Cancer care clinicians’ provision of smoking cessation support: A mixed methods study in New South Wales, Australia

Michelle DiGiacomo1 | Paula Simoes dos Santos2 | Erin Furestad3 | Gemma Hearnshaw3 | Shirlee Nichols3 | Sungwon Chang1 | Nicola Scott3

1 Improving Palliative, Aged and Chronic Care through Clinical Research and Translation (IMPACCT), Faculty of Health, University of Technology Sydney (UTS), Broadway, New South Wales, Australia
2 Institute for Public Policy and Governance (IPPG), University of Technology Sydney (UTS), Broadway, New South Wales, Australia
3 Cancer Institute New South Wales, Alexandria, New South Wales, Australia

Abstract

Objectives: Given the importance of supporting cancer patients to quit smoking, we sought to ascertain cancer care clinicians’ beliefs and practices regarding providing smoking cessation brief interventions.

Methods: We used a cross-sectional sequential explanatory mixed method design, including a survey of multidisciplinary cancer care clinicians and semistructured interviews.

Results: One hundred and sixty-five cancer care clinicians completed the survey and 21 participated in interviews. Over half of survey respondents (53%) said they do not regularly undertake smoking cessation brief interventions and 40% rarely or never advise quitting. Nonmetropolitan clinicians were more likely to discuss medication options and refer to the Quitline. Physicians were more likely to do brief interventions with patients and radiation therapists were least likely. Barriers were lack of training and experience, lack of knowledge of the Quitline referral process, lack of role clarity, lack of resources and systems, and perceived psychological ramifications of cancer for patients.

Conclusion: There is a need to upskill cancer clinicians and improve systems to provide smoking cessation brief interventions as part of routine clinical practice. All cancer care clinicians should complete brief intervention smoking cessation training relevant to the cancer context, including making referrals to Quitline, and be supported by systems to record and follow-up care.

KEYWORDS
counseling, delivery of health care, health services, neoplasms, smoking cessation

INTRODUCTION

Smoking is a major public health issue that is implicated in many chronic diseases, including cancer. In Australia, approximately 14% of the population smokes daily1 and smoking accounts for 22% of the cancer disease burden.2 Of people with cancer, 14% smoke at the time of receiving their diagnosis,3 and some individuals continue to smoke thereafter. Consequences of continued smoking following a cancer diagnosis include increased risk of developing secondary primary cancers and metastases, decreased efficacy of treatment, greater occurrence of treatment complications, poorer quality of life, and shorter survival.4 Conversely, quitting smoking following a cancer diagnosis is...
associated with more positive treatment and survival outcomes. The 8-year survival rate following cancer diagnosis in Australia for people who quit smoking is 43% and 37% for those who continue to smoke.5

Health care providers can play important roles in assisting patients to make quit attempts. Many patients have frequent contact with cancer clinicians during treatment. These interactions are opportunities to facilitate behavior change when motivation is high.6 Whether and how clinicians seize this opportunity to discuss smoking cessation with patients may influence the number and outcomes of quit attempts.

Despite endorsement by several peak national bodies advocating the inclusion of smoking cessation brief interventions in standard cancer care services,7–9 few staff in these settings provide smoking cessation support by discussing methods to enhance its efficacy.10 For the purpose of this research, a brief intervention is defined as an evidence-based practice designed to identify people who smoke and motivate them to change their behavior. This involves asking patients if they use tobacco, explaining the benefits of quitting smoking and the potential harms of continuing after cancer diagnosis, and offering assistance or referring patients to a quit support service, such as Quitline, a telephone smoking cessation support service in Australia. Research indicates that clinicians’ perceived barriers to implementing brief interventions involve lack of role clarity and low self-efficacy in helping patients to change this behavior.11

Previous research used survey data and focused on single discipline perspectives of clinicians’ intervention engagement, limiting our understanding of what informs clinicians’ beliefs across the cancer care sector and how best to address any perceived deficits in knowledge or skill. To address this gap, we aimed to ascertain information about cancer care clinicians’ beliefs and behaviors regarding delivering smoking cessation interventions to patients, whether geographic or discipline factors are associated with these, and perceptions of barriers to making brief interventions part of routine clinical practice.

2 METHODS

We used a cross-sectional sequential explanatory mixed method design to ascertain cancer care clinicians’ beliefs and practices regarding providing smoking cessation brief interventions.12 First, an online survey of cancer care clinicians was conducted to gather data about their professional characteristics, attitudes, and behaviors related to providing smoking cessation interventions. The results of the quantitative survey were used to inform the interview guide for the qualitative component, which was informed by Grounded Theory. In interviews, we sought to better understand clinicians’ attitudes, behaviors, and perceived barriers to design and implement an intervention to improve practice of smoking cessation in cancer services. At the end of the survey, respondents ticked a box indicating willingness to participate in a semistructured interview regarding their experiences and beliefs about doing smoking cessation brief interventions with patients in cancer services.

We used a nonprobability, convenience sampling strategy to recruit participants. Clinicians working within cancer services who interact directly with patients as part of their cancer care in New South Wales, Australia, were eligible to participate in this study. These included medical oncologists, radiation oncologists, hematologists, radiation therapists, cancer nurses, and allied health practitioners. Staff in nonclinical roles who do not have patient contact were excluded from participation.

An email invitation was sent to eligible participants via cancer service managers in each of the 15 local health districts and one specialty health network. The email contained a link to the voluntary online survey. One follow-up email was sent encouraging staff participation. Participants were asked to complete a 40-item questionnaire that was a modified version of Warren et al.’s11 and Day et al.’s13 surveys exploring clinicians’ smoking cessation practices and beliefs. Data were collected between February and March 2019. Demographic items included professional role, the geographic area of practice, and type of practice setting. Clinicians were asked about their current practices and attitudes regarding delivering smoking cessation brief interventions, barriers to providing these, and about their training needs and preferences. Items that assessed frequency of action or degree of agreement used a Likert scale response format (never, rarely, some of the time, most of the time, always, don’t know/not applicable and strongly agree, somewhat agree, neither agree nor disagree, somewhat disagree, and strongly disagree, respectively). These response options were collapsed into two response options for the purpose of analysis (never/rarely vs some of the time/most of the time/always and neither agree or disagree/somewhat disagree/strongly disagree vs somewhat agree/strongly agree). Three open-ended questions allowed respondents to provide additional information not reflected in the options available. The survey was pilot-tested with six clinicians who were not involved in the study to ensure relevance and coherence prior to dissemination. Respondents were offered entry into a draw for one of five gift vouchers as a participation incentive. The online survey took approximately 10 minutes to complete. Descriptive analysis was conducted using SPSS (version 25). Fisher’s exact tests or Pearson’s chi-square tests and Monte Carlo testing14 for associations were carried out between practices and beliefs and two demographic variables (geographic setting, i.e., metropolitan vs. regional/remote) and health professional type (medical/nurse/allied health/radiation therapist). Monte Carlo testing was used when more than 20% of cells with a less than expected 5-count were not satisfied. All Monte Carlo tests were performed using 100,000 samples, random starting seed. Results from each Monte Carlo test are reported using the simulated exact \( p \) value and the 99% confidence interval. Although radiation therapists are classified as allied health professionals, we separated them for the purpose of analysis because their role in cancer services is primarily involved in diagnosis and treatment and is different from other allied health professionals, such as psychologists, who may provide supportive care. Items depicting practices and beliefs were deemed significant if \( p < .05 \).

Semistructured telephone interviews took place between May and June 2019. Interview questions sought to ascertain a more nuanced understanding of clinicians’ attitudes toward providing brief interventions, what beliefs and experiences informed these attitudes, and to elicit contextualized examples of enablers and barriers to making brief interventions part of routine clinical practice. Interviews were con-
ducted by two researchers with social science backgrounds who had no previous relationship with participants. All participants provided informed consent to 30 minute interviews that were audio recorded with their permission. Recordings were transcribed and deidentified prior to analysis in NVivo (version 11). Inductive qualitative content analysis\cite{15} began with multiple readings and open coding by two separate analysts. They then met to discuss and finalize a coding framework to use with the remainder of transcripts. Categories were then developed and grouped to depict major topics evident in the raw data. Following this step, abstraction involved formulating general descriptions of the categories that reflected the overarching topics. Headings in the results section depict these groupings of clinicians’ experiences and beliefs that help to shed light on survey results and provide insight into barriers to smoking cessation brief intervention delivery.

The study was approved by the Human Research Ethics Committees of South Eastern Sydney Local Health District (18/290) and the University of Technology Sydney (ETH19-3500).

3 | RESULTS

Although 205 surveys were completed, 40 respondents were removed from the analysis because they were not in clinical roles and/or did not work in cancer services. As a result, data from 165 cancer care clinicians in New South Wales, Australia, were included in the analysis. Table 1 lists characteristics of the survey respondents who were mainly allied health professionals (45%), half of whom were radiation therapists. Nurses and physicians comprised 36% and 15% of respondents, respectively. Respondents represented 14 of the 15 local health districts and one specialty network in New South Wales. This included 58 respondents (35%) from rural/regional and 107 respondents (65%) from metropolitan services. Half of the sample (50%) reported working in more than one care setting and for nearly all (98%), one of these settings was outpatient cancer services. The 21 clinicians who participated in semistructured telephone interviews were nurses (9), allied health professionals (5), radiation therapists (3), and medical doctors (4).

Table 2 contains frequencies of clinicians’ responses about behaviors and attitudes to smoking cessation brief interventions. These will be described below with qualitative data that offer further insight into perceptions and experiences of clinicians.

3.1 | Perception of universal responsibility, yet lack of role clarity

As a whole (Table 1), more than half of respondents (53%) reported not regularly providing or never having considered providing smoking cessation brief interventions to patients with either a tobacco or non-tobacco-related cancer. This is despite clinicians’ beliefs that smoking impacts cancer treatment outcomes (85%) and brief interventions should be a standard part of routine care (82%), which is part of all clinicians’ roles (77%). Despite this majority perception of universal responsibility, lack of role clarity was described.

| Is it my business to really do it as an oncologist professional? Or is it just the doctor’s business? Or is just the nurse’s business? … it’s kind of another thing that we all acknowledge the value of, but the question is, who’s actioning it? (Medical) |

In contrast, another clinician suggested that smoking cessation brief interventions should be enacted by all clinicians. Presenting a repeated, consistent message across clinicians was perceived as an important approach.

I think it should not just rest on one person, I think that everybody – everybody’s job because if the person hears it from the oncologist and then the allied health and then the nurse, everybody together is helping the patient (Medical)

While the majority of clinicians said they always or sometimes ask if patients smoke/use tobacco (70%), plan to quit (62%), or advise patients to quit (60%), the remainder appeared to avoid this topic with patients. The following excerpt posits a reason for such avoidance:

*If they don’t ask the question, they don’t have to address it.* (Medical)

3.2 | Psychological sequelae of cancer inhibits clinicians’ smoking cessation discussions

Clinicians referred to the psychological and physical ramifications of cancer and treatment, potential patient self-attribution of cancer to smoking, feelings of shame and guilt, and the role that smoking has in patients’ lives. Clinicians commented on the need to speak sensitively when broaching issues related to smoking so as not to compound the psychological impact of cancer.

I think the negative could be that (patients) can blame themselves that they have developed a particular cancer because they’ve smoked so I think from the psychological perspective, making sure that it’s addressed in a thoughtful manner and, again, not a blaming manner. (Medical)

It was perceived that the confluence of stressors upon cancer diagnosis and treatment can challenge coping, as some patients smoke as a coping mechanism. The threat to this activity was seen to challenge psychological outcomes and the willingness to make a cessation attempt. Using smoking to manage stress and anxiety is an example of why some clinicians perceived patients as uninterested in quitting (31%) or were resistant to smoking cessation interventions (25%). This offers explanation of clinicians’ beliefs that quitting smoking might have a negative impact on a patient’s ability to manage their treatment (41%).

3  |  RESULTS

Although 205 surveys were completed, 40 respondents were removed from the analysis because they were not in clinical roles and/or did not work in cancer services. As a result, data from 165 cancer care clinicians in New South Wales, Australia, were included in the analysis. Table 1 lists characteristics of the survey respondents who were mainly allied health professionals (45%), half of whom were radiation therapists. Nurses and physicians comprised 36% and 15% of respondents, respectively. Respondents represented 14 of the 15 local health districts and one specialty network in New South Wales. This included 58 respondents (35%) from rural/regional and 107 respondents (65%) from metropolitan services. Half of the sample (50%) reported working in more than one care setting and for nearly all (98%), one of these settings was outpatient cancer services. The 21 clinicians who participated in semistructured telephone interviews were nurses (9), allied health professionals (5), radiation therapists (3), and medical doctors (4).

Table 2 contains frequencies of clinicians’ responses about behaviors and attitudes to smoking cessation brief interventions. These will be described below with qualitative data that offer further insight into perceptions and experiences of clinicians.

3.1 | Perception of universal responsibility, yet lack of role clarity

As a whole (Table 1), more than half of respondents (53%) reported not regularly providing or never having considered providing smoking cessation brief interventions to patients with either a tobacco or non-tobacco-related cancer. This is despite clinicians’ beliefs that smoking impacts cancer treatment outcomes (85%) and brief interventions should be a standard part of routine care (82%), which is part of all clinicians’ roles (77%). Despite this majority perception of universal responsibility, lack of role clarity was described.

Is it my business to really do it as an oncologist professional? Or is it just the doctor’s business? Or is just the nurse’s business? … it’s kind of another thing that we all acknowledge the value of, but the question is, who’s actioning it? (Medical)

In contrast, another clinician suggested that smoking cessation brief interventions should be enacted by all clinicians. Presenting a repeated, consistent message across clinicians was perceived as an important approach.

I think it should not just rest on one person, I think that everybody – everybody’s job because if the person hears it from the oncologist and then the allied health and then the nurse, everybody together is helping the patient (Medical)

While the majority of clinicians said they always or sometimes ask if patients smoke/use tobacco (70%), plan to quit (62%), or advise patients to quit (60%), the remainder appeared to avoid this topic with patients. The following excerpt posits a reason for such avoidance:

*If they don’t ask the question, they don’t have to address it.* (Medical)

3.2 | Psychological sequelae of cancer inhibits clinicians’ smoking cessation discussions

Clinicians referred to the psychological and physical ramifications of cancer and treatment, potential patient self-attribution of cancer to smoking, feelings of shame and guilt, and the role that smoking has in patients’ lives. Clinicians commented on the need to speak sensitively when broaching issues related to smoking so as not to compound the psychological impact of cancer.

I think the negative could be that (patients) can blame themselves that they have developed a particular cancer because they’ve smoked so I think from the psychological perspective, making sure that it’s addressed in a thoughtful manner and, again, not a blaming manner. (Medical)

It was perceived that the confluence of stressors upon cancer diagnosis and treatment can challenge coping, as some patients smoke as a coping mechanism. The threat to this activity was seen to challenge psychological outcomes and the willingness to make a cessation attempt. Using smoking to manage stress and anxiety is an example of why some clinicians perceived patients as uninterested in quitting (31%) or were resistant to smoking cessation interventions (25%). This offers explanation of clinicians’ beliefs that quitting smoking might have a negative impact on a patient’s ability to manage their treatment (41%).
TABLE 1  Professional characteristics of survey participants (n = 165)

| Characteristic                                      | N (%) |
|----------------------------------------------------|-------|
| Clinical role                                      |       |
| Nurse                                              | 60 (36)|
| Allied health (excluding radiation therapists)     | 39 (24)|
| Radiation therapist                                | 37 (22)|
| Medical (oncology physicians and hematologists)    | 25 (15)|
| Other                                              | 4 (2)  |
| Geographic setting                                  |       |
| Metropolitan                                       | 107 (65)|
| Rural and regional                                 | 58 (35)|
| Care settinga                                      |       |
| Outpatient services                                | 162 (98)|
| Inpatient services                                 | 83 (50)|
| Community services                                 | 8 (5)  |
| Had any training on smoking cessation brief interventions |     |
| Yes                                                | 52 (32)|
| No                                                 | 111 (67)|
| Provide regular smoking cessation brief interventions toa: |       |
| A patient with a tobacco-related cancer (such as lung or head/neck cancer) | 58 (35)|
| A patient with a nontobacco-related cancer (such as breast or prostate cancer) | 41 (25)|
| I do not regularly provide any of the above in regards to tobacco cessation support for cancer patients | 59 (36)|
| I have never considered any of the above in regards to tobacco cessation support for cancer patients | 28 (17)|
| For those who provide brief interventions, these are for: |       |
| All patients including those with metastatic disease | 59 (91)|
| Only patients with curative intent                  | 6 (9)  |

*aCould select more than one option.

Clinicians were adamant that an appropriate type and intensity of support be provided for patients given the dual stressor of living with cancer and quitting smoking.

The other thing is obviously cancer itself can have quite a strong effect on some patients, like psychologically, and that combined with trying to stop smoking can make things really hard because smoking cessation can trigger depression or increase symptoms of depression in some people and that’s a big thing in people diagnosed with cancer as well. So, having support for them right – if they’re going to be participating in a smoking cessation program, it’s really important. (Allied Health)

3.3  Smoking cessation as an early and ongoing discussion

Cancer was seen to potentially inhibit clinicians from engaging in brief interventions, but was also described as a potentially motivating time that should be leveraged.

I do believe in this thing called the teachable moment whereby if someone gets cancer they will do anything to try and reduce their risk of the cancer coming back and that the teachable moment only basically lasts about a year and after that the cancer and the scariness of the cancer coming back has gone and the chance of them
### TABLE 2  
Clinician survey responses (n = 165)

| Clinician smoking cessation brief intervention interactions with patients\(^{a,c}\) | Some/most/all of the time n (%) |
| --- | --- |
| Ask your patients if they smoke or use tobacco products | 71 (44) |
| Ask patients who smoke or use tobacco if they are planning to quit | 54 (34) |
| Routinely record a patient’s smoking status within the electronic medical record system | 27 (24) |
| Advise patients who smoke or use tobacco products to quit | 55 (34) |
| Discuss medication options, such as nicotine replacement therapy (NRT), bupropion, varenicline, and so on | 29 (18) |
| Send a referral for patients to the Quitline | 8 (4) |
| Advise patients to call the Quitline themselves | 24 (15) |
| Refer patients to a local smoking cessation specialist or GP | 12 (8) |
| Actively treat or counsel patients for smoking cessation yourself | 11 (7) |
| Provide patients with brochures and information on smoking cessation | 17 (11) |
| Routinely record brief interventions and referrals to smoking support services within the electronic medical record system | 14 (8) |

### Clinician opinions of tobacco use and brief interventions in patients with cancer\(^{b,c}\)

| | Some/most/all of the time n (%) |
| --- | --- |
| Current smoking or tobacco use impacts treatment outcomes in cancer patients | 140 (85) |
| Smoking cessation brief interventions should be a standard part of cancer care | 136 (82) |
| It is everyone’s (medical, nursing, and allied health) role to provide smoking cessation brief interventions | 127 (77) |
| I believe it is part of my role as a health worker to provide smoking cessation brief interventions | 112 (68) |
| Quitting smoking might have a negative impact on a patient’s ability to manage their treatment | 35 (21) |

### Clinician perceptions of patient barriers\(^{b,c}\)

| | Some/most/all of the time n (%) |
| --- | --- |
| Patients with a cancer diagnosis who smoke are resistant to smoking cessation interventions | 48 (31) |
| Patients with a cancer diagnosis who smoke are not interested in quitting smoking or tobacco use | 42 (25) |

### Clinician perceptions of their skill and knowledge barriers to enacting smoking cessation brief interventions\(^{b,c}\)

| | Some/most/all of the time n (%) |
| --- | --- |
| I have not had sufficient training or experience in providing smoking cessation brief interventions | 125 (76) |
| I have had adequate training in providing smoking cessation brief interventions | 21 (13) |
| I do not know how to make a referral to the Quitline | 93 (56) |
| I am not confident in my ability to get patients to quit smoking or using tobacco | 88 (54) |
| I do not know enough about potential interactions between cessation pharmacotherapies and cancer treatments or supportive drugs | 121 (73) |
| I feel confident in my ability to provide a smoking cessation brief intervention | 45 (27) |

### Clinician perception of systems-level barriers that disenable smoking cessation brief interventions\(^{b,c}\)

| | Some/most/all of the time n (%) |
| --- | --- |
| There is a lack of available resources (printed and/or electronic material) to support smoking cessation brief interventions | 81 (49) |
| Electronic medical record systems do not easily facilitate the recording or provision of smoking cessation brief interventions | 70 (42) |
| I do not feel supported by my organization to deliver smoking cessation interventions | 58 (35) |
| I do not have time to discuss smoking with patients | 46 (29) |
| I do not have time to refer patients to smoking cessation support | 42 (26) |

---

\(^a\) Refers to clinicians’ practice.  
\(^b\) Refers to agreement with the statement.  
\(^c\) Excluded Don’t know/Not applicable from the responses.
self, you know, like they're just in this machine, so I go a bit soft at that time ... it should be talked about at the first consult and maybe more times as you go along just touch base again in case there's been a change of mind along the way. (Nurse)

3.4 Perceived lack of smoking cessation training and confidence

The majority of respondents (76%) reported not having had sufficient training or experience providing smoking cessation brief interventions, and felt a lack of confidence in being able to help people quit (54%). Once smoking status was identified, 42% of clinicians reported sometimes or always discussing medication options to support a quit attempt. Reasons for this minority include clinicians’ self-reported lack of understanding of the appropriate use and dosing of nicotine replacement therapy (NRT) and not knowing enough about potential interactions between cessation pharmacotherapies and cancer treatments or supportive drugs (73%). Patients, too, were perceived as potentially lacking knowledge of appropriate use of NRT and, therefore, not achieving its therapeutic benefit.

I think it’s underdosing, especially when they’re going on to the patches as well, you know, they think, if they go and buy them, they think if they slap one on, they should be able to stop there and then and I think they just need better education on that, that it’s not one patch that fits everybody, it’s more, intricate than that and it should be properly assessed as to which is the best form. (Nurse)

A perceived shortfall in expertise to support smoking cessation could be addressed with upskilling of cancer care clinicians and better availability of referral options.

I think there’s definitely a role for upskilling, or building the educational piece around [smoking cessation] for the oncology workforce. (Medical)

Yet, the feasibility of incorporating routine smoking cessation into cancer services was questioned in light of current workloads and staffing.

With cancer services already so busy, expecting smoking cessation to be a routine part of our service is unrealistic - especially in low SES areas where smoking among our patients is prevalent. We would need ongoing training and supervision and also increased funding for more staff if we are to begin implementing smoking cessation interventions into our practice. (Allied Health)

Perceptions of being supported by their organization to deliver cessation interventions were mixed with over one third (35%) of survey respondents stating not feeling supported.

We need in-house training, I attended an external training event, but there was no support for me to introduce or implement into the department after I got back. (Allied Health)

3.5 Unfamiliar processes and perceived system deficits inhibit brief interventions

Perceived lack of skills in brief interventions extended to making referrals to the Quitline. The majority of clinicians reported not making referrals to the Quitline (90%), with 56% saying that they do not know how to do it:

I need to become familiar with referral to Quitline, I was under the impression that the patient called themselves. (Nurse)

Some clinicians preferred to leave the decision to engage the Quitline to the patient rather than refer without explicitly stated interest or permission from the patient, in an effort to maintain trust.

I have to have an interpersonal relationship with these people, so I don’t want to just refer them to the Quitline if they’re not receptive to it. (Nurse)

Other clinicians spoke about assuming that other members of the health care team, such as a social worker or general practitioner (GP), would take responsibility for enacting the Quitline referral. Just 22% of clinicians reported making referrals to local smoking cessation specialists or GPs, with 26% citing lack of time. Clinicians noted the out-of-pocket costs associated with GP visits or pharmacotherapy without prescription and the potential delay in getting a GP appointment in some areas inhibiting cessation support, despite referral.

Without medical resources - in the country - they can wait a month to get into the doctor to get the patches. So, they’ll come back to us the next visit, three weeks later for their next lot of chemo and I’ll go, “How did you get on with your not smoking?” And they go, “Well, I haven’t been to the doctors yet, so I haven’t started.” (Nurse)

System-related barriers include electronic medical record systems (EMRS) that are not conducive to recording smoking cessation
| Theme                                                                 | Total(n = 164) | Metropolitan (n = 106) (%) | Rural (n = 58) (%) | p Value |
|----------------------------------------------------------------------|----------------|----------------------------|------------------|---------|
| **Frequency of clinician smoking cessation brief intervention**       |                |                            |                  |         |
| Ask patients if they smoke or use tobacco products                   | 112 (68)       | 69 (65)                    | 43 (74)          | .3      |
| Ask patients who smoke or use tobacco if they are planning to quit   | 99 (60)        | 58 (55)                    | 41 (71)          | .06     |
| Routinely record a patient's smoking status within the electronic    | 61 (37)        | 39 (37)                    | 22 (38)          | .9      |
| record system                                                        |                |                            |                  |         |
| Advise patients who smoke or use tobacco products to quit            | 39 (24)        | 17 (16)                    | 22 (38)          | .2      |
| Discuss medication options, such as nicotine replacement therapy     | 66 (40)        | 35 (33)                    | 31 (53)          | .02     |
| (NRT), bupropion, varenicline, and so on                             |                |                            |                  |         |
| Send a referral for patients to the Quitline                         | 16 (10)        | 5 (5)                      | 11 (19)          | .005    |
| Advise patients to call the Quitline themselves                     | 51 (31)        | 28 (26)                    | 23 (40)          | .1      |
| Refer patients to a local smoking cessation specialist or GP         | 34 (21)        | 18 (17)                    | 16 (28)          | .1      |
| Actively treat or counsel patients for smoking cessation yourself    | 40 (24)        | 24 (23)                    | 16 (28)          | .6      |
| Provide patients with brochures and information on smoking cessation | 96 (59)        | 58 (55)                    | 38 (66)          | .002    |
| Routinely record brief interventions and referrals to smoking        | 26 (16)        | 15 (14)                    | 11 (19)          | .5      |
| support services within the electronic medical record system         |                |                            |                  |         |
| **Clinician opinions of tobacco use and brief interventions in**     |                |                            |                  |         |
| patients with cancer                                                 |                |                            |                  |         |
| Current smoking or tobacco use impacts treatment outcomes in cancer  | 139 (85)       | 91 (86)                    | 48 (83)          | .2      |
| patients                                                             |                |                            |                  |         |
| Smoking cessation brief interventions should be a standard part of    | 135 (82)       | 84 (79)                    | 51 (88)          | .3      |
| cancer care                                                          |                |                            |                  |         |
| It is everyone’s (medical, nursing, and allied health) role to       | 127 (77)       | 78 (74)                    | 49 (84)          | .3      |
| provide smoking cessation brief interventions                         |                |                            |                  |         |
| I believe it is part of my role as a health worker to provide        | 111 (68)       | 67 (63)                    | 44 (76)          | .3      |
| smoking cessation brief interventions                                 |                |                            |                  |         |
| Quitting smoking might have a negative impact on a patient’s         | 35 (21)        | 22 (21)                    | 13 (22)          | 1.0     |
| ability to manage their treatment                                    |                |                            |                  |         |
| **Clinician perceptions of patient barriers**                        |                |                            |                  |         |
| Patients with a cancer diagnosis who smoke are resistant to smoking  | 48 (29)        | 32 (30)                    | 16 (28)          | .6      |
| cessation interventions                                              |                |                            |                  |         |
| Patients with a cancer diagnosis who smoke are not interested in     | 42 (26)        | 29 (27)                    | 13 (22)          | .4      |
| quitting smoking or tobacco use                                      |                |                            |                  |         |
| **Clinician perceptions of their skill and knowledge barriers to**   |                |                            |                  |         |
| enacting smoking cessation brief interventions                       |                |                            |                  |         |
| I have not had sufficient training or experience in providing        | 124 (76)       | 88 (83)                    | 36 (62)          | .004    |
| smoking cessation brief interventions                                 |                |                            |                  |         |
| I have had adequate training in providing smoking cessation          | 21 (13)        | 10 (9)                     | 11 (19)          | .09     |
| brief interventions                                                  |                |                            |                  |         |
| I do not know how to make a referral to the Quitline                 | 93 (57)        | 67 (63)                    | 26 (45)          | .03     |
| I am not confident in my ability to get patients to quit smoking     | 87 (53)        | 60 (57)                    | 27 (47)          | .2      |
| or using tobacco                                                     |                |                            |                  |         |
| I do not know enough about potential interactions between             | 120 (73)       | 82 (77)                    | 38 (66)          | .1      |
| cessation pharmacotherapies and cancer treatments or supportive drugs|                |                            |                  |         |
referrals or interventions and prompting follow-up reminders and alerts. Survey responses indicated that EMRS were used to record a patient’s smoking status (40%), but less often to record brief intervention and referrals (16%).

### 3.6 Geographic and discipline comparisons

Table 3 shows comparisons of clinicians’ responses according to metropolitan or regional/rural areas in NSW. Compared to their metropolitan counterparts, regional/rural clinicians were more likely to discuss medication options (53% vs. 33%), provide patients with brochures or information on cessation (66% vs. 55%), and send referrals to Quitline (19% vs. 5%).

Metropolitan-based clinicians were more likely to agree that they have not had sufficient training or experience in providing smoking cessation brief interventions (83% vs. 62%), do not know how to make a Quitline referral (63% vs. 45%), feel unsupported by their organization to deliver smoking cessation interventions (42% vs. 22%), and lack available resources to support these interventions (56% vs. 36%).

Table 4 displays associations of the different discipline groups of clinician respondents. Compared to the other disciplines, physicians were most likely to report that they ask about smoking status (100%), ask whether patients planned to quit (91%), refer to specialists or GPs for cessation support (45%), counsel patients themselves (50%), report providing patients with brochures and information on smoking cessation (100%), and record smoking status in EMRS (77%), yet also report that they do not have time to discuss smoking cessation with patients (50%) or refer them to support (59%).

Nurses were most likely to advise patients to call the Quitline (43%) and believe patients are resistant to smoking cessation interventions (40%). Radiation therapists were most likely to perceive patients as uninterested in quitting smoking (43%) and not know how to refer patients to the Quitline (76%). They were least likely to engage in delivering aspects of smoking cessation brief interventions to patients, provide brochures and information on smoking cessation (30%), record smoking status (8%) or brief interventions in EMRS (0%), and were least likely to report having had adequate training in smoking cessation brief interventions (92%).

### 4 DISCUSSION AND CONCLUSION

#### 4.1 Discussion

In this study, we surveyed different clinicians working in cancer care across the state, rather than focus on one type of health professional. This approach emanates from the premise espoused by the World Health Organization that every clinician, at every point in care, needs to be able to facilitate support for patients to quit smoking by undertaking brief opportunistic interventions. This extends to patients with cancer throughout all stages of the cancer care continuum.

Different clinicians reinforcing these messages and offering cessation support can increase a population’s quit attempts and outcomes.

Our findings indicate that across disciplines in cancer services, more than half of clinicians surveyed are not providing smoking cessation brief interventions, despite perceived importance. Although oncologists routinely ask patients if they smoke, fewer ask about and advise quitting and act to support quit attempts. Partial implementation of brief intervention by oncology health professionals has been reported by patients previously. One reason for abbreviated
### TABLE 4  
Behaviors and attitudes by clinician type

| Theme                                                                 | Discipline                                      | Totaln = 165 (%) | Medicaln = 22 (%) | Nursen = 58 (%) | Radiation treatmentn = 37 (%) | Allied healthn = 38 (%) | Othern = 10 (%) | p Value(99% CI)a |
|----------------------------------------------------------------------|-------------------------------------------------|------------------|------------------|-----------------|---------------------------|----------------------|----------------|------------------|
| **Frequency of clinician smoking cessation brief intervention interactions with patients** |                                                                                       |                  |                  |                 |                           |                      |                |                  |
| Ask patients if they smoke or use tobacco products                    |                                                                                       | 113 (68)         | 22 (100)         | 46 (79)         | 8 (22)                    | 29 (76)              | 8 (80)          | <.001            |
| Ask patients who smoke or use tobacco if they are planning to quit    |                                                                                       | 100 (61)         | 20 (91)          | 39 (67)         | 12 (32)                   | 22 (58)             | 7 (70)          | <.001            |
| Routinely record a patient’s smoking status within the electronic medical record system |                                                                                       | 62 (38)          | 17 (77)          | 23 (40)         | 3 (8)                     | 15 (39)             | 4 (40)          | <.001            |
| Advise patients who smoke or use tobacco products to quit             |                                                                                       | 40 (24)          | 6 (27)           | 20 (34)         | 1 (3)                     | 9 (24)              | 4 (40)          | <.001            |
| Discuss medication options, such as nicotine replacement therapy (NRT), bupropion, varenicline, and so on |                                                                                       | 67 (41)          | 15 (68)          | 29 (50)         | 3 (8)                     | 13 (34)             | 7 (70)          | <.001            |
| Send a referral for patients to the Quitline                           |                                                                                       | 16 (10)          | 1 (5)            | 10 (17)         | 0 (0)                     | 3 (8)               | 2 (20)          | .04 (.04, .05)a |
| Advise patients to call the Quitline themselves                       |                                                                                       | 51 (31)          | 8 (36)           | 25 (43)         | 2 (5)                     | 12 (32)             | 4 (40)          | .002             |
| Refer patients to a local smoking cessation specialist or GP          |                                                                                       | 34 (21)          | 10 (45)          | 8 (14)          | 3 (8)                     | 9 (24)              | 4 (40)          | .004             |
| Actively treat or counsel patients for smoking cessation yourself      |                                                                                       | 40 (24)          | 11 (50)          | 14 (24)         | 0 (0)                     | 12 (32)             | 3 (30)          | <.001            |
| Provide patients with brochures and information on smoking cessation  |                                                                                       | 97 (59)          | 22 (100)         | 40 (69)         | 11 (30)                   | 17 (45)             | 7 (70)          | .006             |
| Routinely record brief interventions and referrals to smoking support services within the electronic medical record system |                                                                                       | 26 (16)          | 3 (14)           | 11 (19)         | 0 (0)                     | 9 (24)              | 3 (30)          | .02              |
| **Clinician opinions of tobacco use and brief interventions in patients with cancer** |                                                                                       |                  |                  |                 |                           |                      |                |                  |
| Current smoking or tobacco use impacts treatment outcomes in cancer patients |                                                                                       | 140 (85)         | 20 (91)          | 52 (90)         | 29 (78)                   | 29 (76)             | 10 (100)        | .8 (.7, .8)a     |
| Smoking cessation brief interventions should be a standard part of cancer care |                                                                                       | 136 (82)         | 17 (77)          | 52 (90)         | 27 (73)                   | 30 (79)             | 10 (100)        | .2               |
| It is everyone’s (medical, nursing, and allied health) role to provide smoking cessation brief interventions |                                                                                       | 127 (77)         | 16 (73)          | 53 (91)         | 23 (62)                   | 25 (66)             | 10 (100)        | .002             |
| I believe it is part of my role as a health worker to provide smoking cessation brief interventions |                                                                                       | 112 (68)         | 16 (73)          | 46 (79)         | 18 (49)                   | 22 (58)             | 10 (100)        | .003             |
| Quitting smoking might have a negative impact on a patient’s ability to manage their treatment |                                                                                       | 35 (21)          | 4 (18)           | 14 (24)         | 10 (27)                   | 7 (18)              | 0 (0)           | .4               |
| **Clinician perceptions of patient barriers**                        |                                                                                       |                  |                  |                 |                           |                      |                |                  |
| Patients with a cancer diagnosis who smoke are resistant to smoking cessation interventions |                                                                                       | 48 (29)          | 4 (18)           | 23 (40)         | 13 (35)                   | 5 (13)              | 3 (30)          | .03              |
| Patients with a cancer diagnosis who smoke are not interested in quitting smoking or tobacco use |                                                                                       | 42 (25)          | 2 (9)            | 16 (28)         | 16 (43)                   | 6 (16)              | 2 (20)          | .003             |
| **Clinician perceptions of their skill and knowledge barriers to enacting smoking cessation brief interventions** |                                                                                       |                  |                  |                 |                           |                      |                |                  |
| I have not had sufficient training or experience in providing smoking cessation brief interventions |                                                                                       | 125 (76)         | 17 (77)          | 43 (74)         | 34 (92)                   | 26 (68)             | 5 (50)          | .04              |
| I have had adequate training in providing smoking cessation brief interventions |                                                                                       | 21 (13)          | 3 (14)           | 6 (10)          | 3 (8)                     | 7 (18)              | 2 (20)          | .6 (.6, .7)a     |

(Continues)
TABLE 4 (Continued)

| Theme                                                                 | Discipline | p Value(99% CI) |
|-----------------------------------------------------------------------|------------|----------------|
|                                                                       | Total n = 165 | Medical n = 22 | Nurse n = 58 | Radiation therapist n = 37 | Allied health n = 38 | Others n = 10 |
| I do not know how to make a referral to the Quitline                   | 93 (56)    | 14 (64)       | 25 (43)      | 28 (76)                  | 21 (55)              | 5 (50)         | .03          |
| I am not confident in my ability to get patients to quit smoking or using tobacco | 88 (53)    | 11 (50)       | 28 (48)      | 27 (73)                  | 19 (50)              | 3 (30)         | .07          |
| I do not know enough about potential interactions between cessation pharmacotherapies and cancer treatments or supportive drugs | 121 (73)   | 15 (68)       | 38 (66)      | 34 (92)                  | 26 (68)              | 8 (80)         | .05          |
| I feel confident in my ability to provide a smoking cessation brief intervention | 45 (27)    | 10 (45)       | 14 (24)      | 5 (14)                   | 10 (26)              | 6 (60)         | .01          |

Clinician perception of systems-level barriers that disenable smoking cessation brief interventions

|                                           | Discipline | p Value(99% CI) |
|-------------------------------------------|------------|----------------|
| There is a lack of available resources (printed and/or electronic material) to support smoking cessation brief interventions | 81 (49)    | 11 (50)       | 32 (55)      | 18 (49)                  | 14 (37)              | 6 (60)         | .5           |
| Electronic medical record systems do not easily facilitate the recording or provision of smoking cessation brief interventions | 70 (42)    | 13 (59)       | 25 (43)      | 14 (38)                  | 12 (32)              | 6 (60)         | .4           |
| I do not feel supported by my organization to deliver smoking cessation interventions | 58 (35)    | 11 (50)       | 15 (26)      | 16 (43)                  | 14 (37)              | 2 (20)         | .08          |
| I do not have time to discuss smoking with patients | 46 (28)    | 11 (50)       | 11 (19)      | 13 (35)                  | 11 (29)              | 0 (0)          | .02          |
| I do not have time to refer patients to smoking cessation support       | 42 (25)    | 13 (59)       | 13 (22)      | 9 (24)                   | 7 (18)               | 0 (0)          | .002         |

*Monte Carlo testing was used.

approaches may be due to time constraints in clinical consultations, which speaks to the importance of brief interventions that are consistently applied.24

Consistent with previous research, common barriers cited by clinicians include perceptions of lack of training and expertise in cessation interventions,25,26 lack of knowledge or confidence,27 few resources to support interventions, and patient resistance.13 A recent systematic review of attitudes of oncology health care practitioners toward smoking cessation identified feeling impacted by their own knowledge, attitudes, perceptions of utility to improve patient outcomes, and procedures within their workplaces.28

The current study extended previous survey research by integrating qualitative data from interviews with clinicians who contextualized responses and provided insight about addressing barriers. Clinicians recognize the specific needs of patients with cancer to be different from non-cancer patients in regards to the distress they may feel. Rather than apply a standard one-size-fits all approach to a smoking cessation brief intervention, clinicians described the need for tailored interventions requiring a skillful, supportive, nonjudgmental, and compassionate approach to behavior change,29 taking into account the acute and chronic stress faced by patients that is often accompanied by shame and guilt. Clinicians expressed concerns about potentially compromising therapeutic relationships in discussing quitting smoking.20 Smoking cessation discussions between patient and providers have potential to fracture or strengthen trust depending on the communication and interaction during consultations.30 In light of this, training for cancer clinicians should include provisions to strengthen communication skills when addressing this topic with patients. Additional tailoring of content of brief interventions may involve information about potential contraindications of smoking cessation pharmacotherapy and cancer treatments, different cancer types and comorbidities, and providing ongoing support for psychological issues.31

We found that clinicians were unclear who was responsible for delivering brief interventions. Radiation therapists were least engaged in smoking cessation brief interventions, likely related to feeling undertrained for this task and that it is not part of their role. Clear communication on the role of radiation therapists in regards to smoking cessation brief interventions and training is required. We also found few clinicians making referrals to the Quitline. Cited barriers were clinicians’ misunderstanding or lack of knowledge of the referral process or belief that patients were not receptive. Education to upskill clinicians in the Quitline referral process has been shown to improve the quantity and quality of referrals by health care providers.31

Our results indicate that regional and rural-area clinicians were more engaged and active in smoking cessation brief interventions,
referrals to Quitline, and felt equipped and supported to do so. Perhaps by nature of access challenges they face, the rural/remote respondents emulated a proactive, responsive approach to smoking cessation in cancer services. This contrasts with challenges reported implementing an antismoking program in rural and remote communities in NSW.32

Inconsistent documentation whereby clinicians did not process referrals systematically, often due to inadequate EMRS, was noted as a barrier to referral. System failures, including the role of health information systems, have been reported as impacting chronic illness management.33 Ensuring adequate systems to record, monitor, track, and follow-up smoking cessation brief interventions is essential to improving outcomes for patients.

The findings of this study should be considered within its methodological limitations. The sample strategy was nonprobability, convenience sampling, which is based on participants’ availability and willingness to participate. Given that this study was exploratory, we preferred not to overlook potentially valuable findings.34 Therefore, we did not make adjustments for multiple tests and suggest the need to exercise caution in interpreting results of comparisons between geographic locations and clinician roles. Some significant differences we found may be due to chance. Age and sex were not collected to protect anonymity of respondents. The number of clinicians in cancer care services who could have responded to the invitation is unknown, which precludes a response rate.

4.2 Conclusion

For people with cancer, quitting smoking is associated with more positive treatment and survival outcomes than continuing to smoke. Despite the importance of providing smoking cessation support for these patients, not all clinicians deliver brief interventions. In this paper, we learned about cancer care clinicians’ beliefs and practices as well as their perspectives of barriers to enacting smoking cessation brief interventions.

4.3 Practice implications

To strengthen delivery of smoking cessation interventions in multidisciplinary cancer services, there is a need for strong leadership and a consistent message such that all clinicians understand that brief interventions are standard care.35 Cancer care clinicians should be trained in brief interventions and referral to Quitline, delivering tailored brief interventions and consistent messaging throughout the patient’s care trajectory, and in ensuring documentation of referrals and interventions for all cancer patients who smoke.

ACKNOWLEDGMENTS

This work was funded by the Cancer Institute NSW. Open Access Funding provided by University of Technology Sydney. [Correction added on 14 May 2022, after first online publication: CAUL funding statement has been added.]

CONFLICTS OF INTEREST

MD, PS, and SC have no conflicts of interest to declare. EF, GH, SN, and NS work for the Cancer Institute NSW.

AUTHOR CONTRIBUTIONS

MD, PS, EF, GH, SN, and NS contributed to study design, interpretation of data, and manuscript revision. MD drafted the manuscript. SC contributed to analysis and interpretation of data and manuscript revision.

ETHICS APPROVAL

The study was approved by the Human Research Ethics Committees of South Eastern Sydney Local Health District (18/290) and the University of Technology Sydney (ETH19-3500).

DECLARATION OF INTEREST

I confirm all personal identifiers have been removed or disguised so the persons described are not identifiable and cannot be identified through the details of the story.

ORCID

Michelle DiGiacomo https://orcid.org/0000-0001-5484-8224
Erin Furestad https://orcid.org/0000-0002-6403-431X
Sungwon Chang https://orcid.org/0000-0003-0723-3192

REFERENCES

1. Australian Bureau of Statistics. National Health Survey: First Results 2017–18. 2018. accessed at https://www.abs.gov.au/statistics/health/health-conditions-and-risks/national-health-survey-first-results/latest-release
2. Australian Institute of Health and Welfare (AIHW). Risk Factors to Health. 2017. Available at: https://www.aihw.gov.au/reports/risk-factors/risk-factors-to-health/contents/risk-factors-and-disease-burden
3. Bryant J, Boyes AW, Hall A, et al. Prevalence and factors related to smoking and smoking cessation 6 months following a cancer diagnosis: a population-based study. J Cancer Survivorship. 2016;10(4):645-653. https://link.springer.com/article/10.1007/s11766-015-0510-7
4. Jassem J. Tobacco smoking after diagnosis of cancer: clinical aspects. Transl Lung Cancer Res. 2019;8(1):SS0-SS8.
5. Sitas F, Weber MF, Egger S, Yap S, Chiew M, O’Connell D. Smoking cessation after cancer. J Clin Oncol. 2014;32(32):3593–3595.
6. Gritz ER, Fingeret MC, Vidrine DJ, Lazev AB, Mehta NV, Reece GP. Successes and failures of the teachable moment: smoking cessation in cancer patients. Cancer. 2006;106(1):17-27.
7. Hanna N, Mulshine J, Wollins D, Tyne C, Dresler C. Tobacco cessation and control a decade later: American Society of Clinical Oncology policy statement update. J Clin Oncol. 2013;31(25):3147-3157.
8. Shields P, Herbst R, Arenberg D. Smoking Cessation Version 1, 2016, NCCN Clinical Practice Guidelines in Oncology. J Natl Compr Canc Netw. 2016;14.
9. Clinical Oncology Society of Australia Smoking Cessation Working Group. Smoking cessation in cancer patients: embedding smoking cessation care in Australian Oncology Health Services. Clin Oncol Soc Aust. 2020. Available at https://www.cosa.org.au/media/332692/cosa-smoking-cessation-in-cancer-patients-140820-final.pdf
10. Warren G, Ward K. Integration of tobacco cessation services into multidisciplinary lung cancer care: rationale, state of the art, and future directions. Transl Lung Cancer Res. 2015;4(4):339-352.
11. Warren G, Marshall J, Cummings K, et al. Addressing tobacco use in patients with cancer: a survey of American Society of Clinical Oncology members. J Oncol Pract. 2013;9(5):258-262.
12. Creswell J, Piano Clark V, Gutmann M, Hanson W. Advanced mixed methods research designs. In: A Tashakkori, C Teddlie, eds. Handbook of Mixed Methods in Social Behavioral Research. 1. Thousand Oaks, CA: Sage; 2003:209–240.
13. Day F, Sherwood E, Chen T, et al. Oncologist provision of smoking cessation support: a National Survey of Australian Medical and Radiation Oncologists. Asia Pac J Clin Oncol. 2018;14(6):431-438.
14. Elo S, Kyngäs H. The qualitative content analysis process. [J]. 1976;4:673-684.
15. Siegmund D. Importance sampling in the Monte Carlo study of sequential tests. Ann Stat. 1976;4:673-684.
16. Raw M, Anderson P, Batra A, et al. WHO Europe evidence based recommendations on the treatment of tobacco dependence. Tob Control. 2002;11(1):44-46.
17. Cooley ME, Sipples RL, Murphy M, Sarna L. Smoking cessation and lung cancer: oncology nurses can make a difference. Semin Oncol Nurs. 2008;24(1):16-26.
18. Toll BA, Brandon TH, Gritz ER, Warren GW, Herbst RS. Assessing tobacco use by cancer patients and facilitating cessation: an American Association for Cancer Research policy statement. Clin Cancer Res. 2013;19(8):1941-1948.
19. An LC, Foldes SS, Alesci NL, et al. The impact of smoking-cessation intervention by multiple health professionals. Am J Prev Med. 2008;34(1):54-60.
20. Hutton D, Gee I, McGee CE, Mellor R. No ifs, no butts: compliance with smoking cessation in secondary care guidance (NICE PH48) by providers of cancer therapies (radiotherapy and chemotherapy) in the UK. Int J Environ Res Public Health. 2016;13(12):1244.
21. Warren GW, Marshall JR, Cummings KM, et al. Practice patterns and perceptions of thoracic oncology providers on tobacco use and cessation in cancer patients. J Thorac Oncol. 2013;8(5):543-548.
22. Agency for Healthcare Research and Quality Five Major Steps to Intervention (The “5 A’s”). 2012. Last accessed 14 December 2020. [https://www.ahrq.gov/sites/default/files/wysiwyg/professionals/clinicians-providers/guidelines-recommendations/tobacco/5steps.pdf](https://www.ahrq.gov/sites/default/files/wysiwyg/professionals/clinicians-providers/guidelines-recommendations/tobacco/5steps.pdf)
23. Simmons VN, Litvin EB, Unrod M, Brandon TH. Oncology health-care providers' implementation of the 5A's model of brief intervention for smoking cessation: patients' perceptions. Patient Educ Counsel. 2012;86(3):414-419.
24. Dawson GM, Noller JM, Skinner JC. Models of smoking cessation brief interventions in oral health. N S W Public Health Bull. 2014;24(3):131-134.
25. Richmond R, Zwar N, Borlan R, et al. Smoking cessation for Australian general practice—evaluation of best practice guidelines. Aust J Gen Pract. 2005;34(6):505-507.
26. Stacey F, Heasman P, Heasman L, Hepburn S, McCracken G, Preshaw P. Smoking cessation as a dental intervention—views of the profession. Br Dent J. 2006;201(2):109-113.
27. Pattinson L, Jessop A. The delivery of health improvement information during radiotherapy treatment: a survey of UK therapy radiographers. J Radiother Pract. 2016;15(2):114-130.
28. Conlon K, Pattinson L, Hutton D. Attitudes of oncology healthcare practitioners towards smoking cessation: a systematic review of the facilitators, barriers and recommendations for delivery of advice and support to cancer patients. Radiography. 2017;23(3):256-263.
29. Shin DW, Park JH, Kim SY, et al. Guilt, censure, and concealment of active smoking status among cancer patients and family members after diagnosis: a nationwide study. Psycho-Oncology. 2014;23(5):585-591.
30. Guassora AD, Gannik D. Developing and maintaining patients’ trust during general practice consultations: the case of smoking cessation advice. Patient Educ Counsel. 2010;78(1):46-52.
31. Carpenter KM, Carlini BH, Painter I, Mikko AT, Stoner SA. Refer2Quit: impact of Web-based skills training on tobacco interventions and quitline referrals. J Contin Educ Health Prof. 2012;32(3):187-195.
32. Tall JA, Brew BK, Saurman E, Jones TC. Implementing an anti-smoking program in rural-remote communities: challenges and strategies. Rural Remote Health. 2015;15(4):3516.
33. DiGiacomo M, Davidson P, Taylor K, et al. Health information system linkage and coordination are critical for increasing access to secondary prevention in Aboriginal health: a qualitative study. Qual Prim Care. 2010;18:17-26.
34. Streiner D. Best (but oft-forgotten) practices: the multiple problems of multiplicity—whether and how to correct for many statistical tests. Am J Clin Nutr. 2015;102:721-728.
35. Evans WK, Truscott R, Cameron E, et al. Implementing smoking cessation within cancer treatment centres and potential economic impacts. Transl Lung Cancer Res. 2019;8(1):S11-S20.

**How to cite this article:** DiGiacomo M, Simoes dos Santos P, Farestad E, et al. Cancer care clinicians’ provision of smoking cessation support: A mixed methods study in New South Wales, Australia. Asia-Pac J Clin Oncol. 2022;18:723–734. [https://doi.org/10.1111/ajco.13769](https://doi.org/10.1111/ajco.13769)