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

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Title

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.

Abstract

Background: Patients who continue to smoke after a cancer diagnosis experience a worse quality of life and worse side-effects. It is important to establish the facilitators and barriers to cessation by looking at the attitudes and beliefs towards smoking cessation of healthcare practitioners.

Methods: A systematic review of the literature was conducted. Statements that identified facilitators, barriers or recommendations surrounding smoking cessation delivery were extracted and analogous statements aggregated to enable thematic analysis.

Results: Delivery of cessation by oncology professionals was impacted by their own knowledge and views, their perception of the benefits to patient health and by the workplace procedures within their institution.

Conclusion: Oncology practitioners worldwide face similar issues in delivering smoking cessation advice. By improving training programs that address the attitudes and beliefs which facilitate or block delivery of smoking cessation and by implementing systemic changes within cancer centres, delivery of smoking cessation should be enabled.

Keywords: Smoking Cessation, Cancer, Oncology, Attitudes, Healthcare Professionals, Facilitators

Introduction

Smoking is one of the greatest public health issues of our time with 6 million people a year dying due to tobacco[1] hence global public health efforts are working to increase cessation rates[2]. Smoking is estimated to cost the National Health Service (NHS) £2.7 billion a year[3] and forms a central theme in the Making Every Contact Count (MECC) directive from Public Health England (PHE)[4]. MECC states all healthcare practitioners (HCP) are responsible for improving the holistic health and wellbeing of their patients and HCP are encouraged to deliver brief interventions, including for

smoking cessation, at every appropriate opportunity[4]. Current recommendations state that practitioners should advise patients to stop smoking, assess their readiness to quit and inform patients of the available support and referral services[5] as patients who receive assistance from local Smokefree services in England are four times more likely to quit[6].

It is recognised that certain populations of patients can particularly benefit from smoking cessation and as such policy and guidance has been developed specifically for mental health[7] and maternity services[8]. However, cancer patients also stand to benefit significantly from smoking cessation. Smoking contributes to a worse quality of life[9,10] after diagnosis and is associated with worse side effects from chemotherapy and radiotherapy[11]. Continued smoking is also associated with higher mortality rates[12,13], recurrence of disease[14] and increased incidence of a second primary cancer[15]. Despite the clear benefits of cessation, a review of smoking prevalence in cancer patients found 30% of patients after diagnosis can be classified as smokers[16]; this is substantially higher than the 19% of general UK population who are reported to smoke[17]. Given the significant proportion of cancer patients smoking and the substantial benefits to cessation there is a strong argument for improvement in delivering smoking cessation interventions to cancer patients.

HCP working with cancer patients are in a unique position to provide smoking cessation interventions and support and this should be a part of routine healthcare. However, evidence suggests current interventions are not improving long-term cessation rates in cancer patients[18] which may be attributed to oncology professionals not fully engaging in delivery[19] despite their involvement being key to success[20]. A recent audit of UK radiotherapy and chemotherapy departments indicated less than a third, 32.4%, of departments advised patients to cease smoking during cancer treatment, with only 16.1% reporting to always give information on smoking cessation and available support to patients[21]. It is important therefore to establish what encourages or prevents HCP from delivering smoking cessation to cancer patients and look to the evidence for what is being recommended to ensure any engagement process is as effective as possible. To date, no review of the evidence has been performed looking specifically at this group of patients therefore the aims of this review are:

1) To establish common attitudes and beliefs surrounding smoking cessation of healthcare professionals working with cancer patients
2) To establish the factors which repeatedly facilitate and hinder the delivery of smoking cessation interventions to cancer patients
3) To establish what recommendations are being made in the literature to enable HCP to deliver effective smoking cessation

Methods

The review was conducted using a search of the literature for all years up to October 2016 using the keywords described in Table 1. Boolean operators were utilised and an explosion of search terms was permitted to perform a thorough search of the literature. A search of the grey literature was also performed using the online databases Ethos and OpenGrey.

*Table 1. A list of keywords used to search the literature databases. Keywords were inputted as search terms with the Boolean operator OR between keywords for each facet. The Boolean operator AND was used between each facet. * represent words where any suffix could be included.*

Facet	Keywords
Smoking	Smoking, tobacco, cigarette, nicotine
Smoking cessation	Cessation, quit*, suspen*, break, halt
Cancer	Oncology, cancer, carcinoma, neoplasm, chemotherapy, radiotherapy
Attitude	Attitude, engagement, conversation, perspective, approach
Healthcare Practitioner	Staff, practitioner, clinician, nurse, provider, therapist

To be included in the current review studies had to assess the attitudes, perceptions or approaches towards smoking cessation held or employed by healthcare practitioners working regularly with cancer patients. Studies had to be English language due to constraints in the resources and time required to conduct an accurate translation. As the aim of the current study was to extract general themes in healthcare, studies were not restricted by global location. Studies were not excluded based on type or methodology as again the aim was to retrieve a broad range of literature from which common themes could be extracted.

After searching multiple databases and the application of exclusion and inclusion criteria (Fig. 1) a total of 19 acceptable studies were identified from which data was extracted into a prospectively designed table. An appraisal of the literature was performed simultaneously. For qualitative studies, tools provided by the Critical Appraisal Skills Program were utilised[22]. Most studies identified through the literature search were descriptive studies utilising surveys as the primary method. An adapted version of an assessment tool used by Davids and Roman (2014) was employed[23]. All studies were deemed to be ethically sound and of a suitable quality for inclusion in the review.

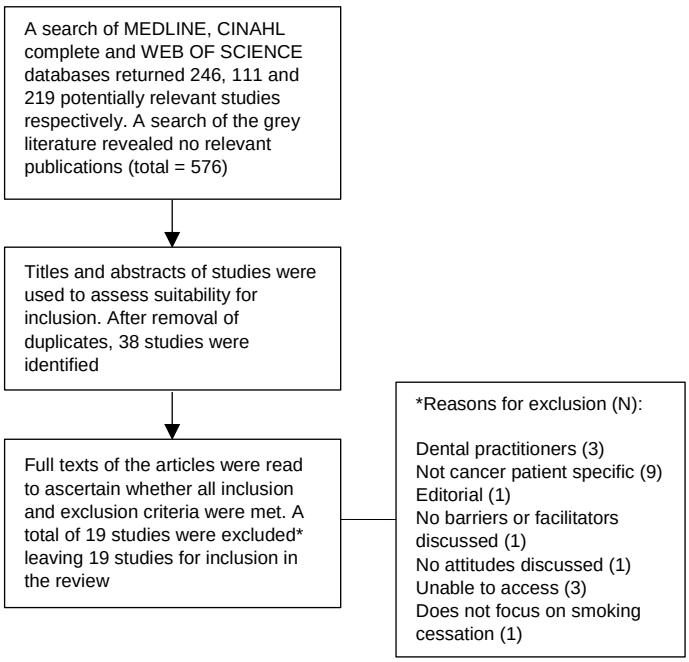

Figure 1. Process by which literature search was performed including numbers of studies found at each stage and reasons for exclusion at the final stage.

Results

Included studies were read by two of the authors and data extracted from the results and discussion sections. Data was extracted if it was interpreted by the reader as a facilitator or barrier to delivering smoking cessation or if it was a recommendation given in light of a study's results. Data extraction therefore generated a set of statements described in Table 2. Statements deemed similar in meaning were aggregated and thus the number of studies containing the same finding was recorded. This was an iterative process where each paper was read twice to ensure any findings identified later in the process were not missed in earlier studies. This generated a set of 116 statements which were grouped into 4 categories: patient-related factors (n = 22), HCP-related factors (n = 51), system-related factors (n = 38) and other (n = 5). Statements in the category "Other" were considered anomalous and therefore not relevant to the remainder of the study. From these groupings, sub-categories and the total number of findings, including aggregates, were identified (Fig. 2).

Table 2. A descriptive summary of all studies identified from searching the literature and after application of inclusion criteria. Abbreviations: NA not applicable, NR none reported.

Study Authors	Year	Study Location	HCP type	Cancer focus	Study type	Methodology	N	Average Age (years)	Time in profession (years)	Percentage current smokers	Barriers identified	Facilitators identified	Recommendations
Sarna et al.[24]	2000	United States	Oncology nurses	NA	Descriptive	Survey	1508	44.1	18	7	• Current smoker • Staff nurse role • Culture in mountain and Southwestern states in USA	• Willingness to be trained • Belief smoking counselling is part of their job • Culture in southern and south-eastern states in USA • Education level (higher qualifications) • Personal experience with a serious tobacco-related-illness in a family member or friend	• Implementation of tobacco cessation content in nursing preparation • Educational program to train providers to explain the immediate consequences of quitting • Education in the value of their role as smoking cessation advocates and educators • Training program targeted at current smokers on staff • Collaboration of cancer organisations and professionals in legislative and policy issues • Use society media output to increase awareness of public health campaigns • Special recognition or awards to those who contribute to antitobacco health policies
Sarna et al.[25]	2001	United States	Oncology nurses	NA	Descriptive	Postal survey	858	43.9 [mean]	18.3	7	• Lack of perceived patient motivation • Lack of skills • Lack of knowledge • Lack of confidence in cessation • Perception intervention would be harmful to patient through increased stress and guilt • Perception intervention would make no difference due to poor prognosis • Younger • Current smoker • Education (less advanced degree) • Clinical position (not nurse practitioner, administrator or clinical specialist)	NR	• Educational programs to help nurses effectively assess patient motivation • Educational programs to help nurses increase patient smoking cessation motivation • Educational programs focused on teaching skills and knowledge related to cessation • Implementation of tobacco cessation content in continuing education • Educational programs must address nurses' concerns that cessation might add to the patient's stress or guilt • Training program targeted at current smokers on staff
Sharp & Tishelman[26]	2005	Sweden	Nurses (radiation therapists)	Head & Neck	Qualitative	Interventions given then diaries of experiences kept	2	NR	NR	NR	• Risk of dependency and burdening in developing closer patient-provider relationships • Potential to increase patient vulnerability	• Close relationship with patients and their families • Delivering information on risks related to smoking during radiation therapy directly • Using weekly carbon monoxide testing	• System-level changes to include routine incorporation of tobacco assessment and cessation into standard care
Schnoll et al.[27]	2006	Russia	Doctors	NR	Descriptive	Training (computer program and training manual) and survey	63	41.3	NR	27	• Lack of confidence in cessation • Current smoker • Lack of time • Perception smoking counselling would be ineffective • Perception patients do not want smoking cessation intervention	• Willingness to be trained • Belief smoking cessation is worthwhile • Confidence in counselling ability • Belief smoking counselling is part of their job • Belief counselling patients would be effective • Have time to deliver counselling • Belief patients were interested in cessation counselling	• Provision of more workplace smoking cessation resources • Education initiatives to address beliefs that serve as barriers • Training program targeted at current smokers on staff

Lally et al.[28]	2008	Canada, Japan, Korea, Taiwan, United Kingdom, United States	Oncology nurses	general	Descriptive	Survey	759	<40 (50%)	>10 (66%)	4.5	• Lack of follow-up after initial assessment • Perception smoking cessation is not of great importance • Do not see smoking cessation discussions as their role	• Awareness of the issues • Belief smoking cessation is worthwhile • Belief they were in a position to encourage smoke-free policies	• Educational programs focused on teaching skills and knowledge related to cessation • Implementation of tobacco cessation content in continuing education • Improved tobacco cessation methods and training in these • Implementation of supportive workplace policies • Education in the value of their role as smoking cessation advocates and educators • Provision of more workplace smoking cessation resources
Webb[29]	2008	United Kingdom	Nurses	Head & Neck	Case-study	Implemented specialist smoking advisor	1	NA	NA	NA	• Lack of confidence in cessation	• Receipt of smoking cessation training • Implementation of specialist smoking cessation role	• System-level changes to include routine incorporation of tobacco assessment and cessation into standard care • Staff should receive brief interventions training • A representative from smoking cessation services should join cancer MDT
Simmons et al.[30]	2009	United States	Various	Head & Neck and Lung	Qualitative	Interviews	11	42.4	NR	NR	• Lack of perceived patient motivation • Perception intervention would be harmful to patient through increased stress and guilt • Lack of sensitivity (with respect to patient guilt and motivation) • Lack of follow-up after initial assessment • Do not mention risk that smoking could interfere with cancer treatment • Do not mention benefits of cessation	• Working in a designated cancer centre	• Education programs to address communication issues and practical support • Educational program to train providers to explain the immediate consequences of quitting • Education with a focus on benefits to patients
Taniguchi et al.[31]	2011	Japan	Nurses	NA	Descriptive	Postal survey	2115	20-29 (51%) [modal group]	<3 (26%) [modal group]	8	• Perception intervention would make no difference due to poor prognosis • Unsure whether to address with palliative patients • Less willing to provide tobacco intervention for patients with non-tobacco-related cancers	• Working in a designated cancer centre • History of instruction in smoking cessation during nursing school • Academic certification in nursing education or technique • More years of nursing education • Younger age • Working in an inpatient setting	• Educational programs focused on teaching skills and knowledge related to cessation • Education into the benefits of smoking cessation for patients receiving palliative care
Movsisyan et al.[32]	2012	Armenia	Doctors	NA	Mixed-methods	Survey and focus groups	93	42.3	NR	37.6	• Perception intervention would be harmful to patient through increased stress and guilt • Current smoker • Lack of adequate training • Do not see smoking cessation discussions as their role • Perception smoking cessation does not require additional assistance or intervention • Belief that smoking one cigarette post-surgery was beneficial to health	• Willingness to be trained • Non-smokers • Receipt of smoking cessation training	• Implementation of tobacco cessation content in nursing preparation • Implementation of supportive workplace policies • Critical review of the current medical training curriculum
			Nurses	NA	Mixed-methods	Survey and focus groups	122	40.3	NR	6.6			

Weaver et al.[33]	2012	United States	Doctors and nurse practitioners	Various	Descriptive	E-mail survey and medical record review	74	43.5	10.9	0	• Lack of perceived patient motivation • Lack of confidence in cessation • Unsure whether to address with palliative patients • Lack of adequate training • Perception smoking cessation is not of great importance • Perception patients do not listen to anti-smoking advice • Not knowing where to refer patients	• Belief smoking cessation is worthwhile • Confidence in counselling ability	• Provision of more workplace smoking cessation resources • Physician training
Goldstein et al.[34]	2013	United States	Cancer centre directors, physicians, researchers and tobacco use treatment clinicians	NA	Descriptive	Email survey	58	NR	NR	NR	• Lack of adequate training • Lack of funding • Lack of space • Lack of feedback for those delivering counselling • No active promotion of services available	• Dedicated institutional programs • Implementation of specialist smoking cessation role • Systems for identification of tobacco use among cancer patients • Strong communication to staff from administration • Clear commitment from leadership	• Specialised smoking cessation staff to deliver prolonged support and counselling • Improved tobacco cessation methods and training in these • System-level changes to include routine incorporation of tobacco assessment and cessation into standard care • Implementation of supportive workplace policies • Provision of stable funding • Provision of adequate space • Implementation of a tobacco use treatment program within cancer centres • Produce reports on tobacco use identification and treatment for feedback to providers
Sutton et al.[35]	2013	United States	Otolaryngologists	Head & Neck	Descriptive	Postal survey	2127	50.3	20.9	2.2	• Lack of time • Do not see smoking cessation discussions as their role • Perception smoking counselling would be ineffective	• Receipt of smoking cessation training	• Education initiatives to address beliefs that serve as barriers • Provision of incentives to attend smoking cessation training • Increase availability of training • Increase quality of training
Warren et al.[36]	2013	Global	Doctors	Lung	Descriptive	Email survey	1306	NR	10> (73%)	5.3	• Lack of perceived patient motivation • Lack of time • Lack of adequate training • Lack of patient cessation resources and support resources • Lack of referral resources	• Belief smoking cessation is worthwhile	• Educational programs to help nurses effectively assess patient motivation • Educational programs focused on teaching skills and knowledge related to cessation • Implementation of tobacco cessation content in nursing preparation • Improved tobacco cessation methods and training in these • System-level changes to include routine incorporation of tobacco assessment and cessation into standard care • Clearly defining tobacco use with standardised assessments during and after cancer care • Consideration of social support for cancer patients
Tomlinson & Mackareth[37]	2014	United Kingdom	Complementary Therapists	general	Qualitative	Interviews	19	41-60 [modal group]	6-10 [modal group]	NR	• Lack of knowledge • Perception intervention would be harmful to patient through increased stress and guilt • Lack of adequate training • Lack of patient cessation	• Willingness to be trained • Had skills to support and assist with mood and wellbeing	NR

										resources and support resources • Do not see smoking cessation discussions as their role • Refusal to treat smokers		
Ostroff et al.[38]	2016	United States	Various	NA	Opinion	NA	NA	NA	NA	NA	• Lack of skills • Lack of knowledge • Lack of adequate training • Lack of patient cessation resources and support resources	• Dedicated institutional programs • Specific expertise in smoking cessation	• Research into effectiveness of implementing smoking cessation programs
Cubbin[39]	2016	United Kingdom	Various (focus groups with nurses and radiographers)	NA	Mixed-methods	Survey and focus groups	77 (survey) and 12 (focus groups)	40-50 (36%) [modal group]	NR	9	• Lack of skills • Lack of knowledge • Perception intervention would be harmful to patient through increased stress and guilt • Unsure whether to address with palliative patients	• Awareness of the issues	• Educational programs focused on teaching skills and knowledge related to cessation • Education into the benefits of smoking cessation for patients receiving palliative care • Education into how to motivate patients receiving palliative care • Education programs to address communication issues and practical support • Working group to address workplace policy • Production of bespoke training
Lina et al.[40]	2016	Italy	Doctors	NA	Descriptive	Web-based survey	213	NR	NR	14	• Lack of skills • Perception intervention would be harmful to patient through increased stress and guilt • Lack of time • Lack of awareness of available services	• Willingness to be trained • On site smoking cessation services/ Easy referral • Women more willing to be trained than men	• Specialised smoking cessation staff to deliver prolonged support and counselling
Pattinson & Jessop[41]	2016	United Kingdom	Therapy Radiographers	NA	Descriptive	Web-based survey	102	NR	NR	NR	• Lack of knowledge • Lack of confidence in cessation • Perception intervention would be harmful to patient through increased stress and guilt • Lack of adequate training • Do not see smoking cessation discussions as their role • Perception changing lifestyle could negatively impact on cancer treatment efficacy • Concerns surrounding patient views	• Belief that intervention would reduce side effects of treatment	• Educational program to train providers to explain the immediate consequences of quitting • Education with a focus on benefits to patients • Education initiatives to address beliefs that serve as barriers • Professional organisations should increase awareness of training opportunities • Integrate health improvement information into undergraduate curriculum
Sherratt et al.[42]	2016	United Kingdom	Thoracic oncology HCP	Lung	Descriptive	Email survey	147	30-49 (60.5%) [modal group]	NR	NR	• Lack of workplace recommendations	• Confidence related to degree of specialism	• Educational programs to address electronic cigarette awareness and sources of information

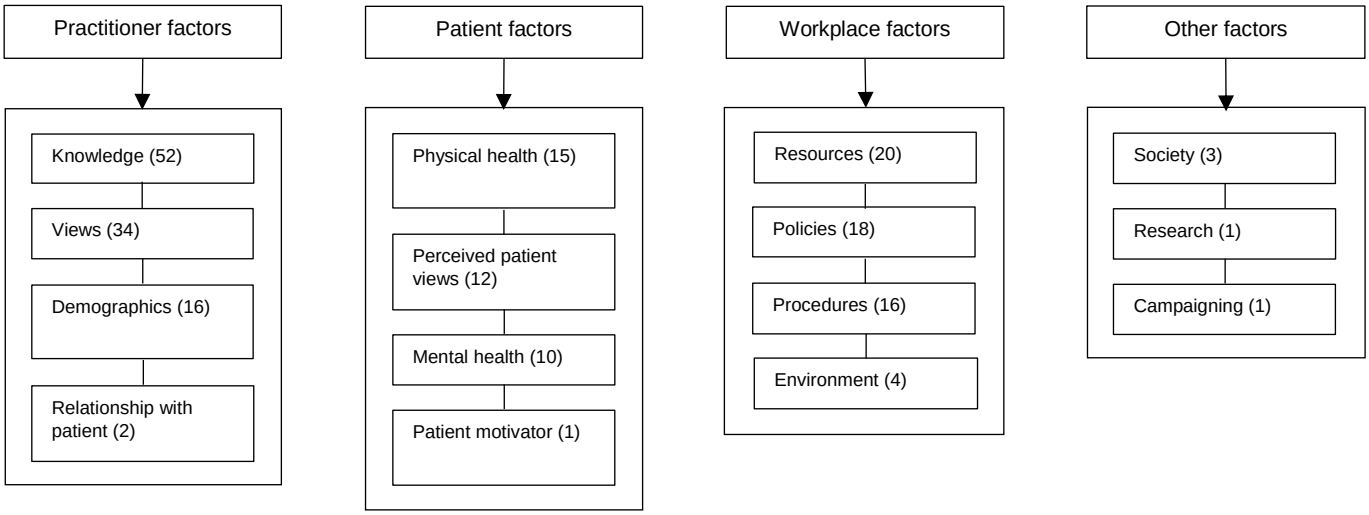

Figure 2. Categories and sub-categories identified from aggregated findings. Numbers in brackets refer to the total number of times findings within each sub-category were discussed within the literature reviewed.

After the removal of statements extracted from only one study, 41 statements remained all of which were discussed a total of 130 times. Of these, practitioner knowledge was the most cited sub-category of statements with 29.2% of extracted findings focussing on this, followed by practitioner views with 25.4%. Meanwhile statements related to resources and patient physical health concerns were each cited 11 times (8.5%). The most frequently extracted findings are displayed in Table 3.

Table 3. Most commonly extracted statements from the literature, the number of studies the statements were found in, whether the finding was considered a barrier, facilitator or recommendation regarding smoking cessation delivery and the category assigned to the statement for thematic analysis.

Finding extracted	Number of studies	Finding type	Category
Lack of adequate training	7	Barrier	Knowledge
Perception intervention would be harmful to patient through increased stress and guilt	7	Barrier	Mental health
Lack of confidence in cessation	5	Barrier	Views
Lack of knowledge	5	Barrier	Knowledge
Do not see smoking cessation discussions as their role	5	Barrier	Views
Willingness to be trained	5	Facilitator	Views
Educational programs focused on teaching skills and knowledge related to cessation	5	Recommendation	Knowledge
Current smoker	4	Barrier	Demographic
Lack of skills	4	Barrier	Knowledge
Lack of perceived patient motivation	4	Barrier	Perceived patient views
Lack of time	4	Barrier	Procedures
Belief smoking cessation is worthwhile	4	Facilitator	Views
System-level changes to include routine incorporation of tobacco assessment and cessation into standard care	4	Recommendation	Procedures

The most commonly cited barriers were “Lack of adequate training”, a statement extracted from 7 of the 19 papers, and “Perception intervention would be harmful to patient through increased stress and

guilt" (n = 7). Other frequently extracted ideas were "Lack of confidence in cessation" (n = 5), "Lack of knowledge" (n = 5) and "Do not see smoking cessation discussions as their role" (n = 5).

The facilitators extracted most often were "Willingness to be trained" (n = 5), "Belief smoking cessation is worthwhile" (n = 4), "Receipt of smoking cessation training" (n = 3) and "Dedicated institutional programs" (n = 3). The most frequently made recommendations were "Educational programs focussed on teaching skills and knowledge related to cessation" (n = 5), "System-level changes to include routing incorporation of tobacco assessment and cessation into standard care" (n = 4) and seven statements were recommended by three studies each. These recommendations were "education initiatives to address beliefs that serve as barriers", "educational program to train providers to explain the immediate consequences of quitting", "training program targeted at current smokers on staff", "improved tobacco cessation methods and training in these", "provision of more workplace smoking cessation resources", "implementation of supportive workplace policies" and "implementation of tobacco cessation content in nursing preparation".

Discussion

Overwhelmingly, the knowledge and views of oncology healthcare practitioners were discussed most frequently within the literature as important factors related to the delivery of smoking cessation for patients. These represent the two most discussed categories but a range of themes related to practitioner, patient and workplace factors were extracted. Although findings were never common to more than 7 studies, this is unsurprising given the heterogeneity of studies involved. Nonetheless similarities in attitude were seen both across professions and cultures. The themes extracted in this study agree with those seen in other healthcare scenarios. Sheals et al. (2016) performed a systematic review of smoking cessation attitudes in mental health professionals where the most frequently perceived barriers were lack of knowledge or training followed by lack of time and low confidence[43]. The authors found that approximately 40% of participants from all included studies held negative attitudes to cessation where practitioners believed patients were not interested in quitting smoking and that smoking cessation interventions were not effective[43]. Similarly, 38% of GPs view discussing smoking with patients as ineffective[44]. These proportions are much lower however than the 63% of Russian oncologists that believe the same[27] suggesting that smoking cessation in cancer patients presents a greater and more unique challenge for professionals.

Lack of knowledge

It was identified from the literature that practitioners did not feel they had the knowledge, skills or confidence to deliver successful smoking cessation interventions to cancer patients. This theme appears to be true across countries, cultures and professions. Of physician members of the International Association for the Study of Lung Cancer, 48% cited lack of training or experience as a barrier to smoking cessation delivery[36] while 43% of Italian oncologists were willing to receive further training[40]. In a sample of oncology nurses from the United States defined as either having a high or low perception of barriers, 75.2% of the high barrier group reported lack of knowledge as impacting on their ability to engage in interventions while only 4.3% reported this as an issue in the low barrier group[25]. Meanwhile in a survey of 77 British oncology professionals only 35% agreed or strongly agreed they had the skills and expertise to discuss smoking cessation[39]. Increased confidence and the belief that smoking cessation was worthwhile were both cited by multiple studies as facilitators to delivery. Although over 40% of a sample of UK therapy radiographers stated they would be confident advising patients of smoking cessation programs, the majority of respondents

rarely or never provided smoking cessation advice[41]. Comments from radiographers regarding provision were often themed around concerns surrounding patient views, staff responsibility and knowledge of the topic, suggesting these professionals require more information on smoking cessation[41].

Required knowledge

Professional knowledge on smoking cessation methods and resources has been shown to correlate with willingness to refer to appropriate services[45]. In the current review, receipt of adequate training was perceived to be a facilitator for delivery of smoking cessation, as was the belief that smoking cessation is worthwhile. The evidence clearly demonstrates the worth of smoking cessation in cancer patients; in a meta-analysis of 27 studies 81% showed a significant negative association between continued smoking and treatment outcome across a range of cancer sites, stages and treatments[46]. Despite clear advantages, Simmons et al. (2009) found that practitioners rarely mentioned benefits of cessation, while patients wished for smoking advice to address the positives of cessation as well as the risks of continued smoking[30]. Head and neck cancer patients are more motivated by short term benefits such as returning to normal life and reclaiming function than, for example, reducing risk of recurrence[47] therefore HCP must be taught the short-term benefits to quality of life of smoking cessation in cancer patients. Evidence from lung cancer patients shows quitters experience a more rapid return to emotional, cognitive or social functioning after surgery[48] and an overall improvement in quality of life[49]. Education on the benefits of smoking cessation to cancer patients has been recommended by two of the studies included in this review and a focus on the short-term benefits may further facilitate delivery of cessation[30,41].

Encouraging smokers to quit is particularly pertinent within the radiotherapy department where it can confer multiple benefits. In head and neck cancer patients, smoking during radiotherapy treatment negatively impacted upon risk of recurrence and chance of survival[50]. In breast cancer, smoking is an independent predictor of experiencing an acute skin reaction during radiotherapy[51]. In radiotherapy for prostate cancer smoking is associated with an increased risk of experiencing long-term bowel and anal-sphincter region related side effects[52]. Across cancer sites, non-smokers have been shown to suffer a significantly reduced burden of symptoms after radiotherapy or chemotherapy[53]. Thus, smoking cessation in radiotherapy patients should be encouraged by practitioners for all patients, not just those with an aetiological tobacco associated cancer, as smoking can significantly increase side-effects[11], reduce quality of life[9,10] and prognosis in these patients[12,13]. Informing therapeutic radiographers of the evidence and improving their knowledge in this area is likely to facilitate delivery of smoking cessation to these patients[41]. Evidence does however remain sparse and further research into the potential short-term gains for patients who stop smoking after a cancer diagnosis can only help to motivate practitioners to deliver smoking cessation interventions to cancer patients.

Desire to be trained

In this study, it was found practitioners frequently desire further training in smoking cessation. Both Italian oncologists (43%) and Russian oncologists (60.3%) would welcome training in smoking cessation and for 55.6% this was a top priority[40,27]. In an Armenian cancer hospital 45.2% of doctors also believed training should be given on cessation techniques along with 58.2% of nurses[32]. This value is comparable to the 66% of oncology nurses in the US who selected learning how to help patients stop smoking as a most important training program[24]. It has been shown that training professionals is significantly associated with improving short-term patient cessation rates[54,55], therefore this desire to receive more training should help to overcome the knowledge barrier. Bristow et al. (2015) showed training improved confidence, comfort and knowledge in cancer care providers

however challenges remained in when to broach the topic with patients and confidence in knowing their scope of practice[56]. It is therefore important that any training programs implemented work to address not just practitioner knowledge, but beliefs and communication skills also to combat the currently low rates of smoking cessation delivery.

Communication of smoking cessation advice

HCP frequently reported they did not have the skills or confidence to deliver smoking cessation interventions. Although providing professionals with the knowledge they require will go a long way to aiding in delivery, HCP also need to learn the communication and support skills to help patients quit smoking and remain abstinent. To do this staff must be made aware of their own beliefs which may serve as barriers, for example those of current smokers. Current smokers were found to be a barrier to smoking cessation delivery by four of the studies as fewer believe they should actively stop patients smoking[24] which likely translates into lower provision of assessment[27]. By overtly informing professionals that their smoking status is likely to impact on the quality of care they provide this may at the least enable smoking HCP to remain aware of this fact and overcome any unconscious bias and may even incentivise HCP to quit smoking themselves.

The patient-provider relationship has been shown to be extremely important in smoking cessation[30]. In a Swedish qualitative study, 13 currently smoking head and neck cancer patients undergoing radiotherapy and 2 radiation therapy nurses were asked to maintain diaries of their smoking cessation experiences and clinical observations respectively[26]. Both patients and practitioners indicated that the relationship was helpful to cessation as patients appreciated a non-judgemental approach where they did not feel the relationship would be harmed if they continued to smoke. Practitioners were more comfortable as they felt able to sense the most appropriate time to broach the subject of smoking cessation due to their regular patient contact[26]. Training in delivery of smoking cessation in a sensitive and empathic manner was recommended by Simmons et al. (2009) and could be facilitated by training those in most regular contact with patients, for example therapeutic radiographers who see patients 5 days a week[30]. Thus, HCP in the radiotherapy department may be uniquely placed to deliver effective smoking cessation advice and assistance and thus training of these professionals and further research in this area should be departmental priorities.

Assumptions to be addressed

A cancer diagnosis, while identified as a pivotal ‘teaching moment’ which can be utilised to encourage healthier behaviours[57], can lead to substantial feelings of guilt particularly in those with a tobacco-related disease[58]. In the reviewed literature HCP frequently suggested they did not deliver smoking cessation for fear the intervention would increase feelings of stress and guilt and thus be detrimental to the patient’s wellbeing. This barrier must be addressed directly in future training programs as patients frequently show willingness and motivation to quit[59] but are unwilling to ask for help[30] therefore practitioners should be prepared to broach the topic first. HCP often perceived patients as lacking motivation and four studies identified this as a barrier to delivering smoking cessation, however evidence suggests patients are very much motivated to quit but lack the tools and support to do so[60]. Practitioners may be rationalising their own lack of confidence or motivation for interventions as that of the patients[41] therefore it is essential this assumption is overtly addressed in any educational materials.

Undergraduate education

Although it is clear further and improved training is required by cancer care professionals, how this training should be delivered remains unclear. Three of the studies here emphasised the need to

integrate smoking cessation training into student practitioner education programs. PHE and Council of Deans has stressed the importance of incorporating public health information and education into pre-registration curricula for allied health professionals which is a positive step to ensuring adequate training of all professionals[61]. The Allied Health Professionals Federation in conjunction with PHE have also strategized to improve integration of public health education at pre-registration level but also stress that public health education, including smoking cessation, must also form a core part of continuing professional development[62]. Education must be delivered at regular intervals to ensure the provision of tobacco cessation advice remains a priority. The most effective method of training resource remains elusive and further research should be conducted into practitioner preferences for training and efficacy of different approaches.

Implementation of institutional policies and procedures

Recommendations from the literature analysed in this study frequently focused on systemic changes with "routine incorporation of tobacco assessment and cessation into standard care" being endorsed by four studies. By establishing systemic workplace protocols this will likely deal with role confusion where practitioners frequently reported they did not see smoking cessation discussions as part of their role. Notably, in a sample of Armenian cancer care providers, the nurses surveyed believed the physicians were responsible for smoking cessation discussions while most doctors believed they had no role in helping patients to quit[32]. If all healthcare professionals were clearly responsible for at least assessing patient smoking status and advising of the services available, then this role confusion should no longer be an issue. The recommendation made by four studies to incorporate assessment of tobacco status into standard procedures may help overcome the role confusion barrier. This can be simply and effectively achieved by adding a field to record smoking status on any personal patient information forms. By repeatedly recording this data, all HCP will be able to refer patients who smoke to the appropriate services. Three of the studies stated that a dedicated institutional service was a facilitator for delivery, perhaps because practitioners felt confident in their knowledge of where to direct patients who wished to stop smoking[40]. Clear referral of smokers to a specialist smoking advisor, was cited multiple times as a facilitator to delivery and centres indicated that tobacco treatment programs could be improved through employment of tobacco treatment specialists[34]. Further research into the success rates of specialists could further enhance the argument for employment of these professionals in all centres providing cancer care.

Conclusions and recommendations

A limitation of this review is the heterogeneity of the studies included which makes aggregation of results difficult, thus why no statistical meta-analysis could be performed. However, by performing a thematic extraction this study has demonstrated attitudes towards smoking cessation show striking similarities between professionals and cultures, thus many lessons can be learned. The themes most commonly extracted included practitioner knowledge and practitioner views surrounding smoking cessation and as such further training and education of healthcare practitioners caring for cancer patients should take priority. This training must look at the benefits of smoking cessation to cancer patients, how best to address cessation with patients as well as the different available cessation methods. Common barriers such as role confusion can be addressed through implementation of standardised assessment and advising in workplace procedures parallel to employment of tobacco use specialists and clear referral pathways for patients who smoke. It is important that any future training programs for oncology healthcare practitioners focus specifically on the benefits of cessation for their cancer patients and that HCP are taught to initiate smoking discussions in a non-judgemental manner. By addressing the barriers and harnessing the facilitators extracted here delivery of smoking cessation

and therefore rates of quitting in cancer should improve thus improving the health of these patients and reducing the future burden on the NHS.

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