

ORIGINAL RESEARCH

COMPARISON OF DIAGNOSTIC EFFICACY OF SKIN LESIONS BY GENERAL PRACTITIONERS AND SKIN SPECIALISTS

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ABSTRACT:

Introduction: Skin cancer is the most common cancer in Australia: over 250 000 people are diagnosed with non-melanoma skin cancer (NMSC) and over 8000 with melanoma annually. This extremely high incidence makes skin cancer the most costly of all cancers to treat all over the world. **Material & Method:** The 100 GPs originally selected, By the use telephone listings, advertisements and the Internet, we identified 51 potentially suitable skin cancer clinics were identified. Those eligible for our study were contacted using the same method as for GPs. **Results:** Of the 1000 first excisions, 166 lesions (16.6%) were treated by specialists, the rest by GPs. Of the 800 first excisions, 23.5% did not have a clinical diagnosis. GPs were more likely to give a clinical diagnosis (77.4%) than specialists (71.6%; $p < 0.001$). For BCC, PPV was significantly higher for specialists compared to GPs. For SCC, CN and seborrhoeic keratosis sensitivity was significantly higher for GPs than for specialists. **Conclusion:** There is value in identifying whether diagnosis and practice are different between specialist and GP populations when both provide services for the care of skin cancer as they do in Australia and in other countries.

Keywords: Skin Lesions, General Practitioners, Skin Specialist.

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INTRODUCTION

Diagnosing skin cancer can be difficult. In primary care settings, sensitivity of clinical examination for diagnosing skin cancer has been reported to range from 40% to 80%. Diagnostic accuracy for pigmented lesions can be considerably lower.¹

The prognosis for skin cancer depends on the type of tumour and the stage of the disease. Although basal cell carcinomas rarely metastasise, as a result of their growth they can cause serious damage to the surrounding tissue if not treated in time.² This risk of local tissue damage also applies to squamous cell carcinomas; in addition, approximately 1-4% of these tumours metastasise. The risk of metastasis depends on the size and location of the tumour. Squamous cell carcinoma has a relative 5-year

survival rate of 92-95%. Melanoma has a relative 5-year survival rate of 87%⁶, but this rate varies widely depending on the stage of the tumour.³

In the many countries healthcare system, the general practitioner (GP) is the gate-keeper for medical care.³ This implies that nearly all patients visit their GP first when they discover a skin lesion that they suspect might be malignant. After taking the patient's medical history, the GP then examines the lesion and determines whether it is benign or potentially malignant. Subsequently, the GP has several options for treatment. If the lesion is benign, no action is required, and the patient can be reassured. However, if the lesion is potentially malignant, the GP can either treat the patient or refer the patient to secondary care.

If the GP chooses to refer the patient to a specialist, most of the time the patient is referred to either a dermatologist or a general or plastic surgeon. This specialist then has similar treatment options as the referring GP. He/she can either take no action and reassure the patient or he/she can treat the patient. Depending on the lesion's type and stage, the patient may remain under the care of the GP or specialist.⁴

To address this gap in the evidence base, we undertook a prospective study of the casemix of patients with skin lesions presenting to primary care practitioners working in skin cancer clinics and in general practice. Focusing specifically on excised or biopsied skin lesions, our aim was to compare the diagnostic accuracy of clinicians working in the two settings. We did not address the issues of false negative results after a skin examination or of the adequacy of excision or recurrence of skin cancer after excision.

METHODS

Our study, conducted in 2006, involved mainstream GPs and skin cancer clinic doctors. Ethical approval was obtained from the Research Ethical Review Committee.

By the use telephone listings, advertisements and the Internet, we identified 51 potentially suitable skin cancer clinics were identified. Those eligible for our study were contacted using the same method as for GPs. Doctors working within skin cancer clinics are primarily vocationally trained GPs who have elected to subspecialise in skin cancer medicine, either in addition to or instead of general practice.

DATA COLLECTION

Demographics of Doctors

We collected data on age, sex, year of graduation, location of training, number of years worked in skin cancer clinics or as a GP, number of sessions per week.

To ensure sufficient numbers of lesions for analysis, we collected data from GPs over two 4-week periods (a total of 8 weeks). As the volume of skin examinations within skin clinics was known to be higher than in general practice, we collected data from skin cancer clinic doctors over two 4-week periods (a total of 8 weeks). Data were collected on a rolling basis during March–May and September–November.

For lesions excised or biopsied, doctors provided a clinical diagnosis and used five-point scales to rate both the likelihood of malignancy (1 [“very unlikely”] to 5 [“very likely”]) and the degree of

patient pressure to excise (1 [“no pressure”] to 5 [“strong pressure”]). The case report form was matched with the histopathology report for each excised or biopsied lesion. Histopathology information included procedure date, body site and histological diagnosis. Case report forms and, where appropriate, histopathology forms were collated by trained research assistants at the practice and allocated a unique number. Multiple lesions from a single patient were numbered separately. To ensure completeness and accuracy of the data, the study team regularly visited the practices.

Positive predictive values (PPVs) and sensitivities together with exact 95%-confidence intervals (95%-CI) were calculated for the histological diagnoses melanoma; basal cell carcinoma (BCC); squamous cell carcinoma (SCC), including intraepidermal carcinoma or Bowen's disease (SCC-in-situ) and keratoacanthoma; solar keratosis; dysplastic naevus; benign naevus; other pigmented lesions (lentiginos, ephelides and seborrhoeic keratosis); other benign lesions (skin tags, dermatofibroma, and cysts); and other malignant lesions. Where multiple diagnoses were recorded for a single lesion, malignant diagnoses were accorded pre-eminence over pre-malignant or benign diagnoses.

RESULTS:

Of the 100 GPs originally selected, seven were ineligible (four could not be traced, and three were no longer in practice). Of the remaining 93 eligible GPs, 3 refused. Three withdrew before data collection, leaving 87 participating GPs (87% of the original sample).

Of the 51 skin cancer clinics initially identified, 15 were ineligible for our study (four were no longer in business, nine were part of a general practice and two were staffed by dermatologists). Of the 36 remaining eligible clinics, six refused, one did not respond and two initially consented but withdrew before data collection. The final group consisted of 27 skin cancer clinics (75% participation rate), representing 50 doctors.

There were no apparent differences in demographic or other characteristics between participating and non-participating skin cancer clinics or doctors, except female GPs were significantly more likely to participate than male GPs ($P < 0.001$).

Skin cancer clinic doctors were significantly younger, on average, than GPs (mean, 45 years v 50 years, respectively; $P = 0.002$); were predominantly male (84.0% in skin cancer clinics v 57.7% in general practice; $P < 0.001$); and were more likely to

have undertaken additional training (including in-house training) in skin cancer diagnosis ($P < 0.001$). Skin cancer clinic doctors worked fewer sessions per week — an average of 6.7 sessions (median, 7.0), compared with 8.0 sessions (median, 8.0) among GPs ($P = 0.002$). Compared with GPs, skin cancer clinic doctors were significantly more likely to use dermatoscopes ($P < 0.001$) and digitised imaging ($P < 0.001$)

Of the 1000 first excisions, 166 lesions (16.6%) were treated by specialists, the rest by GPs. Of the 800 first excisions, 23.5% did not have a clinical diagnosis. GPs were more likely to give a clinical diagnosis (77.4%) than specialists (71.6%; $p < 0.001$). For BCC, PPV was significantly higher for specialists compared to GPs. For SCC, CN and seborrhoeic keratosis sensitivity was significantly higher for GPs than for specialists.

DISCUSSION:

Skin cancer is a major public health issue all over the world and there are formidable challenges in providing clinical services to the population.⁵ In recent years, there has been a significant increase in skin cancer-related procedures such as diagnostic biopsies and skin flap repairs. The recent emergence of skin cancer clinics in primary care has provided an additional option for patients concerned about skin lesions, but questions have been raised about the clinical performance of doctors working in this area.¹ To our knowledge, ours is the first large-scale prospective study to compare diagnostic accuracy between mainstream GPs and skin cancer clinic doctors. Our key finding was that diagnostic accuracy is similar for these two groups of doctors. Strengths of our study were its large sample size, prospective design, random selection of GPs, and inclusion of a wide representation of skin cancer clinics. A limitation was the low response rate from GPs. While it was comparable to response rates in other studies auditing skin lesions, we cannot be sure whether our sample was truly representative. Although we found no evidence of selection bias on the basis of age, sex or simple measures of clinical training, we had no information about the clinical interests of non-participating doctors, and so could not exclude the possibility that doctors with a particular interest in skin cancer medicine were over-represented among mainstream GP participants. There were no significant differences between participating and non-participating skin cancer clinics. While participants may have achieved increased diagnostic accuracy knowing that their

performance was being scrutinized (the Hawthorne effect), this effect would have been similar for both groups.

There are some limitations to the analysis, interpretation and generalisation of the present data which must be acknowledged.⁶ First, diagnostic accuracy may have been altered by the failure to record a clinical diagnosis at excision on the pathology request. The lesions which had missing diagnoses were included in our calculations as incorrect diagnoses. The true sensitivity would probably be higher if these missing clinical diagnoses had been available. However we feel that our results should equate to normal clinical practice because the data were obtained from completed histology request forms as part of a registry style study, rather than being specifically requested for the purposes of the study.

CONCLUSION

There is value in identifying whether diagnosis and practice are different between specialist and GP populations when both provide services for the care of skin cancer as they do in Australia and in other countries. If the accuracy of diagnosis is similar then identifying the reasons for referral to surgeons may help to define whether referral is appropriate and so in turn help to reduce the cost of care.

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