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Pacific Islands Families Study: Risk factors associated with otitis media with effusion among Pacific 2-year-old children

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Summary

Objective: This study examined the risk factors associated with middle ear disease in a cohort of Pacific 2-year-old children residing in New Zealand.
Methods: The data were gathered as part of the Pacific Island Families: first 2 years of life (PIF) study in which 656 2-year-old were screened using tympanometry to identify children at risk for otitis media with effusion (OME) and other otological disorders.
Results: Within this 2-year-old cohort of Pacific children, one set of factors significantly associated with OME was clustered around the respiratory and auditory health of the child over the past year. OME was more likely for children who were regularly suffering from fluid/pus discharge from ears (OR = 2.10, 95% CI: 1.01—4.35), children with five or more coughs/colds in the last year (OR = 1.90, 95% CI: 1.22—3.00), and children who frequently/constantly snored (OR = 2.60, 95% CI: 1.09—6.23) to have OME. Those children who were treated at home for breathing problems were more that two times more likely to have OME (OR = 2.61, 95% CI: 1.55—4.42). A second set of factors was clustered around environmental risks that exposed children to a large number of other children. Children who attended a day care centre for more than 20 h were five times more likely (OR = 5.21, 95% CI: 2.90—9.35) and those who regularly attended church (OR = 2.78, 95% CI: 1.05—7.40) were almost three times more likely to have OME.

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Conclusions: These findings portray a child compromised by persistent ear infections and general coughs and colds as being at increased risk of contracting OME. In line with international research these findings raise questions about the negative child health effects associated with the day care environment for young children.

1. Introduction

1.1. Background

Pacific peoples (those residents with a Pacific Islands heritage) form an integral part of New Zealand society [1]. In the 2000 census, over 230,000 people were of Pacific ethnicity, making up 6.5% of the New Zealand population [2]. Compared with most New Zealand children, Pacific children have a higher incidence of respiratory infections, meningococcal disease and infectious diseases such as measles [3–5].

Otitis media with effusion is considered a serious health issue as it may result in hearing loss of variable severity [6–8], and has been described as the most common cause of acquired conductive hearing loss in children [7]. Recurrent OME is of particular concern in early childhood as children with OME are likely to be receiving variable auditory input thus affecting language development [9,10].

International research on children within the preschool range has shown wide variation in prevalence rates [11–16]. Within the PIF cohort OME was the most common otological problem and it was estimated that the population prevalence for Pacific children was 25.4% for OME, 1.9% for acute otitis media (AOM), and 26.9% for OME or AOM [17].

The most important environmental risk factors for contracting OME that have been reported to date are day care attendance, family size, tobacco smoke exposure, breastfeeding and socioeconomic status [18–20]. Children living in households with many family members [21,22] and several siblings [23] have also been found to have an increased risk for contracting OME. Some studies demonstrated that exposure to passive smoking in the home was associated with an increased risk of OME [23], whereas other studies found no such association [24–26]. There is some evidence that children who have been breast fed have a lower risk of developing OME at a preschool age [23,27–29], however this is also a contentious finding [26]. Socioeconomic status has also been the subject of debate with some studies reporting that the higher the socioeconomic status, the higher OME prevalence is [27], whereas other studies reported that the disease is more common among lower SES groups [30].

In addition, some researchers have demonstrated that OME is more frequently encountered in boys that in girls [21,29,31] however this has not been substantiated by other studies [12,24,26,28,32].

In view of the concern over middle ear disease among Pacific children the PIF study included tympanometer screening when the children were 2 years of age. Tympanometry is an objective measure of aural acoustic immitance of the middle ear. When fluid is present in the middle ear space the immitance of the middle ear system is altered, thus tympanometry is an important tool for the screening of children for OME.

The aim of this paper is to examine the demographic, maternal and child risk factors associated with otitis media with effusion among Pacific children.

2. Methods

Data were collected as part of the Pacific Islands Families: first 2 years of life study. This longitudinal study is following a birth cohort of Pacific Islands infants born at Middlemore Hospital between 15 March and 17 December 2000. All potential participants were selected from births where the child had at least one parent who identified as being of Pacific islands ethnicity and also a New Zealand permanent resident. Recruitment occurred through the Birthing Unit in conjunction with the Pacific Islands Cultural Resource Unit that provided a daily list of Pacific Islands ethnicity admissions and consent was sought to make a home visit.

Approximately 6 weeks after the infant's birth, interviewers of Pacific Islands ethnicity who were fluent in English and a Pacific Islands language visited mothers in their homes. Once eligibility was established and informed consent obtained, mothers participated in 1 h interviews concerning the health and development of the child and family functioning. This interview was conducted in the preferred language of the mother. With consent, home visits were repeated at approximately 12 and 24 months postpartum, and when the children were 4 and 6 years of age. Detailed information about the cohort and procedures is described elsewhere [33].

2.1. Screening process

At the 24-month measurement point initial tympanometery screening was carried out as part of a child