States.

STIGMA

The stigma or embarrassment of wearing hearing aids and/or the perceived unattractiveness of hearing aids in the ears can be difficult to overcome for some potential hearing aid users. Existing hearing aid users do not rate fashion and visibility of hearing aids as highly desirable characteristics for improvement (Kochkin, 2002b). However, ample evidence exists for the stigma and negativity associated with the use of hearing aids (Blood et al., 1977; Johnson and Danhauer, 1982; Mulac et al., 1983). More recently, Garstecki and Erler (1998) investigated a variety of factors influencing hearing aid use among older adults. Male subjects who elected to accept advice to acquire and use hearing aids viewed hearing aids as less stigmatizing than those who elected not to accept such advice. Cienkowski and Pimentel (2001) revisited the “Hearing Aid Effect” by comparing the perceptions of young adults toward hearing loss and hearing aids to perceptions of older adults with hearing loss. The results suggested that, although young adults did not associate hearing aids with aging or diminished cognitive function, there was a reticence toward wearing amplification. Erler and Garstecki (2002) acknowledged that many adults deny hearing loss and reject amplification, in part due to stigma. Results of their study focusing on women suggested that negative perceptions associated with hearing loss and hearing aid use are related to age. Specifically, younger women perceived greater stigma than older women. An encouraging finding was that less stigma was associated with hearing aid use than hearing loss, suggesting a positive effect of hearing loss management. Stigma and the negative aura associated with hearing aids continues to be an obstacle, but affects subsets of the population with hearing loss in differing degrees.

PSYCHOSOCIAL EFFECTS OF HEARING IMPAIRMENT

Personality, attitude, and related factors contribute to the psychosocial effects of hearing impairment and willingness to accept the use of hearing aids. Garstecki and Erler (1998) noted a variety of factors, including
demographic, gender, and personality characteristics, affecting the decision for individuals with hearing loss of whether to obtain and use hearing aids. There is some evidence to suggest that depression inhibits the patient with hearing loss from taking appropriate corrective action. The National Council on the Aging’s 1999 report suggested that unaided hearing loss is associated with depression, anxiety, and social isolation in seniors. In an unrelated study that has implications for the population with hearing impairment who may be depressed as a result of their hearing loss or other factors, DiMatteo et al (2000) found that depressed patients were three times more likely to be noncompliant with medical treatment recommendations than nondepressed patients. Cox et al (2005) found that individuals seeking to obtain and use hearing aids are not a simple random sample of the general population but differ in their personalities and approaches to life’s problems. There were also differences noted between the personality characteristics of those receiving care in government-funded hospital-based settings and those in private practice settings. Hearing-aid-seeking behavior is complex and dependent on the individual characteristics of the patients with hearing loss. Insightful and analytical individuals may cope with their hearing loss in innovative ways other than hearing aids and could be helped additionally if they would accept amplification. Skeptical and suspicious individuals who have hearing loss are less likely to seek assistance in a private dispensing practice but may behave differently in a government-funded public health system. Cox and her colleagues (2005) concluded that it is important for audiologists to gain expertise in recognizing the different characteristics of individuals with hearing loss so that therapeutic treatment approaches may be adjusted to better match the needs of individual patients. These studies indicate that there is broad diversity in the personality and attitudinal variables among the population with hearing loss, which leads to a wide range of behaviors in response to the impairment. Psychosocial factors and their effects on behavior related to hearing aid use are very complex and require a more prominent place in assessment and fitting protocols than exist with the current standard of care.

COST AND VALUE

Cost is a factor in any decision a consumer makes when partial or full responsibility for payment rests with the individual. MarkeTrak VI lists price of hearing aids in the top five reasons for choosing where to obtain products and services (Kochkin, 2002c). At the same time, value of the benefit received from the use of hearing aids is also a key component in shaping consumers’ attitudes. In part of the MarkeTrak VI series of reports, Kochkin noted that price was slightly positively correlated with satisfaction but negatively correlated with value (Kochkin, 2003b). The average retail price paid for hearing aids in the United States increased 35% from 1997 to 2000, further challenging the perception of value (Kochkin, 2001).

Consumers spend between 40% and 50% of their income on housing, food, and clothing. Priorities are set for the remaining income according to needs and the value appreciated. Hearing services do not hold the same appeal as expenditures such as entertainment, which equals or exceeds expenditures for all health care for households with income ranges of $50,000 per year and above (U.S. Department of Labor, Bureau of Labor Statistics, 2003). Cost and value are factors that impact hearing aid purchase decisions and represent an obstacle to hearing aid ownership if people are not convinced that hearing aids are worth what they cost. The increased per capita usage of hearing aids in the United Kingdom and Australia where government support for hearing aids reduces the cost to consumers suggests that a lower cost/higher value system of hearing care delivery in the United States may yield similar increases in consumer hearing aid ownership.

HEARING AID USER OUTCOMES

While many studies point to improvements in outcomes for patients wearing hearing aids (Hawkins and Yacullo, 1984; Hawkins and Naidoo, 1999; Preves et al, 1999; Rickets and Dahr, 1999; Larson et al, 2000; Walden et al, 2000; Cord et al, 2002), perceived problems, such as difficulty hearing in noise (Rickets, 2000), illustrate the negative side of the status quo of hearing care. Describing ten-year trends in customer satisfaction in the hearing aid market,
Kochkin (2002a) reported that evidence indicated that hearing aids were providing only limited satisfaction in the situations investigated in the MarkeTrak VI study. Hearing aid users have reported high levels of satisfaction with the personal attention and service from their dispensing professionals, and ability to hear in a one-to-one situation. However, much lower levels of satisfaction were noted for sound quality, value, comfort with loud sounds, feedback, and use in noisy situations. The MarkeTrak data support the common complaints clinicians hear on a daily basis from their patients who are seeking better performance from their hearing aid systems.

**LACK OF AN EVIDENCE BASE FOR DETERMINING CARE**

It is difficult for providers of hearing care to meaningfully address problems of low hearing aid satisfaction due to the lack of a comprehensive evidence base for the selection and fitting of hearing aids and a troubling lack of a culture that promotes continuous improvement based on evidence. Peer-reviewed publications describing performance of various techniques and hearing aid circuits are available, but high-quality evidence about what works for patients in the form of randomized, blinded studies designed to answer critical questions about candidacy for hearing aids, hearing aid selection, fitting, and rehabilitation are very rare. For example, typical clinical questions facing many audiologists on a daily basis have to do with the determination of candidacy for hearing aids, the selection of appropriate devices, and development of an effective treatment plan. A MEDLINE search for recent publications on the question of candidacy yields some helpful information, as found in Walden and Walden (2004). However, the majority of clinical studies focus on cochlear implant and bone-anchored hearing aid candidacy. The quality of research information on traditional amplification is summed up by Maki-Torkko et al, who note that “only a few studies on HA [hearing aid] outcome meet strict scientific criteria and even fewer studies correlate rehabilitation outcome with the degree of HI [hearing impairment], disability or handicap” (2001, p. 8).

If one agrees that questions about specific clinical approaches to patients’ needs are best answered following the principles of evidence-based practice, then high-quality evidence should be readily available for practitioners; however, it is not. The standard of care for delivery of hearing services includes hearing assessment based on decades of sound research. However, the determination of a treatment plan that includes candidacy for, and selection of, hearing aid characteristics does not have the same foundations. The common approach is to use clinical experience based on past performance with other patients in determining candidacy, amplification characteristics, and rehabilitation. Research is often reactive to products introduced by industry, with published data emerging long after the introduction and commonplace use of the technology.

**THE STATUS QUO OF HEARING CARE**

Treatment of hearing loss is targeted at a population that is difficult to define and quantify by self-report surveys. In addition, an analysis of the data available suggests that the U.S. system of hearing care delivery does not reach the same percentage of hearing-impaired individuals as are served in the United Kingdom and Australia. Clearly, improvements are needed in the current hearing health-care delivery model in the United States. While important advances in nonmedical treatment options for hearing loss have been realized, the number of patients willing to seek this treatment has not kept pace with the estimated number of those who would benefit from treatment.

Further, there is an absence of a culture of building a sound body of high-quality evidence that promotes continuous improvement of hearing care in the form of effective services and products delivered to the hearing-impaired population.

**WHAT CAN BE DONE TO IMPROVE THE SITUATION?**

In the economic conditions that exist in 2005, it is unlikely that a government program or other third-party payment system will emerge in the near future to help more
of the population with hearing loss purchase hearing aids. Thus, problems with cost and value will likely remain for the foreseeable future. In the long term, however, hearing care would ideally be regarded as highly as any other health-care service, with direct access to audiologists by the general public and third-party payment for hearing aids and the associated audiologic services.

In the meantime, it is possible to be proactive about building an evidence base for hearing care. Practitioners need to be trained to understand the importance of evidence and to recognize what is evidence and what is not. This will require building a culture of graduate and continuing education that is centered on evidence-based practice. Researchers and manufacturers need to give more attention to the scientific principles needed to generate good evidence. Audiologists and the hearing-care system inherited a sales-oriented hearing aid delivery model several decades ago. The distinction between sales and science is often blurred for the consumer and practitioner alike. When we can present a universal, solid science-oriented approach, there will be no need for, and confusion about, a sales orientation.

REFERENCES


