A casemix study of patients seen within an urban Aboriginal Health Service dermatology clinic over a five year period

Dr Crystal Williams[1], Dr Jenny Hunt[2], Associate Professor Johannes S Kern[3] and Dr Rebecca Dunn[4]

1 Dermatology Department, St Vincent's Hospital Melbourne (ORCID: 0000-0002-5111-8880). Email: crystal.grant.williams@gmail.com
2 Clinical Director, Victorian Aboriginal Health Service, Melbourne
3 Dermatology Department, Royal Melbourne Hospital
4. Dermatology Department, Royal Melbourne Hospital

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DR. CRYSTAL WILLIAMS (Orcid ID : 0000-0002-5111-8880)
A/PROF. JOHANNES S KERN (Orcid ID : 0000-0001-6372-8048)

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Abstract

This is the largest study of Aboriginal and Torres Strait Islander dermatologic presentations to an urban specialist clinic within a community-controlled health organisation. It adds to our understanding of Aboriginal and Torres Strait Islander dermatoepidemiology. Patient files were reviewed over the five-year audit period, with age, gender, Indigenous status, diagnosis, disease category, 'new' or 'review consultation' and 'did not attend' (DNA) data recorded. Our study shows that eczema and benign, pre-malignant or malignant neoplasms are the most common presentations for urban Aboriginal and Torres Strait Islander patients. Lupus erythematosus and cutaneous infections were less prominent in comparison to data from rural and remote populations. Overall, a broad casemix of dermatologic presentations was observed. Similar to other studies, adult male patients were under-represented. Most skin malignancies were diagnosed in this cohort; this, therefore, identifies a possible target for public health intervention. A high ratio of new to review patients is consistent with the clinic offering a consultation model of care facilitated by primary health care providers' support within Aboriginal Community-Controlled Health Service. DNA rates in this study were lower than hospital outpatient rates in a comparative study[1] and may be attributed to specialist dermatology care being offered in a more culturally sensitive environment.

The dermatology clinic at the Victorian Aboriginal Health Services (VAHS) provides a good breadth of specialist dermatology care. The community health care model could be replicated in centres elsewhere, including interstate, to help overcome barriers to specialist dermatology care experienced by Aboriginal and Torres Strait Islander populations. Additionally, this model improves trainee exposure and understanding of Aboriginal and Torres Strait Islander health.

Introduction

The VAHS is a metropolitan Aboriginal Community-Controlled Health Organisation (ACCHO) located on Wurundjeri Country in the Melbourne inner-city suburb of Fitzroy. Established in 1973, it is the largest single provider of primary health care to Aboriginal and Torres Strait Islander people in Melbourne, with 33,395 yearly episodes[2] that service one-quarter of the 25,119 Aboriginal and Torres Strait Islander people in Melbourne[3]. VAHS also provides care to non-Indigenous patients, who represent approximately 10% of patients. The VAHS dermatology clinic was re-established in late 2013. In 2015, a federally funded specialist training program scheme provided an accredited dermatology trainee to attend the clinic monthly over twelve months. From February 2016, the clinic was included under the Victorian dermatology training program.

To our knowledge, this original research paper represents the largest collection of urban data on Aboriginal and Torres Strait Islander dermatologic health. This study intends to better inform our understanding of dermatologic conditions that impact the health of metropolitan-based Aboriginal and Torres Strait Islander populations. It also aims to assess the accessibility and acceptability of this speciality service by capturing DNA rates and comparing them against published hospital attendance data.

Materials and Methods

Ethics approval was obtained from the Royal Melbourne Hospital Human Research Ethics Committee. The VAHS Research Sub-Committee also supported the project. Patients were identified using Medicare billing lists and cross-referenced against patient lists generated from VAHS booking software. Patients in receipt of multiple diagnoses only had their primary presenting complaint recorded as the diagnosis. Review appointments were included in the demographic data and listed as separate episodes of care, but these are not included in the results analysis. Appointments that were booked but not attended were recorded as a DNA episode. Patients who returned for a review appointment within twelve months were marked as a review. Those who were re-referred after twelve months or re-presented with a different skin concern were classed as a new presentation.

Electronic patient medical records were reviewed retrospectively to collect data on age, gender, indigeneity, new or review consultation, DNA, diagnosis and disease categories. As described by Tilakaratne et al., disease categories were allocated according to the Australasian College of Dermatologists (ACD) curriculum[4] for ease of comparison. The current ACD curriculum outlines 38 disease categories in its Specialised Content Topic Areas. In line with the study above, a normal full skin examination was recorded as a 39th category.

Results

In total, 255 episodes of care were recorded in the five-and-a-half-year period from December 2013 to August 2019. The majority (229 episodes of care) involved Aboriginal or Torres Strait Islander patients (89.8%), while 26 out of 255 episodes of care involved patients identifying as non-Indigenous (10.2%). There were 196 episodes of care for new patients (77%) and 59 review episodes of care (23%) over the five-and-a-half-year period. Fifty-six DNAs were recorded between 2013–2018, amounting to 56 of the 214 recorded appointments (26%). DNAs were not collected for 2019, as a change in the clinic's software prevented this data from being retrospectively collected with accuracy. Of these 56 DNAs, 45 were Aboriginal or Torres Strait Islander (80%) and eleven were not Aboriginal or Torres Strait Islander (20%). Men were under-represented, comprising just over one-third of all patients seen. The median age was 41. There were 52 episodes of care for patients aged 18 years or under (20.4%). To avoid conditions frequently seen being over-represented, only new cases are included in the Results and Discussion sections.

Eczema or dermatitis	• Eczema (22) • Venous eczema (2) • Nodular prurigo (1) • Pompholyx (1) • Hand dermatitis (1) • Lichen simplex chronicus (1)
Psoriasis	• Chronic plaque psoriasis (5) • Pityriasis amiantacea (1) • Palmoplantar pustulosis (1)
Papulosquamous	• Seborrheic dermatitis (5) • Periorificial dermatitis (1) • Lichen striatus (1) • Keratosis pilaris (1) • Lichen planus (1)
Urticaria, erythema, purpura and vasculitis	• Urticaria (2)
Benign skin neoplasms	• Viral warts (7) • Seborrheic keratoses (3) • Epidermoid cysts (3) • Dermatofibromas (2) • Chondrodermatitis nodularis (1) • Benign vulval melanotic macule (1) • Intradermal naevus (1) • Blue naevus (1) • Glomangioma (1)
Pre-malignant and malignant neoplasms	• Invasive melanoma (1) • Melanoma in situ (1) • Dysplastic naevi (2) • Atypical intradermal naevi (1) • Basal cell carcinomas (3) • Squamous cell carcinoma in situ (5) • Actinic keratoses (13) • Actinic cheilitis (1)
Infections	• Tinea corporis (4) • Herpes simplex (3) • Onychomycosis (4) • Folliculitis (2) • Infected eczema (1)
Adnexal diseases	• Acne (7) • Hidradenitis suppurativa (3)

Pigmentary disorders	• Pityriasis versicolor (1) • Melasma (1) • Vitiligo (1)
Infestations, bites and stings	• Scabies (4) • Pediculosis capitis (1)
Autoimmune connective tissue or rheumatological disorders	• Systemic lupus erythematous (1) • Discoid lupus erythematosus (1) • Erythema elevatum diutinum (1) • Relapsing polychondritis (1)
Vesiculobullous disease	• Dermatitis herpetiformis (1)
Disorders of Hair	• Alopecia areata (1) • Folliculitis decalvans (1)
Disorders of Nails	• Benign longitudinal melanonychia (1)
Disorders of sweat glands	• Hyperhidrosis (4)
Anogenital diseases	• Genital lichen sclerosis (1) • Genital eczema (1) • Genital psoriasis (1)
Disorders due to physical agents (inc. PMLE)	• Polymorphic light eruption (1) • Radiation dermatitis (1)
Disorders of Macrophages (Non-Infective Granulomas)	• Granuloma annulare (6)
Disorders of dermal connective tissue	• Keloids (3) • Atypical fibromatosis (1) • Lipodermatosclerosis (1)
Vascular system disorders	• Progressive telangiectasia – suspected capillary malformation arteriovenous malformation (CM-AVM) (1)
Skin signs in systemic disorders	• Juvenile dermatomyositis (1)
Metabolic and systemic disorders	• Acanthosis nigricans (3)
Psychocutaneous disorders	• Delusions of parasitosis (1) • Acne excorie (2)
Dermatoses of specific populations	• Notalgia paresthetica (1) • Brachioradial pruritus (1)
Full skin exam normal	• Full skin exam normal (33)

Table 1: Casemix results with a number of new diagnoses in each category. The left column indicates categories based on the ACD curriculum. The right column shows the number of times a new diagnosis was made, with the frequency of each new diagnosis given in brackets.

Discussion

Optimising urban Aboriginal and Torres Strait Islander services is vital to national health outcomes since recent census data shows that most Aboriginal and Torres Strait Islander

people reside in regional areas (351, 200) and major cities (298, 400). The minority live in remote and very remote areas (148, 700)[3]. Further, the population growth of Aboriginal and Torres Strait Islander people is greatest within major cities and is expected to continue to rise[3].

Our research addresses the gap identified in a previous casemix study[4], where Aboriginal and Torres Strait Islander patients represented 2% of outpatient dermatology presentations to Royal Adelaide and Royal Darwin Hospitals and only 17% of Northern Territory outreach clinics[4]. These rates are respectively[3] equal to and lower than population parity. They show that in Australian studies examining urban, regional and remote centres, most specialist dermatology outpatient health care is accessed by non-Indigenous Australians[1,4]. Improving access to outpatient services is an important marker of dermatology care access, which is predominantly an outpatient specialty.

Conditions in which serious sequelae were diagnosed and referred onwards for prompt care include a diagnosis of juvenile dermatomyositis, referred to the Royal Children's Hospital for admission and acute management, and psoriatic arthritis mutilans referred urgently to rheumatology. These time-critical cases demonstrate the importance of access to specialist dermatology services optimising outcomes for these patients.

Similar to previous data[1], cases of eczema were common. The frequency of eczema presentations decreased in the final two years of the clinic's operation, despite increased numbers. This may be due to a higher proportion of patients receiving initial treatment by primary care providers after the clinic was established.

Malignant and pre-malignant skin neoplasms were seen frequently, with 26 in total. One 0.44 mm Breslow thickness invasive melanoma and one melanoma in situ were detected, both in male patients. In a previous study, risk factors for cutaneous malignancy within an urban Aboriginal and Torres Strait Islander cohort in Sydney were identified as male sex, skin phototype III and immunosuppression[5]. In that study, basal cell carcinoma was most common (50%), followed by squamous cell carcinoma (31.8%), melanoma (9.1%) and cutaneous sarcomas (9.1%). All malignant skin neoplasms except for the melanoma in situ occurred in Aboriginal and Torres Strait Islander patients, highlighting skin phenotype variability within urban Indigenous populations. In a survey of Aboriginal and Torres Strait Islander health care workers, 64% ranked education regarding skin cancers, sunspots and moles as very relevant, lending support for education in this area[6].

Keloid scars were common and often seen concurrently with acne indicating the importance of early speciality dermatology care in this cohort. There were three new cases of hidradenitis suppurativa. A true incidence of hidradenitis suppurativa within Aboriginal and Torres Strait populations has not been identified, but the national incidence is estimated between 0.2% and 4%[7]. The authors agree with published comments that hidradenitis suppurativa within Aboriginal and Torres Strait populations may be underestimated due to barriers to accessing care, stigmatisation or delays to diagnosis or dermatology referral[8].

Notably, presentations for bacterial and fungal infection were fewer than reported in previous studies[1,9–11]. This may demonstrate high treatment rates within primary care or a reduction in the prevalence in urban areas. Similarly, cases of scabies were fewer than figures seen in studies investigating scabies endemic in communities in central and northern Australia[11].

Previous research has suggested that autoimmune connective tissue disorders, especially systemic lupus erythematosus (SLE), are seen more commonly in Aboriginal and Torres Strait Islander people[11]. Our data did not corroborate this; however, anecdotally, most SLE patients seen at VAHS attend rheumatology clinics. Therefore, this would not have been documented as a primary diagnosis. An audit of rheumatology and renal clinics at public hospitals might yield insightful data to complement this study. Previous authors have noted discoid lupus erythematosus is more prevalent in Aboriginal and Torres Strait Islander patients[11], but similarly, this was not found. A possible explanation for this may include differences in urban and remote population groups, comparatively lower UV status of Victoria influencing dermatoepidemiology or the small numbers in our study design.

Psoriasis was not frequently seen. One explanation is that reduced pathogen exposure prior to European colonisation may have resulted in less evolutionary pressure for innate immunity, a driving factor in psoriasis. Supporting this is that the Major Histocompatibility Complex HLA-A and HLA-B, genes critical in the immune response, show near monomorphism in Indigenous Australians from the Oceania region[11]. Additionally, HLA-Cw6, which has the most significant relative risk amongst the many genes involved in psoriasis, has been observed to be lower in Indigenous Australians[11]. Another explanation may be lack of awareness of newer treatment options available that may prompt patients with psoriasis to present for dermatology care.

New cases of acanthosis nigricans were seen three times. This contrasts with common understandings that recognise it may be more common in Aboriginal and Torres Strait Islander patients, likely associated with increased rates of polycystic ovarian syndrome,

diabetes and obesity. The low numbers may be underestimated and reflect that it was not the primary reason for attending the dermatology clinic.

Capillary malformation arteriovenous malformation (CM-AVM) was suspected in a child and a sibling. Still, as genetic testing has not yet confirmed the diagnosis, this condition was placed in the vascular system disorder category. In total, 23 disease categories were seen, allowing for a broad trainee experience.

Analysis of the DNA rate contrasts against the previous data[1] that identified a 50% DNA rate for Aboriginal and Torres Strait Islander hospital outpatient appointments. This study demonstrated a rate of 26%. The lower DNA rate may be due to additional supports provided by VAHS to overcome barriers to care not offered within the public outpatient clinic setting. These supports include transport to the clinic, co-location of other primary care services, and delivering services within a familiar and culturally appropriate setting.

Our data also shows a high ratio of new to review patients concordant with the clinic primarily offering a consultation model. This success can be attributed to good primary care support with follow-up often undertaken by VAHS general practitioners. In our experience, this model has been effective and demonstrates a sustainable use of specialist services.

This study offers many valuable insights into the casemix of patients seen within an urban Aboriginal and Torres Strait Islander healthcare setting and recognises three main limitations. Firstly, only the primary diagnosis was recorded for each visit and not multiple diagnoses when present. This method ensured that each episode of care represented a single consultation with a dermatologist. This may have resulted in an underestimation of some coexistent conditions. Secondly, although this is the largest urban study of Aboriginal and Torres Strait Islander dermatologic presentations reported with 255 episodes of care, the numbers remain small. As a result, external validity is limited, and the numbers recorded may not truly reflect prevalence in the broader population. Finally, the study was retrospectively designed, and so the information collected was limited to basic demographic data. There is further research potential in expanding the dataset to include secondary diagnoses and Fitzpatrick skin type, urban or rural status and latitude, and medical comorbidities.

Conclusion

In conclusion, this five-year audit of the Victorian Aboriginal Health Service dermatology clinic is the largest study of urban Aboriginal and Torres Strait Islander health ever collected

and the first to look at data collected within an ACCHO. Our improved knowledge of the scope of dermatologic presentations will assist in the education and upskilling of primary health care providers and direct health initiatives in skin diseases. It also highlights the demand for specialist dermatology care in Aboriginal and Torres Strait Islander patients and supports the ongoing allocation of funding and resources in this setting. We hope this data encourages interstate dermatology training programs to work collaboratively with ACCHOs to set up accredited training posts.

This research is endorsed by the VAHS Aboriginal and Torres Strait Islander Research sub-committee and would not have been possible without the support and feedback they provided or without the support of VAHS clerical and services staff. The authors acknowledge that Aboriginal and Torres Strait Islander people should be collaboratively involved in research and retain ownership of intellectual property generated. Data from this paper will be part of ongoing quality improvement to optimise health outcomes for Aboriginal and Torres Strait Islander people who access this service. The authors recognise that Aboriginal and Torres Strait Islander people should benefit from research as part of an ethical standard that ensures when research is undertaken it contributes to the community's health under study.

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Author/s:
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