Title: Initial Experience Validating the Need For a Hearing Screening Program During PHOP Experience in Rural Peru

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Background: Hearing is vital for livelihood of children and adults. My elementary school science fair titled, “How do loud sounds affect human hearing?” showed the detrimental effects of loud sounds, certain medications, and aging on hearing. The data mostly supported my hypothesis and concluded that improved access to hearing screening can improve quality of life

Problem and Hypothesis: Rural Peruvians who live in valleys and at high altitudes are exposed to extreme climate and temperature changes. This combined with limited resources and access to basic healthcare, such as hearing screening, can result in the development of auditory problems, such as SEH (secondary endolymphatic hydrops), ISSH (idiopathic secondary sensorineural hearing loss), or inadequate post trauma care.  My hypothesis is “If inhabitants of mountainous areas and fluctuating climates are exposed to these natural phenomena, then they will suffer from various degrees of hearing loss over the course of their life.”

Results: Free commercially available iPhone app (Hearing Test) that tests hearing and produces customized audiograms used along with noise cancelling headphones (Sony Corporation) to test adults and children’s hearing across various tones and frequencies. Testing required about 5 minutes per patient. Testing was done at the Pisac clinic and two rural schools (valley school and mountainous school), and PAMS clinic Chincha, Peru. Customized audiograms were recorded and stored. When possible, brief histories were obtained, but no specific patient information or identifiers were recorded.

Conclusion: Hearing impairment is highly prevalent in rural prevalent at all four PHOP sites tested, highest in mountainous and coastal Peru. Compared to high frequency hearing loss seen most commonly in the US populations, rural Peruvians had hearing impairment in both middle and high frequency sounds. This initial experience validates the need for the PHOP team to consider setting up an inexpensive and sustaining hearing screening program during the PHOP experience, recognizing that the each location brings its own set of resource limitations and workflow challenges.

Future Directions: Create educational material for Sacred Valley and Chincha, Peru (e.g. posters, community talks) on hearing hygiene and benefits of hearing screening. Set up an inexpensive, quick, and sustainable hearing screening program. Meet with Cusco medical school ENT specialists to rotate to help those with correctable hearing problems.