ORIGINAL RESEARCH



Geographic variation in referral practices for patients with suspected head and neck cancer: A survey of general practitioners using a clinical vignette

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Abstract

Introduction: General practitioners (GPs) play a crucial role in cancer care and GPs are often the first doctor that patients with symptoms suggestive of cancer will encounter. Head and neck cancer (HNC) is a relatively uncommon presentation in primary care, and evidence suggests that times to diagnosis and treatment of HNC vary based on geographical location of patients. This may be due to barriers to referral faced by regional or rural GPs as compared to those in metropolitan cities in Australia. **Objective:** To investigate the effect of geographical location of GPs on management of patients with symptoms suggestive of HNC.

Design: This was a descriptive, analytical, cross-sectional survey. Surveys were sent to GPs at practices in two primary health care networks in New South Wales, Australia (Mid North Coast Primary Healthcare Network and the Central and Eastern Sydney Primary Healthcare Network) between February and May 2020. Main outcome measures were perceived time from referral to specialist appointment, factors affecting timeliness of patient help-seeking, and awareness and use of clinical guidelines.

Findings: A total of 1803 GPs were sampled, of which 196 responded (45 regional GPs and 151 metropolitan GPs). Less than half (48%) of regional GPs reported patients could expect to be seen by a specialist within 2 weeks of referral, compared to 70% of metropolitan GPs (p=0.001). Most metropolitan GPs stated they would refer a patient with suspected HNC to a surgeon subspecialising in HNC. Regional GPs were split between ear, nose, and throat (ENT) and general surgeons. Availability of services was the most common factor influencing referral practices for regional GPs, whereas for metropolitan GPs, this was the patient's symptoms. Awareness of government resources for cancer referrals was generally low.

[Correction added on 10 May 2022, after first online publication: CAUL funding statement has been added.]

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Discussion: Regional GPs report patients with HNC are less likely to be seen by a specialist within optimal time frames compared to metropolitan GPs. Respondents reported different barriers to early referral of patients with suspected HNC, with regional GPs more often citing system-level factors while metropolitan GPs more often cited patient-level factors.

Conclusion: Evaluating service provision and uptake with respect to community need, and addressing of barriers to implementation, may minimise unwarranted clinical variation.

KEYWORDS

access, disparities, general practice, hand neck cancer, health services, variation

1 | INTRODUCTION

Cancer is a leading cause of death in Australia, estimated to cause three in every 10 deaths. Early detection and timely treatment are crucial to optimising cancer survival.² In Australia, general practitioners (GPs) are medical specialists with a broad remit,³ and analogous to family or primary care physicians in other countries. GPs play an important role in cancer care, from screening and diagnosis, coordinating care, management of side effects of cancer treatment, to survivorship and palliative care. 4-6 GPs are often the first doctor a patient with symptoms suggestive of cancer will encounter. The GP then refers the patient for further diagnosis and treatment, but are frequently involved in coordinating ongoing care.⁷ Consequently, GPs are said to have a 'gatekeeper' role, 7,8 which is critical to achieving wellcoordinated, person-centred care and optimising patient outcomes.

Australian GPs are estimated to see only four new serious cancer diagnoses each year⁹ and among adults aged 45-64 years, an average of 3.4 patients are managed each year with malignant cancer as a chronic condition. 10 Head and neck cancer (HNC) is particularly uncommon in Australia, accounting for 3.6% of new cancer diagnoses annually. 11 HNC also demonstrates significant geographic variation in terms of stage at diagnosis¹² and survival. ¹³ The Cancer Australia Optimal Care Pathways for People with Head and Neck Cancers (OCP-HNC)¹⁴ suggest that patients with suspected HNC should be referred to a specialist associated with a multidisciplinary team within 2 weeks. This standard is mirrored internationally, particularly in the United Kingdom where the 2-week wait (2WW) fast-track referral system has been implemented since 2000 to improve early detection and management of HNC.15 However, delays in referrals still occur. Vedsted and Olesen¹⁶ suggest that this may be due to GPs' reluctance to arrange

What is already known on this subject:

- There are significant rural-urban disparities in health services in Australia, including timeliness and stage of cancer diagnosis, and cancer survival rates. General practitioners are often the first port of call for patients experiencing symptoms suggestive of cancer
- Head and neck cancer is an uncommon cancer in Australia, which may contribute to delayed diagnosis and referral of cases to specialist care
- Drivers of referral practices for head and neck cancer by Australian general practitioners have been under-researched

What this study adds:

- This study utilised a clinical vignette to quantify general practitioners perceptions of times from referral to specialist appointments for people with suspected head and neck cancer
- General practitioners in regional New South Wales reported their patients would wait longer for an appointment with a head and neck cancer specialist, compared to general practitioners in metropolitan New South Wales
- Factors influencing referral practices varied based on remoteness of general practitioner practice, with availability of services reported as a primary driving factor for regional general practitioners compared to patient symptoms for metropolitan general practitioners
- Interventions to improve referral and diagnosis
 of suspected head and neck cancer may vary
 based on patient location, and availability of
 services should be accounted for when designing cancer care policy in regional areas

appropriate diagnostic investigations. This question has been broached for colorectal, lung and ovarian cancers¹⁷; however, there is a paucity of research relating to referral practices for HNC.

The English National Audit of Cancer Diagnosis in Primary Care has shown that patients with oropharyngeal and laryngeal cancer have some of the longest patient and primary care intervals. 18 Several factors could contribute to these disparities, such as the nonspecific symptom signatures of oropharyngeal cancer¹⁹ and laryngeal cancer.²⁰ Times to diagnosis and treatment of oral and oropharyngeal cancer vary by remoteness of residence in Australia. 21 Understanding referral patterns of GPs in different locations may provide insight into the effect that timely referral has on stage and survival outcomes. The aim of this study was to investigate geographical variation in self-reported management of patients with symptoms suggestive of HNC by GPs in New South Wales (NSW). The specific hypotheses were that the proportion of GPs who report being able to refer a patient in accordance with the OCP-HNC timelines will be lower in regional NSW, and regional GPs will be more likely to refer a patient with suspected HNC to a general or ear, nose and throat (ENT) surgeon rather than a surgeon subspecialising in HNC.

2 METHOD

2.1 Study design and setting

This study was a mailed cross-sectional survey of GPs using a study-specific questionnaire, and reporting of this study follows the *Strengthening the reporting of observational studies in epidemiology (STROBE)* guidelines. ²² The survey was administered in Central and Eastern Sydney and the Mid North Coast of New South Wales, the most populous state in Australia, between February 2020 and May 2020.

2.2 | Questionnaire development

The project team, composed of an academic GP, HNC specialists and health services researchers, developed a study-specific questionnaire, which was piloted among a small group of academic GPs. Where possible, closed-ended questions were used over open-ended questions, as closed-ended questions are associated with higher response rates.²³ The questionnaire consisted of four sections:

BOX 1 Clinical scenario presented to survey participants

A 54-year-old Caucasian male presents to your practice with a 3-week history of a sore throat and a mild ache in the left ear, which has been present for 1 week. The patient does not report any voice overuse, no cough and no recent respiratory tract infections. Oral/oropharyngeal examination is clear and neck palpation reveals no lymphadenopathy. Chest is clear, abdominal examination is unremarkable, and his thyroid is not palpable. His hearing is normal, and ears are normal on examination. The patient returns after completion of two courses of antibiotics reporting a new lump in the left upper neck that they noticed while shaving the previous day. Neck examination reveals a 20 mm firm mobile lump (not fixed to the skin). There are no other enlarged lymph nodes. You are suspicious of these new symptoms and decide to refer the patient to a specialist for further investigation.

2.2.1 | Section 1: Clinical scenario

The clinical scenario depicted a fictional patient presenting to their GP with 'red-flag' upper aerodigestive tract symptoms suggestive of HNC (sore throat and mild unilateral earache) and re-presenting with a new lump in the upper neck without resolution of symptoms (Box 1). The participants were asked:

- To indicate which specialist they would refer to the patient to and why.
- Whether and how they would facilitate making the appointment.
- An estimate of how long the patient would wait for the appointment.
- Any actions they may take to facilitate a fast-track appointment.

2.2.2 | Section 2: Factors affecting timeliness of patient help-seeking

Participants were asked to rate the perceived importance of several health system, patient and tumour factors on timeliness of a patients' attendance for symptoms suggestive of HNC. A six-point Likert scale was used consisting of the following options: not important, low importance, slightly important, moderately important, very important or extremely important. Health system factors included difficulty obtaining appointments and distance to services; patient factors included patient demographics and co-morbidities, health insurance status and previous experience with the health system; and tumour factors included the wide variation in the symptom profile of HNC and what constitutes a red-flag symptom.

2.2.3 | Section 3: Guidelines for clinical practice

Participants were asked to indicate their awareness of clinical guidelines or resources available in NSW that may facilitate referral of patients with symptoms suggestive of HNC. These included the *OCP-HNC*, ¹⁴ eviQ²⁴ (a freely available online resource of cancer treatment protocols), Canrefer²⁵ (an online directory of cancer specialists associated with a multidisciplinary cancer care team in NSW, designed to assist GPs refer patients with suspected cancer) and guidance in published literature or medical magazines. If participants were aware of the resources, they were asked to rate their perceived usefulness (not useful, somewhat useful or very useful). Participants were also offered the opportunity to list any additional guidelines or resources that were not listed on the questionnaire.

2.2.4 | Section 4: Participant demographics and practice information

The following demographic and practice information was collected: gender, location of practice (metropolitan or regional NSW), size of practice, years in practice, clinical workload, 'bulk-billing' practises (the practise of accepting the rebated component of the consultation fee as the total fee, to eliminate out of pocket expenses for patients), ²⁶ number of patients in previous 12 months referred for investigation of HNC and number of patients referred in last 12 months diagnosed with HNC.

2.3 | Survey administration

The survey was administered by mail rather than email as email addresses were not available for all GPs. Strategies shown to improve responses to mailed surveys were utilised for the survey administration, ²³ including advance notification, a non-conditional and non-monetary incentive, hand-signed letters, sending reminders and using university sponsorship. The incentive provided to the potential participants was a tea bag and a sachet of coffee

included in the survey pack, to encourage participants to take 5 min to complete the survey while enjoying a cup of tea or coffee. All participants received a one-page advance notification flyer promoting the survey in advance of the actual survey notifying them that a questionnaire would follow within 1 week. The flyer also outlined the purpose of the questionnaire that it would survey their views on referral pathways for patients with symptoms suggestive of HNC. The survey was accompanied by an invitation letter from the study coordinator, a participant information sheet (PIS) and a reply-paid envelope. Up to three reminders were sent to non-respondents, commencing 2 weeks after the first mail out of the survey, at two-weekly intervals. The reminders included another copy of the survey, PIS, reply-paid envelope and a reminder letter from the study coordinator. Data were entered into and managed using an online survey tool hosted by Research Electronic Data Capture (REDCap),²⁷ hosted securely by the Sydney Local Health District Information and Communication Technology (SLHD ICT) services.

2.4 | Study sample

2.4.1 | Participants

The questionnaire was mailed to all GPs on the mailing lists of the Central and Eastern Sydney Primary Healthcare Network (CESPHN)²⁸ (n=1556), a metropolitan area, and the North Coast Primary Health Care Network (NCPHN) (n=319), a regional area.²⁹ PHNs are Australian Government funded services established in 2015 that cover geographic regions of varying sizes and populations across Australia. Their roles include improving medical services for patients in their region, improving links between local health services and hospitals and guiding government health funding to reach areas most in need. There are 31 PHNs in Australia, 10 of which are in NSW. Invitees were considered ineligible if they were not working as a GP, had died, retired or were on extended leave for more than 6 weeks.

2.4.2 | Sample size determination

The sample size calculation was based upon the difference in proportion of GPs in metropolitan and regional NSW who believed that their patients with symptoms suggestive of HNC would be seen by a specialist affiliated with a multidisciplinary team within 2 weeks of referral, based on recommendations in the *OPC-HNC*. ¹⁴ To detect a 20% difference, with 80% power, a 5% significance level (alpha) and a 2:1 allocation ratio of metropolitan to regional GPs, a minimum of 228 responses was required.

2.5 | Statistical analysis

Demographic and practice factors were assessed using descriptive statistics and are presented as number and percentage (%). Categorical data were analysed using Pearson's chi-square statistics or Fisher's exact test to determine differences among respondents based on location of practice (metropolitan or regional NSW). For the analysis of GP-rated importance of patient and health system factors, Likert scale response options were dichotomised into either important (very or extremely important) or not important (not important, low importance, slightly or moderately important). Missing data were not imputed. Open-ended questions were coded by one author (Author 1) into groups using thematic analysis to ensure that the meaning of responses was not lost during the coding process. All tests were two-sided, and significance was taken at p < 0.05. Analyses were conducted using IBM SPSS Statistics Version 25.0 for Windows.

3 RESULTS

3.1 | Participant characteristics

Of the 1875 GPs sampled, 72 were ineligible (Figure 1). Of the remaining 1803 eligible GPs, 196 completed the survey (overall response rate 10.8%). The response rate was higher among regional GPs (45/301, 15.0%) compared to

metropolitan GPs (151/1501; 10.1%). Metropolitan GPs reported more years in practice (84.1% with >15 years in general practice) compared to regional GPs (62.2% with >15 years in general practice; p=0.003; Table 1). Some 21.2% of metropolitan GPs were in solo-practice compared to 4.4% of regional GPs (p=0.026). Fewer regional GPs reported offering bulkbilling to all patients (24.4%) compared to metropolitan GPs (45.7%; p=0.021).

3.2 | Clinical scenario—referral practices

Most metropolitan GPs indicated they would refer to a surgeon subspecialising in HNC (Table 2). Regional GPs' referrals were split between ENT and general surgeons. Most metropolitan GPs (70%) indicated that their patient would be seen by a specialist within 2 weeks, compared to 42% of regional GPs (p = 0.001). The proportion of GPs who had referred a patient with red-flag symptoms over the preceding year was similar for regional and metropolitan GPs (80% among regional GPs vs 86% among metropolitan GPs). The factors influencing specialist choice for regional GPs were availability of services (62%), followed by need for further investigations (either by a specialist or organised by the GP; 44%), and a rapid pathway or appointment (24%). The predominant factor for metropolitan GPs was the symptoms the patient was experiencing (46%), with accessibility of services only reported in 17% of responses. Both metropolitan

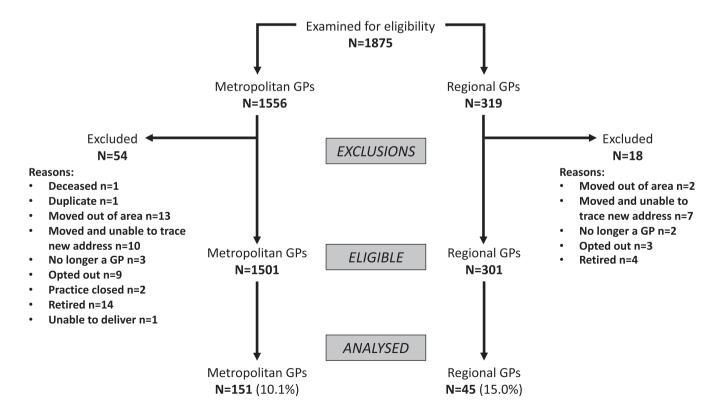


FIGURE 1 Flow chart of participant eligibility and exclusions for the survey

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	Metropolitan GPs (N = 151)	Regional GPs (N = 45)					
Characteristic	N (%)	N (%)	χ^2 ; df; p				
Sex							
Male	69 (45.7)	24 (53)	0.81; 1;				
Female	82 (54.3)	21 (47)	p = 0.37				
Years in general practice							
<6 years	5 (3.3)	6 (13)	10.68; 2;				
6–15 years	19 (12.6)	11 (24)	$p = 0.003^{a}$				
>15 years	127 (84.1)	28 (62)					
Size of general practice							
Solo practice	32 (21.2)	2 (4)	7.34; 2;				
Practice with 2-5 GPs	46 (30.5)	14 (31)	p = 0.026				
Practice with ≥6 GPs	73 (48.3)	29 (64)					
Full-time or part-time							
Full-time	84 (55.6)	24 (53)	0.07; 1;				
Part-time	67 (44.4)	21 (47)	p = 0.79				
Bulk billing							
Bulk bills all patients	69 (45.7)	11 (24)	6.85; 2;				
Bulk bills some patients	79 (52.3)	33 (73)	$p=0.021^{\rm a}$				
Do not bulk bill	3 (2.0)	1(2)					
How many of your patients have you referred for investigation of possible head and neck cancer in the last year?							
0	21 (13.9)	9 (20)	2.47; 3;				
1–5	118 (78.1)	32 (71)	$p = 0.44^{\mathbf{a}}$				
6–10	11 (7.3)	3 (7)					
>10	1 (0.7)	1 (2)					
How many of these patients have been diagnosed with head and neck cancer?							
Not applicable (0 referred for investigation)	21 (13.9)	9 (20)	$3.78; 4;$ $p = 0.44^{a}$				
0	28 (18.5)	5 (11)					
1	61 (40.4)	22 (49)					
2–4	36 (23.8)	7 (16)					
>5	5 (3.3)	2 (4)					

TABLE 1 Personal and practice characteristics of 196 study respondents to a questionnaire regarding a hypothetical clinical scenario of a patient with symptoms suggestive of head and neck cancer

Abbreviation: GP, general practitioner.

Bold values signified where p < 0.05.

and regional GPs used personal phone calls directly to the specialist as a strategy to fast-track an urgent appointment.

3.3 | Influence of patient and health system factors on timeliness of help-seeking and diagnosis

Both metropolitan and regional GPs rated patient awareness of the significance of symptoms as the most important factor influencing timeliness of initial attendance and diagnosis (Table 3). Health system factors including

availability of local services, appointment availability and costs associated with services were rated as more influential than patient factors, particularly among regional GPs. Distance required to travel to specialists, which in Australia tend to be centralised in major cities, was rated more important among regional GPs (p = 0.013).

3.4 Usefulness of resources

GPs in both metropolitan and regional NSW reported that clinical updates in journal publications and medical

^aFisher's exact test.

TABLE 2 Reported referral processes by 196 GPs responding to questionnaire regarding a hypothetical clinical scenario of a patient with symptoms suggestive of head and neck cancer

	Metropolitan GPs (N = 151)	Regional GPs (N = 45)						
	N (%)	N (%)	χ^2 ; df; p					
Which specialist would you refer the patient to? ^a								
Head and neck surgeon	78 (52.0)	9 (20)	40.31; 3; p < 0.001					
Ear, nose and throat surgeon	42 (28.0)	14 (31)						
General surgeon	1 (0.7)	11 (24)						
Other (descriptions below)	29 (19.3)	11 (24)						
Further investigations (eg send to radiology)	26 (17.3)	11 (24)						
Haematologist	2 (1.3)	_						
Multidisciplinary team	1 (0.7)	_						
Would you request the patient make the appointment themselves? ^a								
No, I would ask my practice staff to make an appointment with the patient	37 (24.7)	16 (36)	13.31; 2; p = 0.001					
No, I would personally make the appointment with the patient	25 (16.7)	16 (36)						
Yes, I would request the patient make the appointment themselves	88 (58.7)	13 (29)						
How long does it usually take for a patient to be seen by a specialist? ^b								
<1 week	32 (21.5)	6 (13)	$19.54; 4; p = 0.001^{\circ}$					
1–2 weeks	74 (49.7)	13 (29)						
2–4 weeks	33 (22.1)	17 (38)						
1–3 months	10 (6.7)	6 (13)						
>3 months	_	3 (7)						

Abbreviation: GP, general practitioner.

Bold values signified where p < 0.05.

magazines were the most useful resources for the management of cancer in general practice (Figure 2). Government resources were considered less useful, with half of GPs unaware of the listed government resources, although more metropolitan GPs described them as useful compared to regional GPs.

4 | DISCUSSION

This is the first study to show important variation in intentions to refer practices with symptoms suggestive of HNC based on location of practice in Australia. While it is not surprising that these differences exist, what is concerning

^an=1 missing.

 $^{^{\}rm b}n$ =2 missing.

^cFisher's exact test.

TABLE 3 General practitioner (GP)-rated importance of patient and health system factors on timeliness of help-seeking or diagnosis, ranked according to importance (metropolitan GPs as reference)

	N	Very or extremely important		
Factor		Metropolitan GPs N (%)	Regional GPs N(%)	χ^2 ; df; p
Patient awareness of significance of signs/ symptoms	193	109 (73.6)	29 (64)	1.44; 1; 0.23
Availability of specialist services locally	195	73 (48.7)	28 (62)	2.55; 1; 0.11
Difficulty getting appointments with specialists	192	67 (45.6)	27 (60)	2.87; 1; 0.09
Costs associated with services	195	68 (45.3)	23 (51)	0.46; 1; 0.50
Health professionals unsure of what constitutes red-flag symptoms	191	61 (41.8)	12 (27)	3.33; 1; 0.07
Wide variation in the symptom profile of head and neck cancer	193	60 (40.5)	16 (36)	0.36; 1; 0.55
Patient co-morbidities	191	51 (34.5)	11 (26)	1.20; 1; 0.27
Previous experience with the health care system	195	44 (29.3)	16 (36)	0.63; 1; 0.43
Patients' health insurance status	194	40 (26.8)	8 (18)	1.53; 1; 0.22
Patient demographics	193	33 (22.3)	12 (27)	0.37; 1; 0.54
Distance required to travel to specialist services	195	27 (18.0)	16 (36)	6.21; 1; 0.013
Difficulty getting appointments with GPs	192	23 (15.6)	8 (18)	0.12; 1; 0.73
Distance required to travel to GP services	193	21 (14.1)	6 (14)	0.01; 1; 0.94

Bold values signified where p < 0.05.

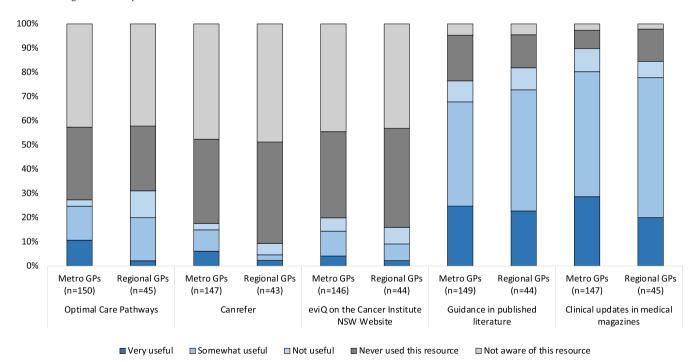


FIGURE 2 Awareness and usefulness of Australian guidelines and resources for management of cancer among respondents

is that these differences remain evident despite increased investment in NSW regional cancer services, telehealth and outreach clinics over the past decade.³⁰ The most striking difference was that 48% of regional GPs reported that patients could expect to be seen by a specialist within 2 weeks compared to 70% of metropolitan GPs. This

suggests that strategies aiming to increase access to specialist services in regional NSW are either being underutilised or there are insufficient services to address the needs of regional patients.

Awareness of resources and guidance for management and referral of cancer patients was generally low

among survey participants. Even among participants aware of resources, their perceived usefulness in practice were not high. This highlights an area which may require further investigation as it is not clear whether guidelines were not considered useful due to barriers to implementation such as lack of resources. As resources and guidelines aim to address inequities in cancer outcomes, it is interesting that awareness and perceived usefulness was slightly lower among regional GPs in this study. While there have been successful implementation projects of the *Optimal Care Pathways* in Victoria, Queensland and the Northern Territory in Australia, ³¹ the communication and implementation strategies in NSW may be worth revisiting to increase awareness and use in practice.

4.1 | Strengths and limitations

One of the strengths of this study was the use of a studyspecific questionnaire, which was developed and piloted among academic GPs. This is also the first study, to our knowledge, to compare referral practices of GPs based on geographic region of practice, which fills a key gap in the literature. We also implemented several strategies to improve response rates to mailed surveys. Despite this, there was a low response rate (10.8%), which limits the generalisability of the findings. GPs are an oversurveyed group and it is possible that the survey topic was not considered relevant to most GPs, given HNC is a rare presentation in primary care.³² However, the COVID-19 pandemic likely contributed significantly to the low response rate, with the administration of the survey coinciding with the peak of infections seen in NSW (March to April 2020) that may have directed GPs' attention away from a survey. Despite this, our response rate was not much lower than the reported response rate of a similar survey published in 2015, 17 in which 11.3% of NSW GPs surveyed responded to the survey. Further, we sampled GPs in two of the 10 PHNs in NSW, and therefore practices may not be representative of those across NSW or Australia. Additionally, we used only one clinical scenario in this questionnaire, and it is possible that if we had used additional scenarios with different symptom combinations, results may have differed. During pilot testing, the decision was made to include only one scenario to reduce respondent burden.

4.2 | Comparison to existing literature

In a qualitative study of health professionals' views of access to cancer care in Australia, 33 regional GPs reported

that travel, poor communication within the health system and a limited subspecialty surgeon workforce were the principal barriers to cancer care in regional Australia. These findings are consistent with the sentiments in the current survey, with regional GPs citing availability of services as the main factor driving their selection of specialist to refer to. These factors have also been identified as barriers to effective coordination of care³⁴ and appear to be persisting in Australia despite increased investment in regional cancer care. Availability of services, and in particular practitioners, is an ongoing issue, with cancer services that depend on specialist medical practitioners a significant service gap in remote Australia.³⁵ In a survey of ENT surgeons, Shein et al.³⁶ found that just one in five surgeons conducted an outreach service in the preceding year, with an average of 5.5 outreach days per year. Promisingly, three in five ENT surgeons surveyed reported an intention to perform outreach services in the future.

5 | CONCLUSIONS AND IMPLICATIONS

This study provides some evidence that strategies and investment to improve access to HNC services in regional NSW still have a way to go to adequately meet the needs of GPs and their patients. HNC services remain centralised in major cities in NSW, with telehealth services and outreach clinics aiming to fill the service gap. Evaluating the current outreach services and telehealth for ENT/head and neck in relation to community need, as well as the barriers to implementation, will generate a clearer picture of how to optimise outreach services.

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CONFLICT OF INTEREST

None.

AUTHOR CONTRIBUTIONS

RLV: conceptualization; data curation; formal analysis; funding acquisition; methodology; project administration; writing – original draft; writing – review & editing. MT: conceptualization; methodology; supervision; writing – review & editing. JRC: conceptualization; funding acquisition; methodology; supervision; writing – review

& editing. CEP: conceptualization; funding acquisition; methodology; supervision; writing – review & editing. JMY: conceptualization; funding acquisition; methodology; supervision; writing – review & editing.

ETHICS APPROVAL

Ethical and governance approval was granted by the Sydney Local Health District Human Research Ethics Committee (Protocol No X19-0366 & 2019/ETH00449).

INFORMED CONSENT

All participants were provided with a PIS, and informed consent was taken as return of a competed questionnaire (implied consent).

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REFERENCES

- Australian Institute of Health and Welfare. Cancer in Australia 2019, 2019. Cancer series no.119. Cat. no. CAN 123. [cited 2019 Apr 24]. https://www.aihw.gov.au/getmedia/8c9fcf52-0055-41a0-96d9-f81b0feb98cf/aihw-can-123.pdf.aspx?inline=true
- Crosby D, Lyons N, Greenwood E, Harrison S, Hiom S, Moffat J, et al. A roadmap for the early detection and diagnosis of cancer. Lancet Oncol. 2020;21(11):1397–9. doi:10.1016/S1470 -2045(20)30593-3
- Royal Australian College of General Practitioners. The role of specialist GPs. [cited 2021 May 19]. https://www.racgp.org.au/ advocacy/position-statements/view-all-position-statements/ health-systems-and-environmental/the-role-of-specialist-gps
- 4. Mitchell GK. The role of general practice in cancer care. Aust Fam Physician. 2008;37(9):698–702.
- Klabunde CN, Ambs A, Keating NL, He Y, Doucette WR, Tisnado D, et al. The role of primary care physicians in cancer care. J Gen Intern Med. 2009;24(9):1029–36. doi:10.1007/s1160 6-009-1058-x
- 6. Campbell NC, MacLeod U, Weller D. Primary care oncology: essential if high quality cancer care is to be achieved for all. Fam Pract. 2002;19(6):577–8. doi:10.1093/fampra/19.6.577
- Vedsted P, Olesen F. Are the serious problems in cancer survival partly rooted in gatekeeper principles? An ecologic study. Br J Gen Pract. 2011;61(589):e508–12. doi:10.3399/bjgp11X588484
- 8. Emery JD, Shaw K, Williams B, Mazza D, Fallon-Ferguson J, Varlow M, et al. The role of primary care in early detection and follow-up of cancer. Nat Rev Clin Oncol. 2014;11(1):38–48. doi:10.1038/nrclinonc.2013.212
- National Cancer Control Initiative. The Primary Care Perspective on Cancer - An Introductory Discussion, 2003. Cited 12 October 2020. https://www.canceraustralia.gov.au/ sites/default/files/publications/primarycaresummary1_504af 01edc922.pdf
- 10. Britt H, Miller GC, Henderson J, Bayram C, Harrison C, Valenti L, et al. General practice activity in Australia 2015–16, 2016. General practice series no. 40. [cited 2021 May 19]. https://www.sydney.edu.au/content/dam/corporate/documents/facul

- ty-of-medicine-and-health/research/research-collaborations-networks-and-groups/40general-practice-activity-in-australia-2015-16.pdf
- Cancer Australia. Head and neck cancer in Australia. [cited 2021 May 6]. https://head-neck-cancer.canceraustralia.gov.au/ statistics
- Jong KE, Smith DP, Yu XQ, O'Connell DL, Goldstein D, Armstrong BK. Remoteness of residence and survival from cancer in New South Wales. Med J Aust. 2004;180(12):618–22.
- Australian Institute of Health and Welfare. Head and neck cancers in Australia, 2014. Cancer series 83 Cat. no. CAN 80. [cited 2020 Oct 15]. https://www.aihw.gov.au/getmedia/bdcce bf2-dbe6-44e2-9104-8461d7e7c165/16933.pdf.aspx?inline=true
- Cancer Australia. Optimal care pathway for patients with head and neck cancers. [cited 2020 Jul 13]. http://www.cancer. org.au/content/ocp/health/optimal-care-pathway-for-peopl e-with-head-and-neck-cancers-june-2016.pdf#_ga=1.20631 0547.1403032834.1491800537
- Tikka T, Pracy P, Paleri V. Refining the head and neck cancer referral guidelines: a two centre analysis of 4715 referrals. Br J Oral Maxillofac Surg. 2016;54(2):141–50. doi:10.1016/j. bjoms.2015.09.022
- Vedsted P, Olesen F. A differentiated approach to referrals from general practice to support early cancer diagnosis – the Danish three-legged strategy. Br J Cancer. 2015;112(Suppl 1):S65–9. doi:10.1038/bjc.2015.44
- 17. Rose PW, Rubin G, Perera-Salazar R, Almberg SS, Barisic A, Dawes M, et al. Explaining variation in cancer survival between 11 jurisdictions in the International Cancer Benchmarking Partnership: a primary care vignette survey. BMJ Open. 2015;5(5):e007212. doi:10.1136/bmjopen-2014-007212
- 18. Lyratzopoulos G, Saunders CL, Abel GA, McPhail S, Neal RD, Wardle J, et al. The relative length of the patient and the primary care interval in patients with 28 common and rarer cancers. Br J Cancer. 2015;112(S1):S35–40. doi:10.1038/bjc.2015.40
- Koo MM, Hamilton W, Walter FM, Rubin GP, Lyratzopoulos G. Symptom signatures and diagnostic timeliness in cancer patients: a review of current evidence. Neoplasia (New York, NY). 2018;20(2):165–74. doi:10.1016/j.neo.2017.11.005
- Shephard EA, Parkinson MA, Hamilton WT. Recognising laryngeal cancer in primary care: a large case-control study using electronic records. Br J Gen Pract. 2019;69(679):e127–33. doi:10.3399/bjgp19X700997
- Venchiarutti RL, Clark JR, Palme CE, Shakespare TP, Hill J, Tahir ARM, et al. Influence of remoteness of residence on timeliness of diagnosis and treatment of oral cavity and oropharynx cancer: a retrospective cohort study. J Med Imaging Radiat Oncol. 2020;64(2):261–70. doi:10.1111/1754-9485.12990
- von Elm E, Altman DG, Egger M, Pocock SJ, Gøtzsche PC, Vandenbroucke JP. Strengthening the reporting of observational studies in epidemiology (STROBE) statement: guidelines for reporting observational studies. BMJ. 2007;335(7624):806–8. doi:10.1136/bmj.39335.541782.AD
- Edwards PJ, Roberts I, Clarke MJ, DiGuiseppi C, Wentz R, Kwan I, et al. Methods to increase response to postal and electronic questionnaires. Cochrane Database Syst Rev. 2009;(3):MR000008. doi:10.1002/14651858.MR000008.pub4
- Cancer Institute NSW. eviQ About Us. [cited 2020 Oct 13]. https://www.eviq.org.au/pages/about-us

- Cancer Institute of NSW. Canrefer about us. [cited 2020 Oct 13]. https://www.canrefer.org.au/pages/about-us
- 26. Services Australia. Bulk Billing. [cited 2020 Oct 13]. https://www.servicesaustralia.gov.au/individuals/subjects/how-claim-medicare-benefit/bulk-billing
- 27. Harris PA, Taylor R, Thielke R, Payne J, Gonzalez N, Conde JG. Research electronic data capture (REDCap)–a metadata-driven methodology and workflow process for providing translational research informatics support. J Biomed Inform. 2009;42(2):377–81. doi:10.1016/j.jbi.2008.08.010
- 28. PHN Central and Eastern Sydney. About Central and Eastern Sydney PHN. [cited 2021 May 19]. https://www.cesphn.org.au/who-we-are/about-cesphn
- PHN North Coast. About NCPHN. [cited 2021 May 19]. https:// ncphn.org.au/about
- 30. Smith T. A long way from home: access to cancer care for rural Australians. Radiography. 2012;18(1):38–42. doi:10.1016/j. radi.2011.10.041
- 31. Bergin RJ, Whitfield K, White V, Milne RL, Emery JD, Boltong A, et al. Optimal care pathways: a national policy to improve quality of cancer care and address inequalities in cancer outcomes. J Cancer Policy. 2020;25:100245. doi:10.1016/j.jcpo.2020.100245
- 32. Alho O-P, Teppo H, Mäntyselkä P, Kantola S. Head and neck cancer in primary care: presenting symptoms and the effect of delayed diagnosis of cancer cases. CMAJ. 2006;174(6):779–84. doi:10.1503/cmaj.050623

- 33. Crawford-Williams F, Goodwin B, March S, Ireland MJ, Hyde MK, Chambers SK, et al. Cancer care in regional Australia from the health professional's perspective. Support Care Cancer. 2018;26(10):3507–15. doi:10.1007/s00520-018-4218-x
- 34. Walsh J, Harrison JD, Young JM, Butow PN, Solomon MJ, Masya L. What are the current barriers to effective cancer care coordination? A qualitative study. BMC Health Serv Res. 2010;10:132. doi:10.1186/1472-6963-10-132
- 35. Hunter J, Smith C, Delaney GP, Templeman K, Grant S, Ussher JM. Coverage of cancer services in Australia and providers' views on service gaps: findings from a national cross-sectional survey. BMC Cancer. 2019;19(1):570. doi:10.1186/s1288 5-019-5649-6
- Shein G, Hunter K, Gwynne K, Tobin S, Kong K, Lincoln M, et al. The O.P.E.N. Survey: outreach projects in ear, nose and throat (ENT) in New South Wales. Aust J Otolaryngol. 2019;2:14.

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