Non-melanoma skin cancers in New Zealand—a neglected problem
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Abstract
Basal cell carcinoma (BCC) and squamous cell carcinoma (SCC) are the commonest types of non-melanoma skin cancer (NMSC). The incidence of NMSC has been increasing globally with Australia recording a 1.5-fold increase over the last 17 years. Given that Australia and New Zealand share similar latitude, sun exposure levels, population skin types, and other risk factors, it is conceivable that this increase has also occurred in New Zealand. However, the incidence of NMSC in New Zealand is unknown.

The cost of treating NMSC in New Zealand is estimated to be more than NZ$50 million annually, based on extrapolated Australian data. In Australia, NMSC is the most costly burden to its healthcare system, and therefore the Australian Government has allocated resources to improve epidemiological research, and preventative efforts. Currently within New Zealand there is a lack of focus on the NMSC problem.

The absence of New Zealand data on the incidence of NMSC has hampered the development of consistent healthcare policies (including preventative measures), that achieve an integrated and sustainable service delivery. A critical analysis of this problem based on longitudinal data is now vitally important to address this neglected problem.

Non melanoma skin cancers (NMSC) are the most commonly diagnosed group of cancers globally. An estimated 2% of the Australian population are treated for NMSC each year\(^1\) an incidence five times greater than the incidence of all other cancers combined.\(^1\) Data on the number of patients treated annually in New Zealand for NMSC is currently unknown.

Since the 1970s the incidence of NMSC in predominantly Caucasian populations such as Canada\(^2\), the United States\(^3\), Switzerland\(^4\), and Australia\(^5\) has increased at an annual rate of 2–8%. Basal cell carcinoma (BCC) and squamous cell carcinoma (SCC) constitute the majority with BCC the most common malignancy in the world. BCC and SCC account for 65–75% and 15–25% of all cutaneous malignancies respectively.\(^6-9\) Rarer forms of NMSC include adenocarcinoma, sarcoma and Merkel cell carcinoma.\(^10,11\)

The fact that the New Zealand population consists predominantly of fair skinned Europeans with a high incidence of NMSC as well as Māori with a lower incidence, but potentially higher mortality, makes NMSC a prominent and relevant health issue affecting all sectors of our society.\(^1,7,8,12-16\)
The lack of data

A 1982 study in the upper central North Island of New Zealand by Freeman et al. shows that New Zealand has a high incidence of NMSC amongst Caucasians with reported incidence of 231 and 124 per 100,000 population for BCC and SCC respectively. This translates to approximately 12,000 new cases every year amongst the non-Māori, non-Pacific islander population of 3,100,000. The incidence of NMSC among Māori was much lower at 6/100,000.

The 2006 Australian study by Staples et al shows a significant increase in the incidence of NMSC within Australia over the last 17 years. The incidence of BCC increased from 657/100,000 in 1985, to 884/100,000 in 2002, an increase of 35%. The incidence of SCC has risen more dramatically from 166/100,000 in 1985, to 387/100,000 in 2002, an increase of 133%.

Given that Australia and New Zealand share a similar latitude, sun exposure levels, population skin types, and other risk factors, it is conceivable that this cumulative 1.5-fold increase in the incidence of SCC and BCC in Australia over 17 years may have also occurred within New Zealand. A study of the population in the Bay of Plenty in 1998 supports this assumption reporting an incidence of 1,120/100,000 for BCC and 598/100,000 for SCC. This represents a total incidence of 1,718/100,000 for NMSC, one of the highest reported in the world and comparable to that reported in Australia by Staples et al and Buettner et al.

Assuming both the 1982 and 1998 New Zealand studies were a representative sample of the entire population, this is an increase in incidence of nearly 385% for BCC and SCC over a 16-year period. This is a substantially greater increase than that reported by Staple et al in the Australian population over a similar period. It is unlikely that these two New Zealand studies accurately reflect the changing incidence of NMSC for the whole country. An increase in the incidence of NMSC comparable to recent Australian data is more likely. This illustrates the lack of longitudinal data on NMSC in New Zealand.

There is a lack of focus within New Zealand on generating up-to-date epidemiological data on NMSC. A 2005 report by Reeder to the Skin Cancer Steering Committee responsible for developing New Zealand’s skin cancer control programme, highlights this emphasising the need for developing “social, behavioural, environmental, psychological and health service research to determine, and evaluate better methods of preventing cancer.” Within New Zealand it is estimated that epidemiological research is allocated only 6% of cancer research funding annually. Without accurate epidemiological data on the extent of the NMSC problem within New Zealand it will be very difficult to evaluate the effectiveness of any preventive measure.

In contrast, two recent reports from the Australian Cancer Council identifies NMSC as the most costly burden to the health system, and recognises the importance of having current epidemiological data by committing to conduct “regular surveys and other measures of national non-melanoma skin cancer,” acknowledging this “will require support through ongoing funding.”
The unquantified cost of treatment

A health economy report in 2000 estimates that NMSC costs the New Zealand health care system NZ$22 million per year, making it one of the most expensive cancers to treat. The report which uses a variety of approaches, notes that this estimate is likely to be conservative with considerable difficulty encountered due to a lack of “available information on the prevalence of skin cancer.”

In Australia, from 2000 to 2001, NMSC is estimated to have cost the Australian health system A$264 million (9% of total costs for cancer treatment). Assuming New Zealand and Australia have the same incidence of NMSC, the estimated number of cases treated in New Zealand annually would amount to 80,000. If the cost of treatment was comparable between the two countries, NMSC would cost over NZ$50 million per year.

Prevention

Adequate protection against ultraviolet radiation at any stage of a person’s life will reduce the risk of NMSC development. A recent World Health Organization report concludes “that the encouragement of sun-protective behaviour is the most effective and cost effective public health measure to reduce the incidence of skin cancer.”

Australia is recognised to have the most extensive, comprehensive and sustainable skin cancer prevention programme in the world. Currently within New Zealand there are limited resources allocated by District Health Boards (DHBs) to support any skin cancer prevention efforts. This is acknowledged by Reeder who cites “successful collaboration with local Division of the New Zealand Cancer Society” as frequently being the principle instigator of campaigns that promote positive sun protection behaviour. New Zealand needs to follow Australia’s example and commit to a “substantial increase in current expenditure on skin cancer.” Allocation of these funds to community-wide interventions, is seen as the most cost effective method of encouraging the use of sunscreen and other sun protective measures.

The challenge

In 1958 the New Zealand Cancer Registry abandoned mandatory reporting of BCC and SCC, because of incomplete reporting and a lack of resources to manage the large number of these cancers. Mandatory reporting is only required for malignant melanoma, and rarer forms of NMSC, such as Merkel cell carcinoma, atypical fibroxanthoma, and dermatofibrosarcoma protuberans. The visible location of BCC and SCC and their relatively low associated mortality has led to the assumption that most lesions can be simply treated.

The indolent nature of the majority of NMSC means many are treated non-surgically and generate no histology record. This is supported by a 2003 study in the United Kingdom which reports 13% of NMSC cases from general practitioners (GPs) have no matching histological records. This practice is evidenced in New Zealand where a WaiMedCa survey of GPs in 1994 shows New Zealand GPs treated an estimated 0.48 new skin cancers per 100 patients. This rate was used in O’Dea’s report that estimates 70,000 new cases of skin cancer each year, an order of magnitude greater
than previous estimates by other New Zealand studies that reported incidence based on histological reports from laboratories. Consequently any incidence generated by a retrospective descriptive epidemiological study based on pathology records will significantly underestimate the true incidence of NMSC.

Management of NMSC is also characterised by the large number of treatment providers including primary care and various specialties, DHB and private providers. This is quite different from other cancers and makes accurate data collection difficult. That is why the Australian study relies on patient recall of NMSC treatment to obtain more reliable information.

The lack of accurate data on the incidence of BCC and SCC in New Zealand has prevented effective service planning and delivery. This is reflected by the implementation of a variety of unproven and inconsistent primary care models for skin lesion removal by different DHBs within the country.

Tertiary services involved in the treatment of the most advanced forms of these lesions such as plastic surgery are being inundated by the increasing numbers of NMSC lesions requiring treatment that inhibits their ability to provide adequate service in other areas. Issues over the sustainability of the skin cancer service have been raised, and there is now a call for a multidisciplinary approach, with appropriate credentialing, and auditing encompassing a variety of treating specialties.

Whilst an epidemiological study to assess the size of the NMSC problem within New Zealand is now vitally important, there is no easy way of performing this accurately. A prospective study may be potentially expensive and time consuming, generating a significant workload. Despite these difficulties, it is now important to carry out a properly designed survey, possibly similar to either the WaiMedCa survey for 1991–1992, now nearly 18 years old, or the recent Australian study by Staples et al.

**Conclusion**

Recent epidemiological data from Australia has shown a dramatic increase in the incidence of NMSC, particularly SCC over the last 17 years. Historically New Zealand has one of the highest incidences of NMSC in the world. Given that Australia and New Zealand share similar latitude, sun exposure levels, population skin types, and other risk factors, it is conceivable that this increase has also occurred in New Zealand. Australia is now addressing its growing NMSC problem through the allocation of appropriate resources to continuing epidemiological research and community-wide preventive measures. However, in New Zealand the current incidence of NMSC is unknown.

An epidemiological study within New Zealand is now needed to assess the size of the NMSC problem. If the incidence of NMSC is rising as rapidly in New Zealand as seen in Australia and other countries there is a need for an increase in appropriate resources to community-based preventative measures, the development and implementation of a consistent and sound national healthcare delivery model, and a commitment to following Australia’s lead by committing to continued monitoring of the incidence of NMSC.
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