Self-reported outcomes of aural rehabilitation for adult hearing aid users in a South African context

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ABSTRACT

Hearing impairment has far-reaching consequences for affected individuals, in terms of quality of life indicators. In the public health care sector of South Africa the hearing-impaired population is faced with limited aural rehabilitation services. This study evaluated self-reported outcomes of aural rehabilitation in a group of adults in the public health care sector with a standardised outcomes measurement tool (IOI-HA). Sixty-one participants were included (44% male; sample mean age 69.7 years) through face-to-face or telephonic interviews. Results revealed that the average perceived outcome of participants (5 = best outcome; 1 = poorest outcome) was positive across all domains of the inventory including daily use of hearing aids (4.3); benefits provided by hearing aids (4.3); residual activity limitation (3.9); satisfaction with hearing aids (4.5); residual participation restriction (4.0); impact of hearing difficulties on others (4.6); and changes in quality of life (4.5). Statistically significant relationships for daily use of hearing aids, degree of hearing loss, type of hearing aids fitted, and the perceived benefit from hearing aids in difficult listening environments ($p<0.05$) were evident. Adult aural rehabilitation for hearing loss in a public health care facility, even without optimal hearing aid fittings, was effective in providing positive perceived outcomes comparable to similar studies in developed countries. The findings advocate for the initiation of affordable and sustainable aural rehabilitation services in developing countries despite apparent resource limitations.

Keywords: aural rehabilitation, self-reported outcomes, developing countries, public health care sector, IOI-HA

The 2005 World Health Organization estimates indicated that 278 million people are affected by disabling hearing loss, two-thirds of whom live in developing countries (WHO, 2005). It is therefore not surprising that hearing loss is a significant contributor to the global burden of disease on individuals, families, communities and countries (WHO, 2005). The number of people with disabling hearing impairment is expected to progressively increase as a result of the increase in world population and a greater life expectancy. Decisive public health action at primary, secondary and tertiary levels should be prioritised to prevent avoidable hearing loss and ensure optimal outcomes for those living with the condition (WHO, 2001).

The effects of hearing loss are pervasive and far-reaching for individuals and their families. Hearing loss affects social participation, emotional and behavioural well-being, employment status and quality of life (Northern & Downs, 2002). Fortunately, the effects of hearing loss can be limited by effective amplification and aural rehabilitation. The first and fundamental step in the aural rehabilitation process involves amplification. A hearing aid is the primary tool in the rehabilitation process (Alpiner & McCarthy, 2000), and aims to restore hearing sensitivity to a normal hearing level (Gagné, 2000). Aural rehabilitation also goes beyond this and assists individuals to restore or optimise participation in activities considered restrictive by the hearing-impaired individual (Gagné, 2000).

As part of clinical procedure, feedback about aural rehabilitation can be obtained by self-reported outcome assessments. Outcome assessments should evaluate the degree to which hearing aids assist individuals to overcome their hearing difficulties, and determine their level of functioning (Danermark, Cieza, Gange, Gimigliano, Granberg, Hickson *et al.*, 2010). While objective measures, such as speech-recognition scores, measure the benefits provided by the amplification and other technical features of a hearing aid, self-reporting has the potential to subjectively evaluate the entire process of aural rehabilitation as experienced by the affected individual (Vestergaard, 2006). The International Outcome Inventory for Hearing Aids (IOI-HA) questionnaire is a commonly used self-reporting measure that consists of seven domains related to hearing aid fitting outcomes. These include: (*i*) hearing aid use as number of hours per day; (*ii*) benefit related to difficult listening situations; (*iii*) residual activity limitations related to the hearing loss; (*iv*) satisfaction with the hearing aids; (*v*) residual participation restrictions in daily life activities even with amplification; (*vi*) impact of hearing loss on others; and (*vii*) quality of life improvements after amplification (Hickson, Clutterbuck & Khan, 2010). The IOI-HA is especially useful since comparisons can be made across studies because a number of published reports have used the instrument. A limitation of the instrument is that it does not differentiate between listening situations or include aspects of satisfaction related to the hearing aid or the service provided (Hickson *et al.*, 2010). Despite widespread use of the IOI-HA questionnaire, there is currently no universal outcomes measure for aural rehabilitation. As a result, the World Health Organization International Classification of Functioning branch is currently in the process of developing a core set of outcomes of functioning for individuals with hearing loss (Danermark *et al.*, 2010).

The growing emphasis on evidence-based audiological rehabilitation means that such outcome measures are becoming increasingly important (Gagné, 2000). Assessing patient satisfaction is an essential part of modern patient-orientated health care services (Danermark *et al.*, 2010). Self-reported outcome measures of aural rehabilitation are therefore of great value and importance to assist in identifying the patient's need for services, highlight expectations that are met through aural rehabilitation, and provide insight into the impact of the impairment on the patient's functioning in daily life (Danermark *et al.*, 2010; Olusanya, 2004). As a result these measures of aural rehabilitation outcomes are prioritised within the health care systems of developed countries. Reports from countries such as The Netherlands, UK, Australia and the USA indicate significant self-perceived improvements in outcomes as a result of aural rehabilitation and are often required to demonstrate the efficacy of audiological services (Kramer, Goverts, Dreschler, Boymans & Festen, 2002; Stephens, 2002; Cox & Alexander, 2002; Williams, Johnson & Danhauer, 2009; Hickson *et al.*, 2010).

In contrast, measuring the efficacy of aural rehabilitation services in developing countries is not prioritised (WHO, 2006; Olusanya, Luxn & Wirz, 2004). Developing countries are economically less developed, determined by factors such as low human and social development

in terms of education, health care and life expectancy (World Bank, 2004). Overcrowding, malnutrition and poverty often characterise the living conditions in developing countries (Olusanya, 2005). Because of competing demands from diseases with high mortality rates such as HIV/AIDS, the focus of health care systems in developing countries is on life-threatening diseases, and little or no support is provided for non-communicable conditions affecting quality of life such as hearing loss (Olusanya, 2004).

Owing to the lack of services for hearing-impaired individuals in developing countries, the research on self-reported outcomes of aural rehabilitation in these countries is very limited. The first such published report, conducted by Olusanya (2004) on the self-reported outcomes of aural rehabilitation in Nigeria, indicated that hearing aid users considered the devices to be beneficial and desirable in all specified domains of the IOI-HA. These findings compared favourably with those of developed countries in almost all domains, indicating that hearing aid users from developed and this developing country may receive similar benefit from aural rehabilitation (Kramer *et al.*, 2002; Stephens, 2002; Cox & Alexander, 2002). The results further suggested that if appropriate conditions for hearing aid services are provided, aural rehabilitation in a developing country may reduce disability and enhance functionality in crucial quality of life domains (Olusanya, 2004).

Based on these studies in developed countries and in a single report from a developing country (Kramer *et al.*, 2002; Stephens, 2002; Cox & Alexander, 2002; Olusanya, 2004), the current research project aimed to investigate the outcomes of aural rehabilitation in South Africa by means of the IOI-HA questionnaire. The use of this widely used device ensured that it could be compared with previous findings from other countries. The unique characteristics of developing countries require the investigation of self-reported outcomes of aural rehabilitation within the contextual realities faced in these settings. Favourable outcomes of aural rehabilitation in developing countries may serve to highlight the importance of early identification and intervention of hearing impairment despite the burden of other challenges that characterise these countries.

Method

The main aim of this study was to describe the self-reported outcomes for a group of adult hearing aid users in South Africa using the IOI-HA. The outcomes were described in terms of daily use of hearing aid(s), benefits (improved activity) provided by hearing aid(s), residual activity limitation, satisfaction provided by the hearing aid(s), residual participation restriction, impact of hearing loss on others, and quality of life.

Research context

The study was conducted at a tertiary hospital in Gauteng, South Africa. Tertiary hospitals form part of the public health care sector, which serves approximately 85% of the population (National Treasury Department, Republic of South Africa, 2005). The public health care sector serves the developing portion of the population who cannot afford private health care insurance and only utilises 39% of the country's total health care expenditure (National Treasury Department, Republic of South Africa, 2005). This tertiary hospital included ear, nose, and throat services, diagnostic audiometry, electrophysiological testing and hearing aid fittings. Hearing aid fittings utilised both digital and analogue technology on the State tender.

Participants

A total of 61 participants, 27 (44%) male and 34 (56%) female, were included in this study. Ages ranged between 23 and 91 years with a mean age of 69.7 years. The degree of hearing loss prior to fitting was minimal to moderate (26 - 70 dBHL) for 23 (38%) and moderate to profound (>70 dBHL) for 38 (62%). Thirty-eight participants (62%) were fitted with behind-the-ear (BTE) and 23 (38%) with in-the-ear (ITE) hearing aids. Thirty-two (52%) and 29 (48%) participants were fitted with analogue and digital technology hearing aids respectively. Only 18 (30%) were fitted binaurally, while the rest of the participants (70%) were fitted monaurally. Most of the participants were fitted monaurally because of financial constraints. The minimum period of time that participants were fitted with hearing aids when interviewed was 2 months and the maximum was 8 months. Table I contrasts the study method and profile of participants for this study compared with similar studies in developed countries (Kramer *et al.*, 2002; Stephens, 2002; Cox & Alexander, 2002) and a developing country (Olusanya, 2004). Table II outlines the participant selection criteria for the current study.

The aural rehabilitation process for all participants in this study consisted of hearing aid fitting with pre- and post-fitting counselling. Each participant was counselled on the management and maintenance of the hearing aid and having realistic expectations about hearing aid outcomes, as well as how to effectively use his/her hearing aids to ensure optimal communication in daily life activities.

Questionnaire

A descriptive quantitative survey design in the form of a questionnaire was followed in this study, the International Outcome Inventory for Hearing Aids (IOI-HA), as used in previous studies of this nature (Kramer *et al.*, 2002; Stephens, 2002; Cox & Alexander, 2002; Olusanya, 2004). This self-reported outcome measurement tool was developed as a product of an International Workshop on Self-Reported Outcome Measures in Audiological Rehabilitation to facilitate co-operation among researchers in diverse health care settings, as well as across national boundaries (Cox, Stephens & Kramer, 2002). The IOI-HA consists of seven closed-ended questions each targeting a different outcome domain (Cox & Alexander, 2002; Hickson *et al.*, 2010). South Africa is a developing country, with a diverse collection of people and cultures (Statistics South Africa, 2003), characterised by low human, social and educational development (World Bank, 2004). Within the multi-cultural, multi-racial and multi-lingual context of South Africa, (Statistics South Africa, 2003) the IOI-HA was a valuable research tool, as the wording and construction of the items present minimal literacy and cognitive demands (Cox & Alexander, 2002).

Data collection and procedures

Face-to-face and telephonic interviews were used to collect data. Telephonic interviews were done in cases where participants were unable to attend follow-up sessions at the hospital. The researcher clarified any uncertainties or questions participants may have had (De Vos, Strydom, Fouche & Delport, 2005). The IOI-HA was used in its original English format (Cox & Alexander, 2002). Although participants were from multi-racial and various language backgrounds, all participants were required to be proficient and comfortable in English.

Analysis

A scale of 1 - 5 was assigned to each of the 7 items on the IOI-HA, proceeding from the worst outcome (1) to the best outcome (5). This was analysed using descriptive statistics incorporating mean scores and standard deviations. The mean scores for each of the seven domains were compared with other related studies (Kramer *et al.*, 2002; Stephens, 2002; Cox & Alexander, 2002; Olusanya, 2004) to explore possible cross-country differences. The chi-square test and Fisher's exact test were used to determine whether any statistically significant relationships existed between IOI-HA items and demographic factors. The level of significance was set at $p<0.05$.

Results

Results are presented in terms of the following: self-reported outcomes of aural rehabilitation based on the seven items on the IOI-HA; the relationships between the degree of hearing loss, the type of hearing aid(s), the daily use of hearing aid(s), the gender of subjects and the benefits perceived by hearing aid(s).

The distribution of responses for the seven self-reported domains of the IOI-HA scale is presented in Figure 1. Results indicated that hearing aid users experienced significant benefit in all seven domains evaluated on the IOI-HA. The average perceived outcome for participants (5 = best outcome; 1 = poorest outcome) in each domain was 4.3 for daily use of

Table I. Profile of participants for the current study and for similar reports from other countries

	Current study	Nigeria (Olusanya, 2004)	UK (Stephens, 2002)	USA (Cox & Alexander, 2002)	Netherlands (Kramer *et al.*, 2002)
Total number of participants	61	99	159	172	505
Gender					
Male	27 (44%)	61 (61%)	76 (47%)	57%	280 (55%)
Female	34 (56%)	38 (38%)	85 (52%)	42%	255 (50%)
Age					
Minimum	23	16	40	26	15
Maximum	91	89	94	98	97
Mean	69.7	45.8	72.4	72	64
Degree of hearing loss					
Mild-moderate*	23%	34%	Mean for better ear: 38.8 dB	Not specified	Mean: 67 dB
Moderate-profound*	38%	65%	Mean for worse ear: 50.6 dB		
Type of hearing aid					
ITE	23 (38%)	43 (43.4%)	5%	Not specified	Not specified
CIC	0	11 (11.1%)	(ITE & CIC)		
BTE	38 (62%)	33 (33.3%)	95%		
Body aids	0	12 (12.1%)	0		
Hearing aids fitted					
Monaural	43 (70%)	1 (1%)	99 (61%)	40%	210 (41%)
Binaural	18 (30%)	98 (99%)	62 (38%)	59%	295 (58%)
Hearing aid technology					
Digital	29 (48%)	8 (8.1%)	Not specified	Not specified	Not specified
Analogue	32 (52%)	91 (91%)			
Hearing aid experience					
Minimum	2 months	3 months	Not specified	1 year	3 months
Maximum	8 months	12 months			1 year
Mean	3.8 months				
Research institution	Public health sector	Private health sector	Private health sector	Private health sector	Private health sector (retrospective study)
Data collection procedure	Interviews	Interviews	Interviews	Mail	Mail

*Based on pure tone averages across frequencies 0.5, 1, 2 & 4 kHz in the better ear.

ITE = in the ear; CIC = completely in canal; BTE = behind the ear.

Table II. Participant selection criteria

Criteria	Description
Age of participants	Participants were required to be 18 years or older. The study measured the benefits provided by hearing aid(s) for adult hearing aid users. From the age of 18 years a person can give independent consent in South Africa.
Population	Participants from different racial, sexual and religious backgrounds participated in this study. This prevented the results of the study from being biased, thereby increasing reliability and validity.
Degree of hearing loss	Hearing impairment of participants ranged from a minimal (26 - 40 dB) to a profound (>90 dB) hearing loss. This was included in the study, as the benefits provided by hearing aid(s) vary according to the degree of hearing loss (Tye-Murray, 2004).
Nature of hearing loss	Participants had a unilateral or bilateral, conductive, sensory neural or mixed hearing loss. This increased the sample size, allowing generalisation to be more accurate (De Vos *et al.*, 2005). Furthermore it prevented the study from being biased towards a specific nature of hearing loss.
Hearing aid(s) fitted	Participants were fitted with analogue or digital technology hearing aid(s), monaurally or binaurally. Any of the following types of hearing aid(s) were fitted: behind-the-ear (BTE), in-the-ear (ITE), in-the-canal (ITC) or completely-in-canal (CIC) hearing aid(s). If only one specific technology and type of hearing aid was singled out, the results would not have been able to be generalised to all hearing aid users.
Time frame	Participants had to be fitted with hearing aid(s) for a period of at least 2 months or longer. Studies suggested that 2 - 3 months after fitting is an optimal time frame after which to assess outcomes (Alpiner & McCarthy, 2000).
Language	Participants had to be able to understand and speak English. Given the fact that South Africa is a multi-cultural country with 11 official languages, the International Outcome Inventory for Hearing Aids (IOI-HA) (questionnaire) was used in its original English form (Cox & Alexander, 2002). The study scope was too limited to translate and validate the questionnaire.

hearing aids, 4.3 for benefits provided by hearing aids, 3.9 for residual activity limitation, 4.5 for satisfaction with hearing aids, 4.0 for residual participation restriction, 4.6 for the impact of hearing difficulties on others and 4.5 for changes in quality of life. The highest percentage (72%) of best outcome scores (5) across all items was for satisfaction with hearing aid(s). A reasonably high (61%) number of participants indicated the highest or best score (5) for hearing aid(s) daily use and 71% of participants reported that their hearing aid(s) improved their residual activity level significantly (score 4 and 5). Only two items, benefit and satisfaction, had any scores in the poorest outcome category (1) across the seven domains. Only a very small percentage (2%) indicated the poorest outcome score (1) in these two categories.

Results of the chi-square test and Fisher's exact test analysis identified statistically significant relationships between the daily use of hearing aids and the degree of hearing loss (p=0.0002), between the daily use of hearing aids and the type of hearing aids (p=0.0326), and between the gender of subjects and the benefits perceived by hearing aids (p=0.0168). These relationships indicated that subjects with a greater degree of hearing loss (78%) used their hearing aid(s) more often. BTE hearing aid users (71.05%) wore their hearing aid(s) for more than 8 hours daily, while those (56.52%) with ITE hearing aid(s) wore theirs less often. Women (91.18%) reported receiving more benefits from hearing aid(s) than men (33.33%). These significant relationships are displayed in Figure 2.

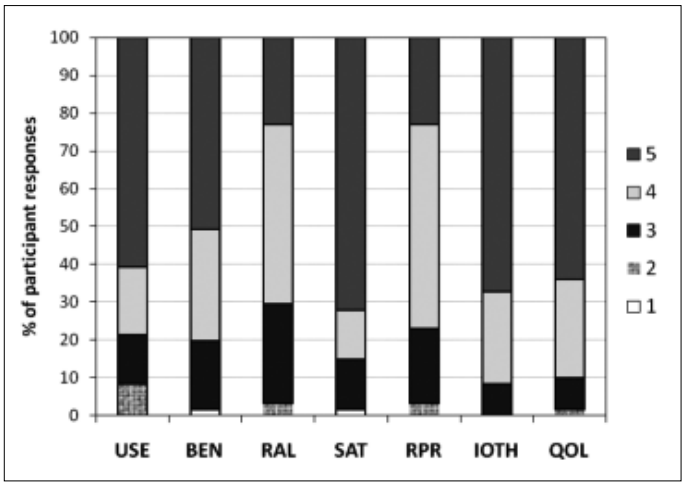

Fig. 1. Distribution of responses for the seven IOI-HA domains (1 = poorest outcome; 5 = best outcome) (USE = daily use; BEN = benefit; RAL = residual activity limitations; SAT = satisfaction; RPR = residual participation restriction; IOTH = impact on others; QOL = quality of life).

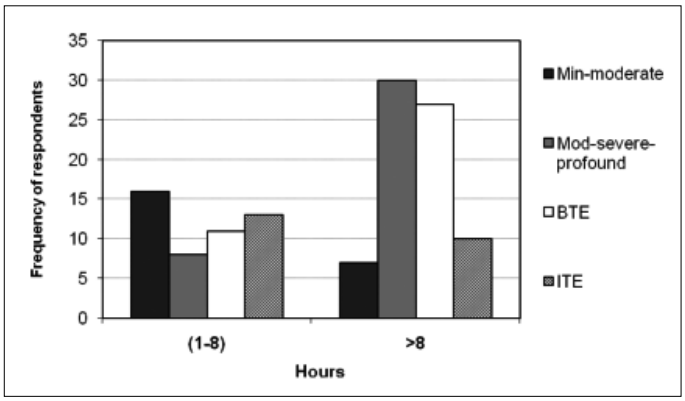

Fig. 2. Degree of hearing loss and type of hearing aid compared with daily use of hearing aid(s) (BTE = behind the ear; ITE = in the ear).

Discussion

In South Africa the majority of the population with hearing loss cannot afford audiological services in private practice and therefore rely solely on the public health care sector (Swanepoel, 2006). This sector and developing countries in general face a number of challenges, including a shortage of hearing aids and insufficient numbers of hearing health care professionals (Swanepoel, 2006; Punch, 2001; WHO, 2001). Budget constraints in the public health care sector meant that the majority of participants in the current study were only offered monaural hearing aid fittings. Despite these challenges the overall self-reported aural rehabilitation outcomes in this study were very positive. Valuable insight into how the South African sample perceived the use of hearing aid(s) and the effectiveness of the aural rehabilitation process can be drawn from these findings.

The benefits delivered by a hearing aid are primarily determined by the extent to which it facilitates everyday communication. The significant benefits derived from hearing aid(s) by participants in this study, emphasise the importance and value of aural rehabilitation services in South Africa and for other developing settings. The overwhelmingly positive report of benefits perceived from hearing aid(s) in this study despite sub-optimal fittings is difficult to explain. It may in part be contributed to the sample representing a developing context where expectations may be lower because of a more accepting stance towards disabilities in African communities (Louw & Avenant, 2002), which may have resulted in greater perceived benefits. Only a small percentage of participants (2%) reported no benefit from the hearing aid(s). This may be due to a number of reasons including technical problems, monaurally fitted hearing aids as opposed to binaural fittings, or unrealistic expectations concerning the use of hearing aid(s) in this subset. Studies have demonstrated that novice hearing aid users may have unrealistic expectations about the benefits they will receive from amplification (Cox & Alexander, 2000). The novice hearing aid user may hope for complete restoration of auditory function, i.e. high expectations. If these expectations are not met, individuals may perceive limited benefits and even reduce the frequency of hearing aid use (Saunders, Chisolm & Abrams, 2005). These results highlight the importance of appropriate counselling on the part of the hearing health care professional, in order to ensure realistic expectations.

Gender differences influenced the outcomes of aural rehabilitation in the current study, with the majority of women (91%) indicating real benefits from their hearing aid(s) compared with only one-third of male participants (33%). In contrast, reports by Williams *et al.* (2009) and Cox and Alexander (2002) did not find any significant influence of gender on the IOI-HA measured outcomes of aural rehabilitation. An earlier study did however find that women were more likely to acknowledge hearing loss than men (Garstecki & Erler, 1999). Women tend to attach greater value to communication in social situations and take part more actively in reducing their communication difficulties, and this may have contributed to the gender difference in the current study (Garstecki & Erler, 1999). The difference may also reflect the population characteristics of the current study, being from a developing African context, compared with reports by Williams *et al.* (2009) and Cox and Alexander (2002) from developed countries.

Residual activity limitation reflects the degree of disability that persists after amplification (Olusanya, 2004). A large percentage of participants (48%) reported still having slight difficulty in crucial situations where they expected their hearing aid(s) to be helpful. According to Olusanya (2004), the reasons for still perceiving activity limitation may be similar to those for poor benefits received from hearing aids such as technical issues or unrealistic expectations. The same may be true for the current study, in that participants may have expected their hearing aid(s) to ensure optimal hearing in all situations. The fact that participants were mainly fitted monaurally may also have contributed to difficulties in discriminating speech in the presence of background noise. Appropriate counselling should be central to the intervention process to ensure realistic expectations in the light of these specific challenges.

Kochkin (1994) associated satisfaction with the fulfilment of a need or a desire. Satisfaction is highly related to benefits achieved by wearing hearing aids. The building blocks of satisfaction can be categorised into six domains: cosmetic and self-image; sound quality; benefit; comfort and ease of use; cost; and service quality (Cox & Alexander, 1999). Satisfaction in these areas will lead to a high level of overall satisfaction (Cox & Alexander, 1999). Most of the participants (72%) in this study were satisfied with their hearing aid(s). Use, benefit and satisfaction are the targeted outcomes for hearing aid fittings. Results indicated a high percentage in the use (61%), benefit (51%) and satisfaction (72%) domains, representing evidence of effective aural rehabilitation.

Most of the participants (77%) in this study reported minimal or no restriction by their hearing difficulty in their daily life participation. These results suggest that hearing aid(s) lead to significant reduction in the handicapping effects of hearing loss in life situations as reported by Olusanya (2004). When evaluating the success of aural rehabilitation, the focus is most often on the residual participation restriction of the user, whereas the impact of hearing loss on the significant others of hearing-impaired people is often overlooked. A large percentage of participants (67%) did not feel that their hearing difficulty was of any inconvenience to those they interacted with while wearing their hearing aid(s). Eight per cent, however, felt that their significant others were affected by their hearing loss. According to the quality of life measure the majority (64%) of participants indicated the highest outcome score (5) for a significantly improved quality of life due to their hearing aid(s). Hearing impairment has adverse effects on physical, cognitive, emotional, behavioural and social functioning, which are all contributors to quality of life (Barton, Bankart & Davis, 2005). The use of hearing aids may lessen depression, reduce negative emotions and improve psychosocial function, thus improving quality of life (Kochkin & Rogin, 2000).

Figure 3 provides a comparison with results from the current study and those of similar studies conducted in developed and developing countries (Table I provides the methodological differences between these studies). This cross-country comparison indicates that South Africa presented with the best overall perceived benefits and satisfaction scores. This is despite the fact that the participants in the current study were faced with the limitations of a developing context and the public health care sector (i.e. monoaural hearing aid fittings). This may be explained in part by the fact that benefits and satisfaction are closely related to expectations (Gatehouse, Naylor & Elberling, 2003). Expectations related to hearing aids in a developing South African context may have been lower than in developed contexts. These lower expectations are then met far beyond conjecture, causing subjective benefits and satisfaction to be high (Bille & Parving, 2003). Providing adequate aural rehabilitation services, even if not state-of-the-art, in developing contexts such as South Africa, may still result in significant outcome benefits to the affected individuals.

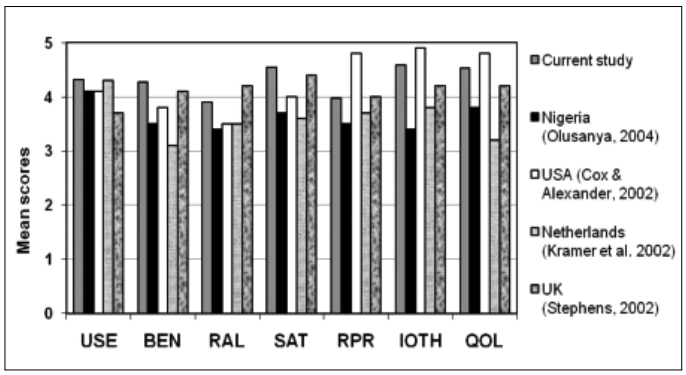

Fig. 3. Cross-country comparisons based on mean scores on IOI-HA items (1 = poorest outcome; 5 = best outcome) (USE = daily use; BEN = benefit; RAL = residual activity limitations; SAT = satisfaction; RPR = residual participation restriction; IOTH = impact on others; QOL = quality of life).

Disability, or hearing impairment, cannot be seen as an exclusive feature of the individual. The focus is not only on the hearing-impaired individual, but also on the environment in which the person lives, and society at large (Schneidert, Hurst, Miller & Ustun, 2003). Non-audiological variables will undoubtedly influence the outcomes of audiological rehabilitation, such as personality, self-efficacy, social support, attitudes towards hearing aids and health status (manual dexterity) (Kricos, 2000). In the multi-cultural context of South Africa, different perceptions of disabilities may also influence the outcomes of rehabilitation, since a more fatalistic outlook that leads to a passive accepting attitude towards hearing loss may be a characteristic of African families (Louw & Avenant, 2002). Investigations of the perceptions of disability, specifically hearing loss, among various populations in developing contexts are necessary to provide better insight into the benefits that patients may perceive. This may also provide a better understanding of the reasons for outcomes that are comparable to those in developed countries despite sub-optimal amplification.

Conclusion

By reporting the subjective opinions of hearing-impaired individuals, this study provides evidence that hearing aid(s) greatly improve quality of life for individuals relying on the public health care system in South Africa. Although the majority of the sample from this study was fitted monaurally, the perceived outcomes were still very positive, especially for women, who demonstrated better-perceived outcomes. Participants were satisfied with and reported benefit from their hearing aid(s), and experienced an increased enjoyment of life. The study indicated that aural rehabilitation in a public health care facility, even without optimal hearing aid fittings, was effective in providing positive perceived patient benefit. These findings advocate for the initiation of affordable and sustainable aural rehabilitation services in developing countries. Implications for clinical practice include the reassurance that intervention in the form of amplification, despite other challenges including sub-optimal fittings typical of resource-poor contexts, may still offer significant benefit to patients. Hearing-impaired individuals gain much benefit from audiological rehabilitations. Furthermore, counselling remains essential in this process and may need to be adjusted to address the specific concerns of male users to ensure optimal outcomes in this population.

Limitations of the current study include the fact that participants were sampled from only one hospital and not from more diverse sectors of the South African health care services. In addition to this limitation, two data collection techniques were used, a questionnaire and interview, which may have influenced results to some degree. Despite these limitations, results compared favourably with similar studies conducted in developed and developing countries (Kramer *et al.*, 2002; Cox & Alexander, 2002; Stephens, 2002; Olusanya, 2004).

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