Tongan children with asthma in New Zealand

HELEN MAVOA*

Introduction

Tongan children comprise 22% of Pacific children (<15 years) in New Zealand and 1.6% of all New Zealand children. While Tongan children are clearly a significant group of New Zealand children, we know little about their health status. Asthma is common in children from all social and ethnic groups and is one of the most frequent causes for hospital admission among pre-school children in most industrialised countries. Asthma is the most frequent reason for hospitalisation of pre-school aged Pacific children and more Pacific children with asthma are admitted to New Zealand hospitals than European children are. This paper draws on New Zealand hospital discharge data for Tongan children with a primary diagnosis of asthma to discuss some challenges encountered when comparing asthma prevalence, morbidity and management across ethnic groups.

Asthma is one of the most important diseases of childhood,[1] and is one of the most frequent causes for hospital admission among pre-school children in most industrialised countries. The prevalence of childhood asthma is greater in Western industrialised countries such as NZ, Australia, UK and parts of the USA, compared to less affluent countries.[2] Asthma appears to be common in children[1] from all social and ethnic groups. Pacific[2] children have a higher rate of hospitalisation for asthma than either Maori or European children do,[3,4,5], are readmitted more often than European children and remain in hospital for longer periods than European children. Pacific children appear to receive less preventive medication for asthma than their European cohorts, and are more likely to die from asthma than other New Zealand children.[6] These data underscore the urgent need to establish whether or not patterns of asthma prevalence, morbidity and health care use are common to all Pacific children, irrespective of age, specific ethnic group, country of birth and time spent in New Zealand.

This paper compares New Zealand public hospital discharge data for Tongan children with a primary diagnosis of asthma with that of New Zealand children in general and Pacific children in particular. It draws on unpublished mortality and morbidity data made available by the Transitional Health Authority and the sparse literature on asthma among Pacific children in New Zealand. Some of the problems encountered when making ethnic comparisons of asthma are discussed. Finally, this paper suggests that more specific data on age, ethnicity and country of birth would facilitate more effective targeting of Pacific children with the greatest need in a climate of decreasing health resources in New Zealand.

The sparse data on asthma among New Zealand children of Pacific Island ethnic origins is due in part to the ways that ethnic affiliation has, or has not been categorised in various data sets (see Mavoa this volume). Pacific children with asthma are variously included in broader ethnic groups, specifically: 1) non-Maori (e.g. Crane, 1994;[7] Shaw, 1991[8]), or 2) Maori (e.g. Mitchell, 1991;[6] Pattemore, 1989[9]). Moreover, when data on Pacific children with asthma have been collected, they are often collapsed into a single category of "Pacific Island" during data analysis and documentation (e.g. Pattemore, 1989[9]). While it may be necessary to analyse the relatively small numbers of Pacific children as a single "ethnic" category in asthma prevalence studies, it may also be useful to differentiate asthma morbidity and health care use within specific ethnic groups.

Tongan children and asthma in New Zealand

Forty three per cent of Tongans in New Zealand are aged fourteen and under.[10] In 1996, Tongan children comprised 22% of Pacific children and 1.61% of all New Zealand children.[11] While Tongan children are clearly a significant group in terms of health needs, we know little about their overall health status. We know even less about asthma in Tongan children. The data on Tongan children that are reported in this section were obtained from discharge figures in New Zealand public hospitals between July 1996 and December 1998 for Tongan children with a primary diagnosis of asthma.[12] These data show a differential

*Department of Anthropology, University of Auckland, Private Bag 92019, Auckland.

pattern of hospitalisation according to age and sex.

Age

More two-year old Tongan children were discharged than any other age group (see Figure 1). Children aged one year had the second highest number of hospital discharges. Hospital discharges for asthma decreased with age after two years, with less than two discharges in each year of age after the age of nine, and no hospital discharges for asthma for 14-year-old Tongan children.

The higher number of hospital discharges for preschool-aged Tongan children, compared to children of school-age, appears to be similar to that of other groups of New Zealand children. Between 1987 and 1991, 20% of Pacific children aged one to four were hospitalised with asthma, while only 4.7% of Pacific children aged five to nine years and 2% of Pacific children aged 10-14 years were admitted to hospital with asthma. [3] The high number of discharges for Tongan children of pre-school age also reflects the age structure of Tongans in New Zealand; 42% of all children are aged four and under.[10]

Pre school-aged children have a higher incidence of asthma than any other age group. Yet we know less about developmental changes in respiratory function[13] and asthma[1] in children under the age of five than we do about children of school age. Pedersen (1996) highlights the need to differentiate each year of the preschool period in order to identify important developmental differences in asthma morbidity.[14] The clear differences in hospital discharges for Tongan children with asthma at ages one, two, three and four (see Figure 1) supports the need to identify at what age children experience the most hospitalisations for asthma.

Sex

Sixty seven per cent of Tongan children discharged from New Zealand public hospitals between July 1996 and December 1998 with a primary diagnosis of asthma were male (see Figure 1). This male-female ratio appears similar to that of Pacific children (60%),[12] and New Zealand children generally (61%).[12] Importantly, the sex differences in discharges of Tongan children with asthma were more marked when ages were analysed by year. Approximately twice as many Tongan boys aged four and under were hospitalised with asthma than girls were (see Figure 1). This male-female pattern was reversed for school-aged children: Tongan girls aged five to nine had more hospital discharges for asthma than boys did. Bathgate et al (1994) reported a similar male-female ratio for hospitalisations of Pacific children aged one to four with asthma. [3] In contrast to the Tongan data reported in this paper, more Pacific males were hospitalised with asthma more than females were for each age category, specifically five to nine and 10-14 years.[3]

Hospitalisation rates for asthma

During 1997, Tongan children had lower hospitalisation rates for asthma than other Pacific children, and lower rates than New Zealand children in general (see Table 1). Pacific children had higher rates of hospitalisation than New Zealand children did generally (see Table 1). The hospitalisation rates reported in this paper support earlier literature which reports on the higher rate of public hospital admissions for Pacific children with asthma than that of either Maori or European children (e.g. Bathgate, 1994[3]; Garrett, 1989[15]; Mitchell, 1991[6]; Mitchell, 1986[16], Shaw, 1994[5]). Mitchell (1991) noted that Pacific children had more than double the admission of European children between August

Figure 1. NZ hospital discharges for Tongan children with a primary diagnosis of asthma by year of age: July 1996 to December 1998 (THA unpublished data 1998)

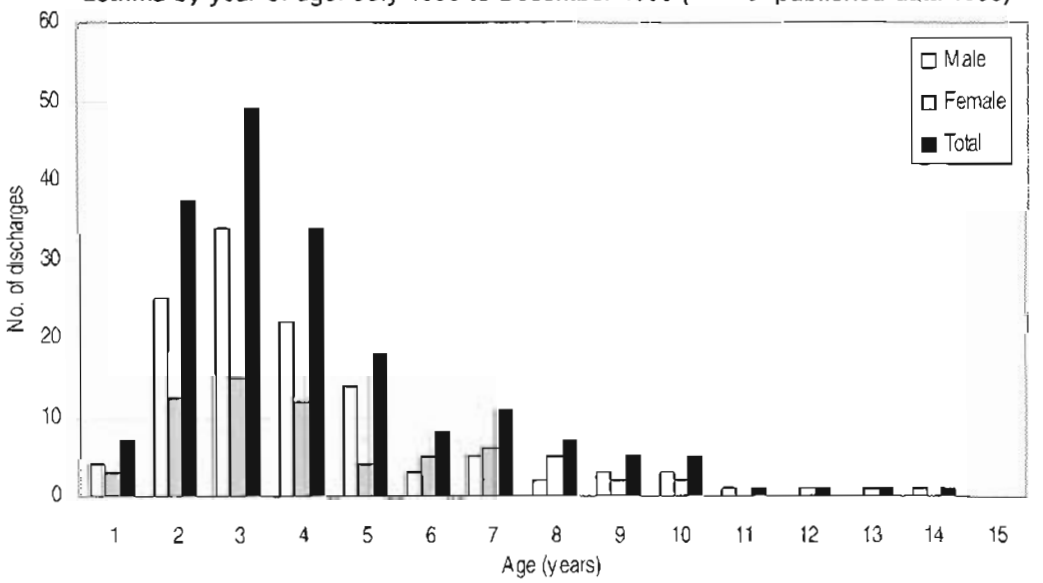

Table 1. Hospitalisation rates and discharges* from New Zealand public hospitals, 1997

	Tongan	Pacific	All children
Male	665.9 (48)	837.3 (263)	750.2 (3207)
Female	333 (23)	724.5 (214)	499.8 (2022)
Total	**503 (71)**	**782.6 (477)**	**628.4 (5229)**

** Hospitalisation rates per 100,000 population, number of discharges in brackets.*
Source: Transitional Health Authority (unpublished data, 1998)

1987 and January 1989.[6] Bathgate et al (1994) reported that Pacific children under the age of five had almost twice as many hospital admissions for asthma than other pre-school aged children between 1987 and 1991.[3]

Tongan hospitalisation rates in this paper have been estimated by adjusting 1996 census population figures to allow for the annual growth rate reported in the previous five years. The comparative data on hospitalisation for Tongan, Pacific and all New Zealand children refers to one year only. Given these cautions, the lower rates for hospitalisation of Tongan children reported in this paper, compared to all Pacific children and all New Zealand children, suggest that either 1) Tongan children have a lower prevalence of asthma than other New Zealand children, and/or asthma is: 2) less severe and/or 3) better managed, either at home, in primary care health centres or in accident and emergency departments.

While there do not appear to be major ethnic differences in the prevalence of asthma, some studies have reported that Pacific children have less wheeze[9,4] and lower bronchial responsiveness to histamine challenge than either Maori or European children.[9] However, Pacific children awake more frequently with a cough than European children do.[9,4]

Management of asthma

Several New Zealand studies report that children of Maori and Pacific ethnic origins with asthma-like symptoms are less likely to be diagnosed with asthma than European children are.[9,5] However, Mitchell (1991) suggests that the greatest difference between Pacific and European children is in the management of their asthma.[6] Certainly, there appear to be differences in patterns of general practitioner (GP) use according to ethnic affiliation. Specifically, European families are more likely to have a GP than either Maori or Pacific families.[9] It is not clear whether Pacific families who do have a GP, consult their GP less frequently than either Maori or European families do as reported in a recent study,[17] or whether the frequency of GP use is similar to that of Europeans, as suggested in the 1992-3 Household Health Survey.[3] Davis et al (1997) report that Pacific families in their study delayed consultation with their GP in comparison to European families, and that less follow-up consultations were requested. Second, more Pacific families access Accident and Emergency clinics for management of asthma than consult with a GP.[18] The differential use of primary health care according to ethnic group has been explained in terms of: 1) organisation of health care,[15] [Garrett, 1989 #788], 2) ready access to either a car, or childcare, 2) access to health care during working hours, [9,15] and 3) cost, especially during the recent social decline.[18] Previous experiences also determine selection of health services, and recent Pacific migrants to New Zealand are more likely to access Accident and Emergency departments than use General Practitioner services, especially if this is their familiar pattern of health care, as is the case in much of the Pacific.[19,15] The pattern of primary health care use reported for Pacific families may be changing with the increasing availability of Pacific-focussed clinics, and ethnic-specific health centres, especially in Auckland.

Medication

There also appears to be differential use and/or prescription of asthma medication, according to ethnic group. Several New Zealand studies report that European children with asthma are prescribed significantly more medication than either Maori or Pacific children,[19,15,6,9] especially in the case of preventatives. This relative under-treatment may contribute to the higher hospital admission and mortality rates reported among Maori and Pacific children, compared to their European cohorts.[6]

Importantly, the greater use of Accident and Emergency departments, and the greater number of hospital admissions for Pacific children with asthma, and the reported differences in medical management, compared to other New Zealand children, suggests that health care use is not an ideal measure for cross-cultural comparisons of asthma morbidity or severity.

Summary

Pacific children are already a significant group of New Zealand children, in terms of population and health needs and will continue to be so. It is projected that by 2051, one in five New Zealand children will be of Pacific Island ethnic origin.[20] The collapsing of data on Pacific children with

asthma into the broad categories of Maori or "other" has rendered the health needs of Pacific children invisible. While the homogenising of Pacific children into a hypothetical ethnic category of "Pacific Islander" has enabled us to highlight the urgent health needs of Pacific children, it has not allowed us to identify specific needs according to ethnic group and age. Together, the proportionately high rate of hospitalisation of Pacific children with respiratory diseases in general, and asthma in particular, the increasing prevalence of asthma, and the projected increase in the relative numbers of Pacific children in New Zealand underscore the urgent need to undertake more detailed analysis of asthma. Specifically, we need to know more about the prevalence, morbidity and management of asthma in Pacific children according to ethnic group and age. These data would allow for more efficient targeting of dwindling health resources to support Pacific children who are most at risk. Until we have age-specific data for children with asthma, and from each ethnic group, we do not know whether the incidence of asthma varies according to specific ethnic affiliation and/or country of birth.

While we now have some Tongan-specific data, there is no room for complacency. We still much to learn about Tongan children with asthma. We need to confirm whether or not the relatively low hospitalisation rates for Tongan children compared to other New Zealand children are evident over a longer period. We also need to establish the prevalence of asthma among Tongan children and the management of their asthma, by children, their families, and by primary health care providers, including ethnic-specific health clinics. Only then can we start to minimise the major social, developmental and economic impact that asthma has on children and their families. We owe this to our children.

Acknowledgements

Thankyou to Dr Julie Park for reading an earlier versionof this paper. Special thanks to Angelique Parr and Marty de Boer for help and advise with data. Dr Sitaleki Finau, Ms Lita Foliaki and Dr Melenaite Taumoefolau have provided ongoing encouragement and support during my doctoral dissertation. None of these people are responsible for the opinions expressed in this paper!

References

1. Asher I. International study of asthma and allergies in childhood (ISAAC): rationale and methods. *European Respiratory Journal* 1995, 8. 483-491.

2. The International Study of Asthma and Allergies in Childhood (ISAAC) Steering Committee. Worldwide variations in the prevalence of asthma symptoms: the International Study of Asthma and Allergies in Childhood (ISAAC). *European Respiratory Journal;* 12: 315-335.

3. Bathgate M, Alexander, D., Mitikulena, D., et al. *The Health of Pacific Islands People in New Zealand.* Public Health Commission, Wellington, 1994.

4. Robson B, Woodman K, Burgess C *et al.* Prevalence of asthma symptoms among adolecents in the Wellington region, by area and ethnicity. *The New Zealand Medical Journal* 1993; 106: 239-241.

5. Shaw R, Woodman K, Crane J, et al Risk factors for asthma symptoms in Kawerau children. *The New Zealand Medical Journal* 1994, 107(987): 387-391.

6. Mitchell E. Racial inequalities in childhood asthma. *Social Science and Medicine* 1991; 32. 831-836.

7. Crane J, Lewis, S, Slater, T., et al. The self-reported prevalence of asthma symptoms amongst adult New Zealanders. *The New Zealand Medical Journal* 1994, 107 (988): 417-421

8 Shaw R, Crane J, O'Donnell T. Asthma symptoms, bronchial hyperresponsiveness and atopy in a Maori and European adolescent population. *The New Zealand Medical Journal* 1991; 104: 175-179.

9. Pattemore P, Ashers M, Harrison A, et al. Ethnic differences in prevalence of asthma symptoms and bronchial hyperresponsivenesss in NZ school children. *Thorax* 1989; 44 168-176.

10. Statistics NZ. *1996 Census, Pacific Islands People.* Wellington: Dept of Statistics, 1998.

11. Ministry of Health. *Our Children's Health Key Findings on the Health of New Zealand Children.* Wellington: Ministry of Health, 1998.

12. Transitional Health Authority. *Unpublished data on mortality and discharges from New Zealand public hospitals.* 1998.

13. Stocks, J., and Quanjer, P. Reference values for residual volume, functional residual capacity and total lung capacity. ATS workshop on lung volume measurements. Official statement of the European Respiratory Society. *European Respiratory Journal,* 8. 492-506.

14. Pedersen, S. Summary and conclusions. *European Respiratory Journal;* 9 (Supp 21): 48s-49s.

15. Garrett J, Mulder J, Wong-Tai H. Reasons for racial differences in A&E attendance rates for asthma. *The New Zealand Medical Journal* 1989. 102. 121-124..

16. Mitchell E, Borman B. Demographic characteristics of asthma admissions to hospitals. *The New Zealand Medical Journal* 1986: 576-579.

17. Davis P, Lay-Vee R, Maingay S, Gribben B. Patterns of general practitioner usage among Pacific people: indicative results from the Waikato Medical Care Survey 1991-2. *New Zealand Medical Journal* 1997; 110. 335-336.

18. Garrett, J., Kolbe, J., Richards, G., et al. Major reduction in asthma morbidity and continued reduction in asthma mortality in New Zealand. what lessons have been learned? *The New Zealand Medical Journal* 1995, 50: 303-311.

19. Barker J. *Pacific Islanders in New Zealand Hospitals.* 1992, 209-228.

20. Ministry of Pacific Island Affairs. *Social Economic Status of Pacific People's Report.* Wellington: Ministry of Pacific Island Affairs, 1999.