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Types of foot problems seen by Australian podiatrists

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ABSTRACT

Background: Understanding frequency of foot problems can assist health care planners with resource deployment to new and emerging services such as paediatric podiatry and focus future research on the most salient foot conditions.
Methods: A review of 2187 patient consultations during a three month period was conducted. Patient medical and podiatric history was coded using industry standards. All patients were recruited for convenience from a metropolitan university podiatry clinic.
Results: 392 new patients were identified with mean age 40.6 years old (range 1–95), with 65% being female. Arthritic diseases, asthma, hypertension and allergies were the most common medical conditions reported. The frequency of new consultations in younger people ($n = 102$; 27%) exceeded those of the elderly ($n = 75$; 20%). Conversely, the elderly were nearly three times more prevalent in this cohort ($n = 910$; 43%) compared to younger people ($n = 332$; 16%).
Conclusion: This study illustrates the diverse nature of pathology seen by podiatrists. Knowledge that skin lesions are highly prevalent is of relevance to health departments, given the aging nature of most populations. Moreover there appears to be a growing trend in the number of young people who present for care, however government funded access to these services are limited.

1. Background

Accurately establishing the incidence (defined as the number of new cases per unit of person-time at risk) and prevalence (defined as the total number of cases of the disease in a given population at a given time) of foot pathology is difficult. This is particularly so, given few large population-based studies have examined the characteristics of those who do and do not access podiatry services in Australia [1]. A range of demographic and personal factors can interact to produce a confusing picture about the extent of foot pathology, and a better understanding of community prevalence of foot disease would allow for more relevant continuing professional education, focused deployment of health department's resources and assist with guiding future research directions.

To gain an appreciation of the work previously done in this field, a number of databases were searched for any current prevalence and incidence rate studies of foot pathology. Search criteria included "(podiat* OR foot OR feet OR lower limb) AND (incidence OR prevalence OR audit)" and input into ScienceDirect, EBSCOhost, Medline, CINAHL and PUBMed databases. The current literature search identified few incident/prevalence specific studies of the most common presenting foot complaints and pathologies, particularly so for Australian or New Zealand. A comprehensive review by Farndon in 2006 and others suggested the most prevalent conditions affecting feet are confined to superficial problems of the skin (corns and callus) and pathological nail conditions [2–5]. These problems primarily occur in the elderly and in female populations [6]. More detailed population based surveys where participants self-reported problems with bunions, corns/callous and toenail pathology do provide a little more insight to the magnitude of community need [7,8]. Care should be exercised when comparing such studies from different jurisdictions and by different methods, however a quasi meta-analysis of these and related key studies allows for a crude estimate of the prevalence of bunions, ingrown toe nails, infections, and corns and calluses in the United States and United Kingdom and is provided in Table 1.

According to Table 1, the mean values from the analysis of several population based studies indicate a 2.5 fold increase in the number of older adults who self reported they had a first metatarsophalangeal joint (bunion or hallux limitus) disorder. Similarly, the population aged sixty-five and older reports a 1.7 fold increase in nail pathology (including ingrown nails) than younger subjects. These results support earlier findings which identified an increased prevalence of corn/calluses, bunion and nail pathology in the over sixty-five age group [4,7,9].

Levy argues that it is important to reflect on the significance of these conditions in terms of their natural history in people with diabetes or aged patients with peripheral vascular disease [7]. If left

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Table 1
Summary of reported prevalence per 1000 for common groups of foot pathology.

Condition and study	Rate per 1000	Rate per 1000 > 65	Ratio increase in over 65 group	% female affected by condition
Corns and callus				
Greenberg and Buttell (1977)	42	110		–
Levy (1992)	20	47.1		71
Greenberg (1993)	45	–		67
Holroyd et al. (1996)	60	107		66
Brimm (1996)	70	124		76
Black and Hale (1987)	–	–		78
Springett (2003)	–	–		75
Dunn et al. (2004)	–	–		66
Median	47	97	2.1	72
Bunions				
Greenberg and Buttell (1977)	12	44		–
Levy (1992)	13.2	34.6		80
Greenberg (1993)	18	–		83
Holroyd et al. (1996)	24	53		82
Brimm (1996)	28	56		–
Black and Hale (1987)	–	–		83
Median	19	47	2.5	82
Pathological toenails				
Dunn et al. (2004)	–	75		68
Greenberg and Buttell (1977)	23	52		–
Levy (1992)	24.5	50		54
Greenberg (1993)	46	–		54
Holroyd et al. (1996)	57	100		53
Brimm (1996)	60	77		67
Black and Hale (1987)	–	–		60
Median	42	70	1.7	58

untreated, these problems and self management of corns and calluses will increase the risk of lower limb infection and amputation. Specifically, first metatarsophalangeal joint (bunion) pathology has two main implications in the aged population: pain and deformation resulting in a lowered functional capacity, and pressure ulceration from footwear [7,10]. The actual number of people who are identified with these problems and require surgical treatment for end stage disease is also more difficult to determine [5].

Further confusing the issue of identifying community needs and unmet health requirements, few public health studies have been undertaken to evaluate the cost effective alternatives such as the provision of more extensive foot care [11]. Limited systematic research has been undertaken to evaluate the role of surgery as a viable alternative to general foot care which is routinely provided by podiatrists. It has been suggested that many conditions that cause the patient's persistent pain and discomfort (e.g. hallux valgus, inter digital heloma molle, inter digital neuromas) can be treated surgically, and such interventions obviate the need for recurrent podiatry attention [11–13].

Perhaps even more concerning, the incidence and prevalence of paediatric foot problems is less well understood. Notari and Mittler in a somewhat dated study attempted to document the incidence of abnormal findings in a group of 508 children screened [14]. Unfortunately classification criteria are somewhat nebulous, and ill defined. Mild and severe flatfoot deformity was the most prevalent abnormal findings. Others, such as Pfeiffer (1988), record the prevalence of flat foot decreases with age. In a group of 3-year-old children 54% showed a flat foot, whereas in the group of 6-year-old children only 24% had a flat foot. A more recent study by Krul et al. indicated the overall incidence rate of foot problems presented to the family physician (FP) decreased substantially from 80.0 to 17.4 per 1000 person-years ($P < 0.0001$). The incidence rate of flat feet decreased from 4.9 per 1000 person-years in 1987 to 3.4 per 1000 person-years in 2001 ($P = 0.001$). The distribution of referrals to other primary health care professionals and medical specialists has almost reversed in favour of primary health care professionals [15]. Irrespective of study design and quality, we once again see the relationship between age and prevalence of particular foot pathologies.

Rates of foot complaints in Australia tend to support similar findings from the United States [5,7,16–18]. Estimates of community based rates of foot problems can vary considerably based on a range of factors such as age, gender, socio-economic status and sampling methodology. For example, in the North West Adelaide Health Study (NWAHS) study of 4060 subjects by Menz et al. the proportion of people who reported visiting a podiatrist was 9.5% which was substantially lower than similar studies conducted in the UK (33–36%) [1]. While the paper provides broad demographic characteristics about service users, it does not specifically identify the prevalence of presenting complaint. More detailed analysis identified 17.4% of this cohort experienced foot pain, but the actual diagnosis of the cause of foot pain was not established [19].

Other studies conducted in Australia have attempted to determine the prevalence of foot problems [20,21]. The most prevalent conditions identified include: superficial excrescencies of the skin and toenails, heel pain associated with overuse, generalised arch pain and foot strain associated with osteoarthritis, ankle, knee, hip, and back related overuse conditions. A general underutilisation of services to treat these problems suggests a "hidden disability" in the community, in as much as many patient are known to have these problems but do not necessarily seek treatment. Perhaps the best example of this is that podiatry services became the single most utilised health service (of all primary health service) when included in the Australian Governments Enhanced Primary Care Programme in 2004. In this programme the Australian Government subsidises the costs incurred by patients who attend podiatry service providers [22]. The purpose of the current study was to increase the precision in recording the actual incidence and prevalence in a convenience sample of common foot conditions presenting to a large metropolitan clinic.

At best, these statistics provide a broad brushstroke of common foot disorders in western communities, but the information lacks any real detail regarding case mix. It is difficult to identify accurately what proportion of this group of people with foot