



Pediatric Hearing Aid Orientation in Rural Guatemala

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Background

- Families of children with hearing loss rely on the Audiologist to educate them on how to become successful hearing aid users.
- Audiologic services in Guatemala are centralized in the capital; however there are some rural clinics operated by trained audio technicians.
- Audio technicians need to be skilled at fitting hearing aids and providing the orientation in order to ensure successful use of hearing aids.
- Spanish is the primary language spoken in Guatemala, but approximately half of the citizens speak one of 22 Amerindian languages native to the country.
- Guatemalan adults have attended an average of 3.5 years of school total, leading to a poor literacy rate of 75.18.

Research Questions

- The aim of this study is to determine whether the delivery of a new, culturally sensitive hearing aid orientation to parents of children with hearing loss improves posttest questionnaire scores compared to the current orientation provided.
- Will improvements be observed across categories of motivation, device knowledge, and realistic expectations?

Methods

- A new hearing aid orientation strategy is needed incorporating:
 - Language differences, literacy level, and cultural sensitivities
 - Motivation to use hearing aids to communicate orally, basic device knowledge, and realistic expectations of hearing aid use
- An assessment of current orientation outcomes in rural Guatemalan clinics is necessary to determine areas requiring further training of the audio technicians.
- Comprehensive training of audiologic services will allow rural clinics to provide sustainable hearing health care without dependence on visiting outreach teams.
- Families were scheduled for hearing aid check appointments, during which they received an additional orientation as part of this study.
- After completing the pretest, parents were randomly divided into test and control groups where they received the corresponding orientation, followed by the posttest.

Clinic Site	Test Subjects	Control Subjects
Xela	14	6
Morales	14	15
San Benito	13	10

Questionnaire Sample Questions

Motivation:

- Hours each day your child wears their hearing aid?
- More than 8
 - 4-6 hours
 - hours 6-8 hours
 - Less than 4 hours

Device Knowledge:

- What should you do if the hearing aid gets wet?
- Have your child continue wearing it and it will dry out
 - Dry it off with a towel
 - Open the battery door and put it in a dehumidifier or a bag of rice
 - Leave the battery door shut and put it in a dehumidifier or bag of rice

Realistic Expectations:

- Hearing aids have a limited amount of volume they can turn up and a limited range of sounds they can help.
- True
 - False

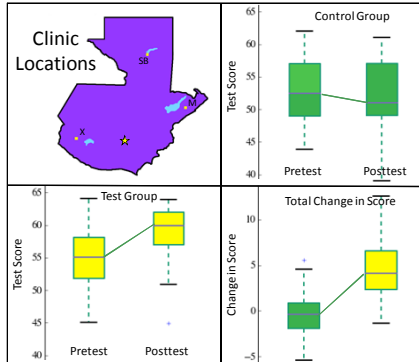


Fig. 1 Test group scored higher than control group on the posttest questionnaire by an average of 6.6 points across sites. Test group improved an average of 5.8 points more than control group between the pre and posttest questionnaire across sites, 95% confidence interval.

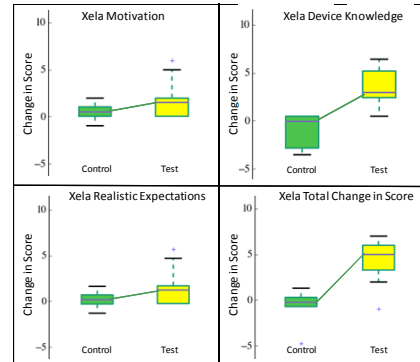


Fig. 2 Xela's test group improved more on average than the control group by 1.1 points on motivation, by 2.77 points on device knowledge, and by 2 points on realistic expectations. Test group overall improved on average by 5.1 points control overall regressed on average by 0.83 points, 95% confidence.

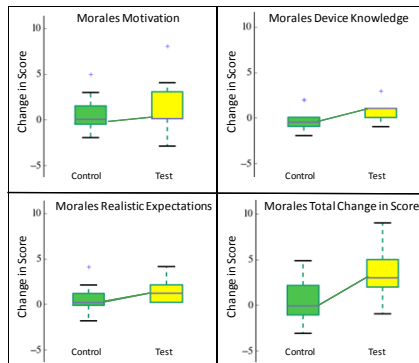


Fig. 3 Morales's test group improved more on average than the control group by 0.98 points on motivation, by 1 point on device knowledge, and by 2 points on realistic expectations. Test group overall improved on average by 3.5 points control overall improved on average by 0.58 points, 95% confidence.

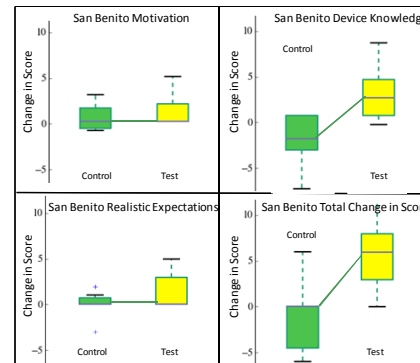
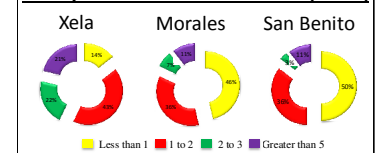


Fig. 4 San Benito's test group improved more on average than the control group by 0.8 points on motivation, by 5.5 points on device knowledge, and by 1.3 points on realistic expectations. Test group overall improved on average by 6.4 points; control overall regressed on average by 1.1 points, 95% confidence.

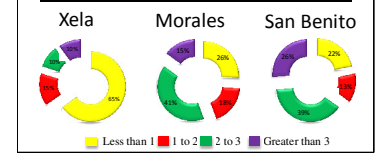
Discussion

- When using a linear regression to adjust for baseline score, months of hearing aid experience, and clinic location, the test group improved an average of 5.8 points more than the control group.
- The category "device knowledge" showed the greatest improvement of scores. A contributing factor may be related to the lack of hearing aid maintenance tools provided at their initial fit. Donated Phonak Junior kits were provided for this study and families were taught how to use the supplies which included a battery tester, dehumidifier, listening tube, and Otoclips. The control group received these after completing the posttest as to not interfere with their score.
- The hearing aid orientations were provided in Spanish using an interpreter. Quiche translation was provided to one participating family. Families also received written materials translated in Spanish.
- Audio technicians were provided with training that targeted the categories showing the greatest discrepancy of overall change in score between the test and control groups. Further training was provided including tympanometry testing and interpretation, earmold retubing and modification, and the Ling 6 Sound test of verification.

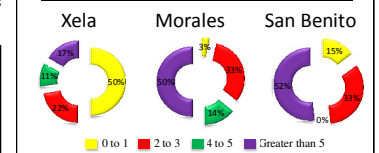
Family Travel Time to Each Clinic (hours)



Length of Hearing Aid Use (months)



Number of Appointments Attended



Demographic Data (above)

- Families traveled the furthest to seek audiologic services in Xela, followed by Morales, and San Benito the least
- Children seeking services in San Benito have used hearing aids the longest, followed by Morales, and Xela the least
- Children seeking audiologic services have attended the highest number of hearing aid check appointments in Morales, followed by San Benito, and the fewest in Xela
- San Benito has been providing audiologic services since 2005, Morales since 2007, and Xela since 2009

Future Steps

- A follow up study is needed to determine whether the parents have applied the knowledge they learned during the orientation to their child's every day hearing aid use.
- Audio technicians should continue to receive comprehensive training on audiologic services when outreach teams visit.
- Distribution of outcome measures of hearing aid use should be considered to validate the fitting and orientation.

Acknowledgments

- Research committee: Julie Bierer, Ph.D., CCC-A, Martha Harney, M.S., CCC-A, Mike Mallahan, Au.D.
- Supplies donated by Nikolas Klakow, Au.D., Phonak (Warrenville, IL)
- This project was supported by the National Center For Advancing Translational Sciences of the National Institutes of Health under Award Number UL1TR000423. The content is solely the responsibility of the author and does not necessarily represent the official views of the NIH.