215

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Enhancing An Ear and Hearing Program for a Philippine cleft palate population – Exploring Hearing and Hearing-related Symptoms

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BACKGROUND

Cleft palate with/without cleft lip (CP±L) is one of the most common craniofacial abnormalities worldwide with variations in prevalence based on ethnicity and geographic location. In South-East Asia, prevalence rates are reported up to 1 per 574 births (Abumustafa et al., 2019).

Children born with CP±L may experience hearing difficulties (Imbery et al., 2017). In middle-income countries, a region with a high risk for ear and hearing impairment, access to interdisciplinary CP±L healthcare is limited. Therefore, the purpose of this study is to investigate the occurrence of ear and hearing problems in a Philippine CP±L population, providing a foundation for recommendations to enhance ear and hearing healthcare in this unique group.

METHODS

PARTICIPANTS

The study comprised of **52 individuals with a repaired CP±L** (21 males and 31 females) with a mean age of 17.8 years, ranged between 5 and 38 years, recruited from the Tebow CURE hospital (Davao City, Philippines).

EAR AND HEARING PROGRAM

A short **semi-structured interview** was performed in which the following aspects were questioned: (1) participation in a previous ear and/or hearing program, (2) current or past hearing problems, and (3) tinnitus.
Ear and hearing **testing** included (1) external ear inspection, (2) otoscopy, and (3) pure-tone audiometry.

RESULTS

- 17.3% reported prior hearing problems such as otitis media with effusion, blocking ear wax, and conductive hearing loss after a severe sinusitis.
- 5.8% reported participation in a prior ear and hearing program which was always linked to addressing existing ear or hearing problems. None of the participants mentioned involvement in any preventive screening initiatives.
- 42.3% reported a prior tinnitus experience. The tinnitus sensation was mostly described as a high-pitched pure-tone or a ringing sound perceived bilaterally or in the right ear that occurred occasionally, especially in a quiet listening environment, and persisted for at least several seconds. In 9.0% of the cases, the tinnitus was perceived as bothersome.

Key recommendations to establish ear and hearing healthcare in middle-income countries:

- Utilize **basic equipment** that is cost-effective, portable, and durable. This should include otoscopy, tympanometry, and pure-tone audiometry coupled with a noise-cancellation headphone.
- Include a validated **tinnitus questionnaire.**
- Guarantee that **communication** is delivered in languages understood by the local population.
- **Collaborate** with non-governmental organizations and international health agencies with expertise in resource-scarce settings as they can provide essential guidance, resources, and support.
- Provide comprehensive **training** to local healthcare providers or community health workers to conduct hearing tests.

- 3.9% showed abnormal external ear anatomy such as protruding ears and an ear tag.
- 28.9% showed abnormal otoscopic findings such as blocking ear wax, otitis media with effusion, a perforated tympanic membrane, and the presence of a grommet.
- 33.3% exhibited hearing loss (Figure 1), and certain problems had been suspected for years but had not been formally diagnosed. A statistically significant association between hearing loss and an abnormal otoscopic examination was seen ($\chi2(1) = 6.382$, $p = 0.012$).

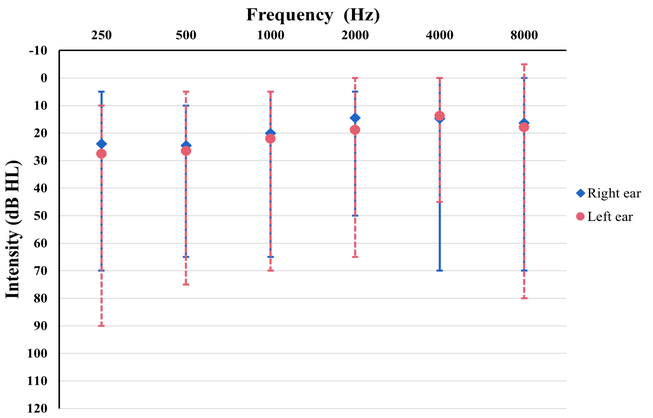

Figure 1: Based on the pure-tone average at 0.5, 1, 2, and 4 kHz, 66.7% participants showed bilateral normal hearing, whereas a unilateral hearing loss left, a unilateral hearing right, and a bilateral hearing loss were seen in 12.5%, 12.5%, and 8.3% participants, respectively. The hearing loss severity varied between mild (68.8%), moderate (25.0%), and moderately-severe (6.3%).

This study sheds light on the occurrence of ear and hearing problems, including tinnitus, within a population of Philippine individuals with CP±L. Given their vulnerabilities stemming from both cleft conditions and living circumstances, this population is particularly susceptible to such issues. The findings underscore the alarming lack of access to adequate ear and hearing care services within this group.

References: Abumustafa, A., B. Alkhen, and M.M. Tolarova, *Prevalence of cleft lip and palate anomalies in south-east Asia*. 2019;; Imbery, T.E., et al., Long-Term Otologic and Audiometric Outcomes in Patients with Cleft Palate. Otolaryngol Head Neck Surg, 2017. 157(4): p. 676-682..

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