



## Review Article

## Overview of a public health approach to pediatric hearing impairment in the Pacific Islands

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## ABSTRACT

**Background:** Childhood hearing impairment is a significant cause of disability in developing countries. Otitis media and meningitis are leading infectious causes of preventable hearing loss in children. It is estimated that the Pacific Islands have among the greatest global burden of childhood hearing impairment due to infectious causes, and yet there is currently very little in the research literature on pediatric hearing disorders in this region.

**Objectives:** (1) To review existing research literature on pediatric hearing impairment in the Pacific Islands, and (2) to present a public health approach to the development and improvement of childhood hearing services in the Pacific Islands.

**Data:** The primary tool was a comprehensive literature review. MEDLINE and ScienceDirect databases were searched for relevant journal articles. There was no limit on the date of publication. Any article reporting on hearing impairment in the Pacific Region was included.

**Results:** A total of 23 journal articles were found that satisfied the above inclusion criteria. The limited information available in the literature suggests that otitis media and vaccine-preventable infections are a significant cause of avoidable childhood hearing impairment in the Pacific Islands. Pediatric audiology services are limited in this region. Further research is required to develop effective public health programs that should reduce the burden of preventable childhood hearing loss in the Pacific Islands.

**Conclusions:** There is limited information in the research literature on pediatric hearing impairment and audiology services in the Pacific Islands. Epidemiological data based on the WHO Ear and Hearing Disorders Survey Protocol are urgently needed, and the development of audiology services within the existing public and primary health care framework should reduce the burden of preventable hearing loss in the Pacific Islands.

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## 1. Introduction

According to the World Health Organization (WHO), two-thirds of the global burden of hearing loss is found in developing countries, with approximately half of these hearing disorders considered preventable [1]. The 2012 WHO estimates on global hearing impairment stated that children represent 9% of the 360 million people worldwide living with a disabling hearing loss [2]. Infectious diseases and middle ear disorders are recognized as the major causes of avoidable hearing impairment in children. Given the well-known adverse effects of hearing loss on child development, the WHO is leading global efforts to address the major causes of preventable childhood hearing loss, as well as advocating for national programs for the early detection and intervention of infants and children with hearing impairment [3–5]. In a developing country context, the implementation of hearing services for children should contribute to the United Nations Sustainable Development Goals (SDGs) through an integrated public health approach, combined with sustainable capacity-development and training of local health professionals. This agenda is timely as the theme for World Hearing Day 2016 was “Childhood hearing loss: act now, here is how!”, with a focus on preventable childhood hearing impairment through public health measures [6].

A review of the literature indicated limited research on hearing loss, middle ear disorders, and audiology services in the Pacific Islands. The scant research available does not meet the current WHO criteria for population-based studies as described by the WHO Ear and Hearing Disorders Survey Protocol [7]. Indeed, the current WHO estimates on global hearing loss did not include any studies from the Oceania Region [8,9], nor were any papers from the Pacific Islands included in another recent literature review of global hearing impairment [10].

And yet, the 2000 Global Burden of Disease Project estimated that the Pacific Islands have among the world's highest burden of hearing impairment due to meningitis and otitis media [11]. The project found that the Oceania sub-region of the WHO Western Pacific Region has the highest rate of deafness and hearing

impairment due to meningitis, and the second highest rate of disabling hearing loss due to otitis media. These estimates were based on prevalence rates from sub-regions with similar health indices as the Pacific Islands, and not only highlight the magnitude of the problem, but also the fact that there has been limited research in the Western Pacific Region on pediatric hearing loss. The findings of the 2010 Global Burden of Disease Project continue to base their Disability-Adjusted Life Years (DALYs) and Years Lived with Disability (YLDs) calculations for the Oceania region on estimates only [12,13].

The Pacific Islands present a unique challenge to international health development professionals. Many Pacific Islands have been identified as Least Developed Countries (LDC) by the United Nations based on criteria of low-income, human resource weakness, and economic vulnerability [14]. In addition to the socio-economic features that are common to most developing countries, Pacific Island communities further contend with the difficulties imposed by their geographic isolation (see Fig. 1). The Pacific Islands are also classified by the United Nations as Small Island Developing States (SIDS), where environmental factors such as climate change, rising sea levels, and natural disasters are additional obstacles to development [14]. These unique challenges require innovative strategies for Pacific Island countries engaged in partnerships with leading global organizations, such as the WHO and the United Nations Children's Fund (UNICEF), in addressing the major health issues in their communities.

The first aim of this paper was to present an overview of the literature available on childhood hearing impairment in the Pacific Islands; the focus is on the avoidable and treatable causes of hearing loss in children, since these may already be addressed through the existing primary health care system in Pacific Island nations. The second aim of this paper, therefore, was to present a public health approach to the development and improvement of childhood hearing services in the Pacific Islands. This approach considers a hearing healthcare model which is sustainable by local health professionals, and which contributes directly to the health and education objectives described by the United Nations Sustainable Development Goals.

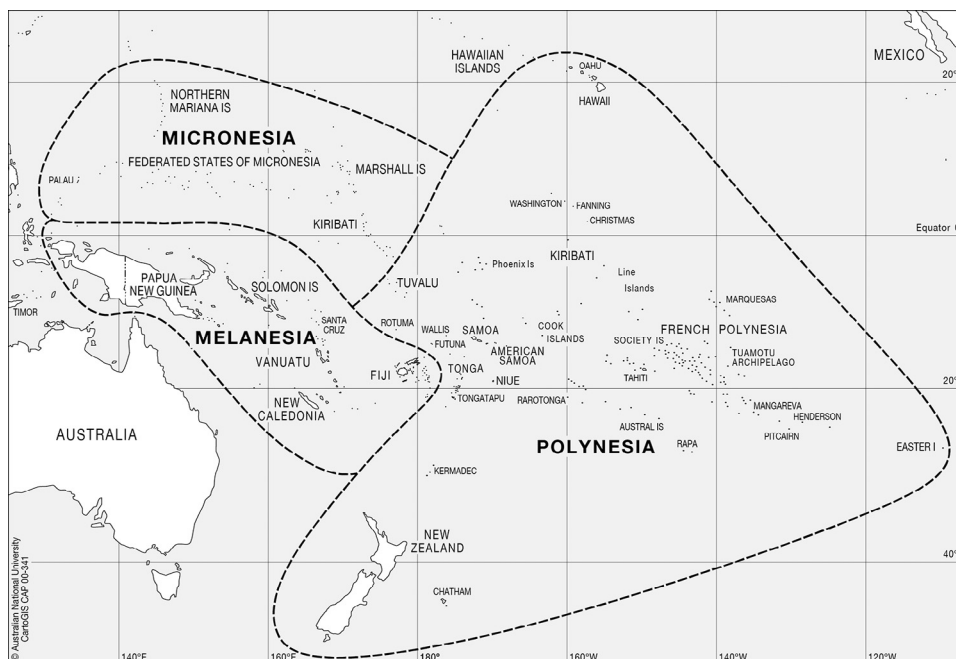


Fig. 1. Oceania Map.

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