Do hearing aids improve lives? An impact study among a low-income population in Guatemala

Executive Summary
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In Memoriam Blema Steinberg & H. Arnold Steinberg

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People with hearing loss:
- Were significantly poorer than people without disabling hearing loss\(^1\)
- Twice as likely to have symptoms of depression
- Had a significantly poorer quality of life

After receiving hearing aids:
- 82% were satisfied with their hearing aids
- 71% of people used them daily
- 78% used them for at least four hours per day

The use of hearing aids created a significant improvement in mental health & wellbeing, including:
- Reduction in moderate-severe symptoms of depression\(^2\)
- 86% of case participants reported that hearing aids increased their self-confidence
- 88% of case participants reported that hearing aids had positively changed their enjoyment of life
- 23% felt safer wearing their hearing aids
- 56% reported that the most significant benefit of wearing hearing aids had been the ability to communicate with family and friends

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\(^1\) Total household and per capita expenditure was over 74% higher in control households as compared to case households

\(^2\) A reduction of 83% based on six case participants reporting moderate to severe symptoms of depression at baseline and one case at follow-up.
Executive Summary

"We have often been asked, 'What are the outcomes of hearing aids on people in low and middle income countries?'. We never had a quantitative answer to that question because the data simply did not exist. That is why this impact study is so important, for the purpose of sharing the results with the world and advancing the field of hearing loss."

Audra Renyi
Executive Director
World Wide Hearing Foundation International

Background
Hearing loss affects over 1.3 billion people worldwide and ranks second on the list of non-fatal, disabling impairments. Geographically, 90% of people with disabling hearing loss live in low & middle income countries.

Hearing loss has both immediate and long-term consequences. It has been adversely linked to a poorer socio-economic status, impaired activities of daily living and employment, reduced mental health and quality of life. Most of this evidence comes from research conducted in high income countries and data is lacking from the poorer parts of the world.

Hearing aids are considered to be the most effective and cost-effective way of improving the quality of life of hearing impaired people and may contribute to the economic independence of affected individuals. However, few studies have looked at the positive impact of hearing aid interventions, in particular in a low or middle income country such as Guatemala.

Research Aim
The aim of this study is to assess the impact of hearing impairment and the provision of hearing aids on socio-economic status (poverty), mental health, quality of life and activity participation in Guatemala.

Methods
A controlled, before-and-after impact evaluation was conducted to assess the impact of: 1) Hearing loss and 2) Provision of hearing aids (the intervention).
**Participants:** Adults with a moderate-profound hearing impairment, living within urban and rural areas in and around Guatemala City, were identified by the Sonrisas que Escuchan Foundation. For each case, a matched age and gender control was selected and screened to confirm that they did not have disabling hearing loss.\(^3\)

**Baseline Data Collection:** All cases and controls were interviewed using a structured questionnaire which asked questions about mental health, quality of life, activity participation and their socio-economic status.

**Intervention:** Cases with hearing loss were provided with hearing aids.

**Follow-up:** After a period of 6-9 months, cases and controls were re-interviewed to assess the impact of this intervention. In-depth qualitative interviews were conducted with a sample of subjects to complement the data gathered from the survey questionnaire.

**Results**
The study compared 206 cases with moderate to profound hearing loss and 146 control participants without disabling hearing loss. The results of the study at baseline indicate that compared to controls, case participants were:

- Significantly poorer, as measured by a 44% lower level of expenditure
- Spending 58% less on household items, 69% less on education but 33% more on health care products and services
- Significantly more likely to have a lower income (34%)
- Twice as likely to report depressive symptoms
- Significantly more likely to experience poor quality of life on a range of domains.

In addition, 78% of case participants described the emotional and social impact of hearing loss as disabling. Common reported barriers to uptake of hearing aids were affordability and lack of knowledge on where to access support.

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\(^3\) Inclusive of mild, non-disabling hearing loss.
At follow-up, after the cases had received their hearing aid(s), they:

- Reported significantly fewer symptoms of depression
- Had significantly improved quality of life across a range of domains
- Reported positive hearing aid experiences including improved communication with family and friends, feeling safer and more confident and increased effectiveness at work.
- Were satisfied with their hearing aids (82%).

Furthermore, the use of hearing aids was high, whether measured objectively, from the device usage data or through self-reporting. Most people (71%) used their hearing aids on a daily-basis and over three quarters (78%) used them for at least four hours per day.

There was no change in poverty level among the cases, as measured by expenditure. However, the expenditure level among controls declined between baseline and follow-up. External forces such as political fragmentation, reduction in public investment, increased poverty levels and insufficient GDP growth\(^7\) may provide an explanation for these results, inferring that under more favourable economic conditions, case income and expenditure at follow up may have increased and that the hearing aids were protecting the cases from the economic losses experienced among the controls.

**Discussion**

Hearing loss has a substantial and broad ranging negative impact on the lives of people living in Guatemala, including their: economic status, mental health and quality of life. In less than a year of usage, hearing aids significantly improve mental health and quality of life. It is proposed that in the longer term, hearing aid provision may also reveal a positive impact on poverty alleviation.

**Research Recommendations**

**Advocacy**

To disseminate the findings of this research study amongst a wide range of community based, national and international stakeholders. Such open communication will generate awareness of hearing loss prevalence, promote an understanding of its impact and aim to encourage a positive change in practice, such as national ear-health policy development and greater hearing aid funding and provision.
Service Provision
The research findings indicate that people were satisfied with the ear health services provided by the Sonrisas que Escuchan Foundation and that commonly reported barriers to uptake of hearing aids was affordability and lack of knowledge. Based on these outcomes, it is recommended that screening activities and hearing aid provision are scaled up and delivered to a wider population. Such activities should be based on the robust and comprehensive aural rehabilitation programme model currently employed by the Sonrisas que Escuchan Foundation. To improve access, such activities should be delivered using a community based, out-reach infrastructure, ensuring financially subsidised hearing aids are provided as part of an ongoing programme of support, guidance and device maintenance.

Further Research
The outcomes from this research project should act as a foundation and catalyst for further research. Therefore, it is recommended that a research strategy is developed that provides clear and systematic guidance as to the prioritized objectives, planning and implementation processes, resources and funding of such research.

Such future research may include:

- Further follow-up of cases after two and five years, to determine long-term impact on mental health, socio-economic status and quality of life.
- An assessment of how different methods of means testing and levels of subsidization of hearing aids affect accessibility, outcomes and usage.
- Examination of the impact of hearing impairment and hearing aid provision on social inclusion and the educational attainment of children living in Guatemala.
- Repetition of this primary impact study in other low and middle income countries, enabling comparative analysis and shared learning.