



Awareness and help-seeking for early signs and symptoms of lung cancer: A qualitative study with high-risk individuals

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ABSTRACT

Purpose: Lung cancer is the most common malignancy and the leading cause of cancer death globally. Lung cancer incidence and mortality are highest among socioeconomically deprived individuals. This study explored awareness and help-seeking for early signs and symptoms of lung cancer among high-risk individuals.

Methods: Participation was sought from multiple community centres and organisations in high-incidence and socioeconomically deprived areas in Ireland. Semi-structured focus groups were conducted with individuals at risk for lung cancer. Data were analysed using thematic analysis.

Results: Five focus groups were conducted with 46 participants. Two themes were identified: (i) lung cancer awareness, beliefs, and experiences and (ii) help-seeking for early signs and symptoms of lung cancer. Participants had fragmented knowledge of lung cancer and associated this malignancy with death. Symptom change, persistence, seriousness, and family history of lung cancer served as triggers to help-seeking. General practitioners were identified as the first point of contact for symptoms of concern, yet their presumed negative attitudes towards smokers served as barriers to help-seeking. Other barriers included symptom misappraisal, fear, denial, use of self-help measures, being inherently a non-help seeker, and machoism and stoicism among men.

Conclusion: Study findings offer guidance regarding lung cancer knowledge gaps and barriers to help-seeking that ought to be considered in public health interventions aimed to promote lung cancer awareness and early detection.

Clinical implications: This study highlights the need for healthcare professionals to adopt a non-judgmental approach during consults for symptoms indicative of lung cancer. This can potentially help detect lung cancer early.

1. Introduction

Lung cancer (LC) is the most common malignancy and the leading cause of cancer death globally (Torre et al., 2016). There were 1.8 million LC cases worldwide in 2012 alone (Wong et al., 2017). In Ireland, 1,407 men and 1,157 women are diagnosed with LC, and 1,069 men and 785 women die from it annually (National Cancer Registry Ireland, 2018). The median age at diagnosis and death ranges between 70 and 74 years. LC ranks first among invasive cancer deaths in Ireland, with a five-year relative survival rate of 17.9% which is comparable to global figures (National Cancer Registry Ireland, 2018; Wong et al., 2017). In the United Kingdom (UK), the five-year relative survival rate for early-stage LC is 57% in comparison to 3% for patients diagnosed at

an advanced stage (Cancer Research UK, 2020).

A persistent cough and shortness of breath are early symptoms of LC (Chowienzyk et al., 2020). However, patients with LC tend to be asymptomatic for several months prior to seeking medical help (Corner et al., 2005). When symptoms of LC occur, they tend to be mistaken for symptoms associated with smoking (Smith et al., 2016), or lung co-morbidities such as chronic obstructive pulmonary disease (COPD) (Cunningham et al., 2019). Symptom misappraisal and help-seeking delay can also result from experiencing systemic and non-specific symptoms of advanced LC including fatigue and unexplained weight loss (American Cancer Society, 2019), as well as LC stigma (Carter-Harris, 2015). This may lead to more advanced-stage LC diagnoses and lower eligibility for curative treatment (Holmberg et al., 2010; Walter

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et al., 2015).

Advanced LC is linked to socioeconomic deprivation, especially among older men, smokers, and ex-smokers (Cancer Research UK, 2020; Lyrtatzopoulos et al., 2012). Hovanec et al. (2018) studied the association between LC and socioeconomic status among 7,021 LC cases and 20,885 healthy controls in Europe and Canada and found that low socioeconomic status was a significant risk factor for LC, even after adjusting for smoking status. Similarly, in Ireland, regional differences in LC incidence exist with an apparent trend of increasing LC incidence with increasing deprivation (Walsh et al., 2016). A national study found that urban individuals from deprived areas had a significantly higher LC incidence, were more likely (6%) to be diagnosed at late stages, and were less (–21%) likely to receive surgery for LC in comparison to their rural counterparts (Walsh et al., 2016). Age-adjusted rates were approximately 60% higher for the ‘most’ compared with the ‘least’ deprived population quintiles, with urban males and females showing higher rates relative to rural individuals (Walsh et al., 2016).

A review of the international literature on help-seeking delay in LC presentation found that very few studies focused on identifying triggers and barriers to help-seeking for symptoms indicative of LC among at-risk populations (Chatwin and Sanders, 2013). Moreover, studies which explored help-seeking for LC ‘alarm’ symptoms were predominantly retrospective, conducted among individuals with a pre-existing LC diagnosis (Chatwin and Sanders, 2013). Therefore, the aim of this study was to explore awareness and help-seeking for early signs and symptoms of LC among high-risk individuals living in high-incidence and socioeconomically deprived areas in Ireland.

2. Methods

2.1. Design

This qualitative descriptive study draws from the tenets of the naturalistic inquiry, whereby the phenomenon of interest was described in its natural state rather than adhering to prior theories, definitions, or views of this phenomenon (Guba and Lincoln, 1994; Sandelowski, 2000, 2010). Qualitative description involves the presentation of facts using everyday language and participants’ own words. This is likely to result in a clearer presentation of findings and easier consensus among the researchers. In contrast, phenomenological, theoretical, ethnographic, and grounded theory research necessitate researchers to “put much more of their own interpretive spin on what they see and hear” (Sandelowski, 2000, p. 336), which is not in line with the aim of the present study.

The focus group technique allows participants to ask each other questions and collectively re-evaluate and reconsider their own understandings of a certain phenomenon, an experience not afforded in individual interviews (Gibbs, 1997; Stewart and Shamdasani, 2014). In the current study, the focus group technique was chosen to create a safe space for participants to interact, share their experiences and knowledge of LC, and discuss matters around help-seeking for symptoms of concern. This study is reported using the Standards for Reporting Qualitative Research (SRQR) checklist to ensure complete reporting of study elements and maintain an audit trail (O’Brien et al., 2014).

2.2. Participants and settings

Participants were sought from Irish counties Dublin (Dublin City North) and Carlow which have the highest Standardised Incidence Ratio for LC (1.16+) (National Cancer Registry Ireland, 2018). Additionally, several regions in both counties are categorised as ‘disadvantaged’ and ‘extremely disadvantaged’ (Haase and Pratschke, 2017), and a number of areas in county Carlow are considered ‘high radon areas’ (Environmental Protection Agency, 2020), a well-established risk factor for LC.

Convenience sampling was used. The research team identified key community centres and organisations in the two Irish counties and asked

them by e-mail and telephone to invite their members to participate in the study. The community centres and organisations then offered to organise the focus groups and to provide private venues for data collection. Participants were included if they were aged 50 years and above and had at least one LC risk factor including tobacco smoking; family history of LC; exposure to radon and ionizing radiation; occupational exposure to arsenic, asbestos, beryllium, cadmium, chromium, nickel, and polycyclic aromatic hydrocarbons; personal history of tuberculosis; beta carotene supplements in smokers; and indoor emissions from household combustion of coal (National Cancer Registry Ireland, 2018). Patients with LC, long-term LC survivors, and participants living in affluent areas were not eligible for inclusion.

Data were collected and analysed concurrently until no new themes emerged. Following the fourth focus group, the research team reached a decision that potentially there was sufficient depth of information to meet the aim of the study. A fifth focus group was conducted in order to confirm this decision.

2.3. Data collection

Ethical approval was obtained from the Social Research Ethics Committee at University College Cork. Participation was voluntary and all participants provided written informed consent. The right for full disclosure was maintained by providing participants with an information leaflet and the contact details of cancer support services.

Icebreakers in the form of social discussions, refreshments, and name tags were used to establish rapport with participants prior to data collection. Focus group rules were agreed upon beforehand such as asking participant to speak one at a time and emphasizing the importance of capturing everyone’s views. Focus groups were audio-recorded and conducted in February 2020. Participants completed a sociodemographic questionnaire with questions on age; gender; nationality; marital status; smoking status; level of education; employment; occupation; health insurance; address (urban/rural); and living arrangements (Drummond et al., 2019; Saab et al., 2017). A semi-structured interview guide published elsewhere was adapted to the context of the current study (Saab et al., 2017). The opening question was: “What is the first thing that comes to your mind when you hear ‘lung cancer’?” Participants were then asked to imagine and discuss two scenarios where they or someone they know experience symptoms indicative of LC (e.g. cough that is changing in nature and changes in their breathing). Open-ended questions were used to probe participants and explore their responses in greater depth. The focus group interview guide is presented in Table 1.

2.4. Researcher characteristics and reflexivity

Each focus group was facilitated by two experienced qualitative researchers to ensure that both uncommunicative and gregarious participants had an opportunity to be heard. One researcher acted as the lead facilitator and the second researcher assisted in picking up on verbal and non-verbal cues, probing participants, and ensuring that all focus group participants had the opportunity to contribute to the discussions. These researchers had no prior relationships with the participants and were not known to them.

Immediately following each focus group, interviewers audio-recorded their own reflections on the focus group process and clarified whether iterations were needed in subsequent focus groups. A summary capturing the essence of each focus group was then prepared by the first author and shared and discussed with the research team. This process enhances researcher reflexivity in qualitative research (Berger, 2015).

2.5. Data analysis

Focus groups were transcribed verbatim. Identifiers were omitted at transcription and data were analysed using thematic analysis (Braun and

Table 1
Focus group topic guide.

Topic	Main question	Sample probing questions
Awareness of lung cancer	What is the first thing that comes to your mind when you hear “lung cancer”?	<ul style="list-style-type: none"> • How come [<i>the answer</i>] crossed your mind? • Can you tell me more about [<i>the answer</i>]? [<i>probe about risk factors, treatment, screening</i>] • [<i>if not mentioned already</i>] In your opinion, what are the early signs and symptoms of lung cancer? • Who do you think is at risk for lung cancer? Why?
Help-seeking for lung cancer	I would like you all to think about two scenarios:	<ul style="list-style-type: none"> • Let’s suppose you, or someone you know had a cough that is changing in nature [<i>unproductive became productive</i>]: • How would you/they feel? What would you/they do? Who would you/they speak to? • Let’s suppose you, or someone you know noticed changes in their breathing [<i>wheezing, shortness of breath</i>] and/or changes in their voice [<i>hoarseness</i>]: • How would you/they feel? What would you/they do? Who would you/they speak to?

Clarke, 2006). This method of analysis is widely used and known for its flexibility in comparison to methods that are tied to pre-existing theoretical or epistemological positions (Braun and Clarke, 2006). Thematic analysis is independent of theory and epistemology and can be applied across a range of qualitative study designs, including qualitative description which was used in the current study (Sandelowski, 2000).

Using Braun and Clarke’s (2006) six phases of thematic analysis, focus group transcripts were read and re-read by five authors to gain understanding of the data. Participant excerpts were then extracted and summarised into codes by five authors. A coding sheet was created by the first author with codes in one column and associated participant experts in a second adjacent column. Similar codes were then collapsed and refined. Sub-themes linking the various codes were generated and cross-checked against participants’ excerpts. The first author then created a thematic map to clarify the relationship between the codes and sub-themes. Similar sub-themes were then grouped into themes which were refined and finalised by all the authors.

3. Results

3.1. Participant characteristics

A total of five focus group discussion sessions lasting between 67 and 93 min were conducted with 46 participants in two community organisations and one community centre. Two focus groups included 11 participants each. The remaining three focus groups included five, nine, and 10 participants.

Participants’ ages ranged between 51 and 90 years. The majority were female (n = 30) and Irish (n = 45) and were either married (n = 17) or widowed (n = 13). Almost half of the participants reported being current smokers (n = 22) and smoked between 10 and 40 cigarettes per day. Most participants were retired (n = 27) with equal proportions completing either primary (n = 19) or secondary education (n = 19). Most participants lived in urban areas (n = 30), either in privately owned homes (n = 22) or in houses rented from a local authority (n = 17), and were medical card holders (n = 40) (i.e. eligible for free medical services). The full participant characteristics are described in Table 2.

Table 2
Sociodemographic characteristics of study participants (n = 46).

Characteristics		n (%)
Age (years)	Range	51–90
	Mean (standard deviation)	68.5 (10.5)
Sex	Female	30 (65.2)
	Male	16 (34.8)
Nationality	Irish	45 (97.8)
	English	1 (2.2)
Marital Status	Married	17 (37)
	Widowed	13 (28.3)
	Single	6 (13)
	Divorced	5 (10.9)
	Separated	3 (6.5)
Highest Level of Education	Partnered	2 (4.3)
	Primary	19 (41.3)
	Secondary	19 (41.3)
Employment Status	University/College	8 (17.4)
	Retired	27 (58.7)
	Employed (part-time)	9 (19.6)
	Disabled	3 (6.5)
	Unemployed	3 (6.5)
Current Occupation	Homemaker	2 (4.3)
	Employed (full-time)	1 (2.2)
	Volunteer	1 (2.2)
	Cleaner	2 (20)
	Day care assistant	2 (20)
Health Insurance	Maintenance	2 (20)
	Other	4 (40)
	Medical card	40 (87)
	Private insurance	2 (4.3)
	Medical card and insurance	2 (4.3)
Current Address	GP card and insurance	1 (2.2)
	Medical card and GP card	1 (2.2)
	Urban	30 (82.6)
Living Arrangements	Rural	8 (17.4)
	Own house (no mortgage)	22 (47.8)
	Rent from a local authority	17 (37)
Smoking Status	Own house (with mortgage)	3 (6.5)
	Living with family/friends	2 (4.3)
	Rent privately	2 (4.3)
	Current smoker	22 (47.8)
	Ex-smoker	17 (37)
Number of Cigarettes Smoked/Day	Passive smoker	6 (13)
	Social smoker	1 (2.2)
	Range	10–40
Number of Years Smoking	Mean (standard deviation)	18.4 (7.2)
	Range	20–75
	Mean (standard deviation)	44.4 (13.5)

Data are presented according to focus group (FG) numbers using participants’ own words to enhance credibility (Cope, 2014). The following two themes were constructed from the data: (i) LC awareness, beliefs, and experiences; and (ii) help-seeking for early signs and symptoms of LC. Study findings including themes, sub-themes, and codes are summarised in Table 3.

3.2. Lung cancer awareness, beliefs, and experiences

3.2.1. Attitudes, beliefs, and perceptions towards lung cancer

LC triggered feelings of fear, worry, and panic among participants, and was perceived as a death sentence by many. Some participants believed that LC can be caught and treated early and that, in comparison to the past, “there’s better equipment to detect it [LC]” (FG4). Others, however, expressed either not believing in cancer or believing that cancer cure was withheld:

“They have a cure for cancer, loads of cancers and they won’t release it because there’s too much money making going on with charities ... I’ve stopped volunteering and donating for all those charities ...” (FG2)

Participants often displayed fatalistic attitudes towards LC either because they were heavy smokers and the “damage was done” (FG3) or

Table 3
Summary of study findings.

Themes	Sub-themes	Codes
Lung cancer awareness, beliefs, and experiences	Attitudes, beliefs, and perceptions towards lung cancer	<ul style="list-style-type: none"> • Death sentence • Fear and worry • Beliefs and misconceptions • Fatalism, “if I die, I die” • Family experiences with cancer
	Awareness of lung cancer risks, signs, and symptoms	<ul style="list-style-type: none"> • Smoking as the prime cause of lung cancer • Occupational exposure • Environmental hazards • Genetics as a risk factor • Early signs and symptoms of lung cancer
	Experiences and beliefs regarding smoking	<ul style="list-style-type: none"> • “Smoking doesn’t cause cancer” • Smoking as a source of comfort during hardships • Smoking “back then” versus smoking now • Cigarette smoking is “very addictive. It is a drug” • Guilt, regret, and embarrassment • Concerns about younger family members • “Health scare” and fear of dying as triggers for quitting
Help-seeking for early signs and symptoms of lung cancer	Triggers for help-seeking	<ul style="list-style-type: none"> • Appraisal of symptom seriousness • Symptom change and persistence • Family history of lung cancer
	Contributors to help-seeking delay	<ul style="list-style-type: none"> • Symptom misappraisal • Fear and denial • Self-help measures • “I would not go to a doctor to save my life, literally” • Machoism and stoicism in men

due to their age:

“I mean we’re over 70 now, so if we die, we die [Laughter] ... but we’ve escaped so far.” (FG4)

Almost all participants were affected by cancer, with the majority reporting that they have lost a family member to LC. Such experiences helped shape participants’ awareness and perceptions regarding LC:

“I never smoked, but all my family did. My brother and sisters, I had seven, all the seven of them did. The majority of them died of lung cancer. My mother and father ... my husband’s family, his father was one of seven and they all died of lung cancer.” (FG5)

3.2.2. Awareness of lung cancer risks, signs, and symptoms

Participants often had fragmented and discrete pieces of information on LC which they were able to draw together during focus groups. For many, the sole motivation to participate in the study was to learn more about LC and know whether they were at risk. Several participants believed that “most people that get lung cancer are smokers” (FG2). Social smoking, vaping, and e-cigarettes were also regarded as “as bad as cigarettes” or “worse than smoking” (FG3). Environmental hazards like pesticides, air pollution, smoke inhalation, and coal fires as well as occupational exposure to carcinogens like asbestos were also mentioned as risk factors for LC:

“My husband was a bricklayer and he was working in a building and they knocked down a shed beside him and he said all the dust, all the people that were working in it were all covered over and he developed throat cancer a few years later and he always thought it was from that, from the asbestos.” (FG5)

Participants believed that LC can be either asymptomatic or can cause several symptoms. While some participants were able to correctly identify early signs and symptoms of LC, others were uncertain about those, or identified symptoms typically associated with late-stage cancer such as haemoptysis and weight loss as symptoms of early-stage LC. The most mentioned LC symptom was cough, followed by pain, “hoarseness ... the voice gets huskier” (FG1), lack of energy, skin colour changes, dyspnoea, wheezing, and weight loss.

3.2.3. Experiences and beliefs regarding smoking

Participants provided detailed accounts of their experiences with smoking, with some falsely believing that focus groups in the current study were aimed at smoking cessation:

“There’s only one way you’ll get me to give up cigarettes and that’s get a gun and shoot me.” (FG3)

Several participants considered smoking as a source of comfort, particularly those who “don’t have much in life ... don’t have a lot to look forward to” (FG2). Participants did, however, express concerns about the impact smoking had on their family’s health and reflected on how smoking changed between the past and present, whereby smoking was part of participants’ “culture growing up” and was perceived as “cheap” (FG4), “trendy ... fashionable ... macho ... everybody smoked, everywhere” (FG3):

“I had my first two children. There was a bed and a cradle at the end of the bed, and you could smoke [Laughter], people smoked in the hospital!” (FG5)

Several participants started to smoke at a very young age, with apparent regret, guilt, and embarrassment as a result. Participants compared smoking to alcohol and heroin addictions, with one participant reporting that she would “rather go without food to have them [cigarettes]” (FG1). Despite numerous slip-ups and ongoing cravings, ex-smokers shared success stories of smoking cessation, with the majority underpinned by a health scare:

“My partner was a heavy smoker. He’d smoke maybe 40, 50 a day. He tried his best to give them up but couldn’t. He got really bad pains ... he went to the doctor. They sent him to [hospital] ... the doctor called me in and showed me an x-ray of his lungs ... they said he was at a 30% increased risk of lung cancer if he didn’t stop smoking there and then. He’s six foot three and a big bloke. If ever I saw a man quiver with fear, and he never smoked from that moment ... they said he’d be dead within six months.” (FG2)

3.3. Help-seeking for early signs and symptoms of lung cancer

3.3.1. Triggers for help-seeking

Healthcare professionals, particularly General Practitioners (GP), were identified as the first point of contact for symptoms indicative of LC. Other sources of help included the local hospital and the pharmacist. Several participants believed that a persistent cough requires medical attention:

“They say three weeks, isn’t it? After three weeks, you go to your doctor if the cough don’t go away.” (FG3)

Participants listed haemoptysis and pain as serious symptoms requiring immediate medical attention. Of note, these symptoms are often linked to advanced LC:

"Once it [sputum] is really dark, then you're buggered ... coughing up blood, that would definitely make me think ... that would scare me. There's definitely something not right if you're coughing blood." (FG1)

In terms of changes in the voice, "hoarseness ... husky voice" (FG1) and "distinctive change in the voice" (FG2) were considered as triggers to seek help. It was apparent that participants with a family history of LC were more inclined to seek help, including those who were inherently non help-seekers:

"I might go to a doctor with a cough because of [his wife] [Laughter]. But if she hadn't gone through her experience [with LC] that she's went through and I hadn't went through with her, I don't think I would [seek help] ... you only go to a doctor when you're sick. And if you can't tell yourself you're sick, why would you go to a doctor? ... I'd just go through it." (FG4)

3.3.2. Contributors to help-seeking delay

Symptom misappraisal served as a key barrier to help-seeking. Several participants, especially women, attributed shortness of breath and changes in their voice to getting older rather than LC. Others attributed their coughing to chronic smoking and differentiated between a smoker's cough and a "cough, cough" (FG3). The "cold weather" (FG4), "dampness" (FG2), and "seasonal changes" (FG5) were also blamed for coughing and wheezing. Misappraisal of LC 'alarm' symptoms, coupled with denial and fear, impacted negatively on participants' help-seeking intentions:

"The help is there, but if you're in denial, how do they know how you're feeling?...and then when it [symptom] goes, you forget about it ..." (FG1)

Self-medicating with a cough syrup, "lozenges" (FG4), inhalers, and "cider vinegar and honey" (FG5) were identified as self-help measures for LC symptoms:

"A: I've girls and they don't smoke. I get up in the morning and my young one might be asleep in the other room. I'd cough my lungs up and all I can hear: 'Cough it up, Ma. It's only a lung! ... I can't stop coughing and I'm laughing at it [Laughter]. At the same time, I'm worried about it."

B: But have you not got it seen to?

A: No.

B: Why?

A: Because I keep getting my cough bottles." (FG2).

Many participants mentioned that if self-help measures fail to alleviate symptoms, then they "might see a doctor" (FG5). Some participants, however, did not want to seem like "hypochondriacs" (FG4) and others refused to seek medical help and listed doctors' presumed negative attitudes towards smokers, cost of healthcare, waiting time, and previous bad experiences with the healthcare system as reasons for not seeking help:

"If you get a cough, when it's lasting more than three weeks, you'll put up with it because you don't want to go to the doctors and get a rollicking. If I go to the doctors ... the first thing they say, are you smoking? ... they're very condescending ... the doctor can push practically any complaint you go to, he can put it down to your smoking ... they make you feel small ... you're a dirty smoker ... it would delay me, definitely ..." (FG3)

For some, seeking help from a doctor meant that they were ill and illness to them was associated with death:

"I wouldn't go to a doctor to save my life literally ... I would literally be at death's door before they'd drag me out to a GP ... if I get really, really ill, I figure that's it. I'm going to pop my clogs and then I'll see a doctor. They can pronounce me." (FG1)

"You wait and wait and wait. And then it's [cough] nearly gone ... a lot of people wouldn't go [to the doctor] ... my leg would have to be hanging off before I'd go to a doctor." (FG5)

Machoism and stoicism among men were identified as barriers to help-seeking. Participants in FG4 were predominantly from the same men's community organisation and believed that men "go too late. Always go too late" (FG4). When probed as to why men are accused of delaying help-seeking, one participant answered:

"They're not accused. It's an actual fact. Because they're scared. It'll be alright tomorrow ... and there's also the fact that a man will always say oh, it's only a cough or whatever it is. Probably alright tomorrow." (FG4)

4. Discussion

Participants had different and discrete pieces of information on LC, which when drawn together during focus groups revealed well documented signs, symptoms, and risk factors for LC. This is a key characteristic of pre-conscious awareness, a level of health awareness whereby individuals can be underinformed about a certain disease, have relevant yet unlinked information, or are somewhat informed but not consciously thinking about the disease unless prompted (Saab et al., 2018a).

Focus group discussions served as an opportunity for participants to share their experiences with smoking, with an apparent regret and embarrassment as a result. Encouragingly, participants believed that LC can be caught and treated early, despite listing symptoms typically associated with late-stage LC such as weight loss as symptoms of early disease. Appraisal of symptom seriousness, symptom characteristics (e. g. changes and persistence), and a family history of LC served as triggers for help-seeking.

While several participants identified healthcare professionals in general and GPs in particular as the first point of contact for symptoms of concern such as a persistent cough and haemoptysis, there was an apparent divide in participants' intentions to seek medical help. Many preferred to adopt the 'wait and see' approach and self-medicate prior to seeking medical attention. This was underpinned by concerns about the cost of healthcare (i.e. on average, the cost of a GP visit in Ireland is €60), previous bad experiences with the healthcare system, not wanting to be perceived as hypochondriacs, symptom misappraisal, fear, denial, in addition to machoism and stoicism among men. Others, however, refused to seek medical help regardless of perceived symptom seriousness, symptom persistence, and family history of LC. This was linked either to participants' perception that medical help-seeking was associated with death or GPs' condescending attitudes towards smokers, regardless of their presenting complaint.

Being treated early is a priority in LC since a diagnosis of LC at advanced stages can result in missed treatment opportunities, worse health-related quality of life outcomes, patient and carer distress, and higher healthcare costs (World Health Organisation, 2020). The nature and relative frequency of symptoms, also known as symptom signature, play a vital role in symptom appraisal and help-seeking among patients later diagnosed with a particular cancer (Koo et al., 2018; Lyratzopoulos et al., 2014; Saab et al., 2018a; Whitaker et al., 2015). Symptom signatures are described as being either 'narrow' when patients present with single identifiable symptoms such as breast (O'Mahony et al., 2013) or testicular (Saab et al., 2017) lumps or 'broad' when patients present with a range of symptoms of varying predictive value, as is the case for LC (Koo et al., 2018). Symptoms like coughing, changes in the voice, and shortness of breath are often considered as 'broad' and attributed to pre-existing lung co-morbidities (e.g. COPD) (Birt et al., 2014; Cunningham et al., 2019), chronic smoking (Smith et al., 2016), ageing, and seasonal changes (Brindle et al., 2012), rather than LC. Indeed, this was reported by current study participants.

Current smokers are more likely to experience cough, dyspnoea, and fatigue but are less likely than non-smokers to seek medical help for

symptoms indicative of LC (Smith et al., 2016). Stigma surrounding smoking, embarrassment and guilt caused by smoking, as well as healthcare professionals' negative attitudes towards smokers were identified in the present study as key impediments to help-seeking. Similarly, a recent study found that feeling judged and unworthy of medical help due to tobacco and alcohol addictions deterred medical help-seeking among at-risk individuals living in deprived areas in the UK (McCutchan et al., 2019). In fact, a survey of 93 individuals with symptoms indicative of LC in the United States of America found that higher levels of perceived LC stigma were associated with a longer waiting time (Median = 41 days) to seek medical help for symptoms of concern (Carter-Harris, 2015). This is known to have detrimental effects on early detection of LC, leading to lower eligibility for curative treatment and higher mortality (Cancer Research UK, 2020; Holmberg et al., 2010; Walter et al., 2015).

Emotional factors such as fear and denial served as other barriers to help-seeking. Such barriers were more pronounced among men and are well documented in the literature on gender specific malignancies such as prostate (Forbat et al., 2014) and testicular (Saab et al., 2017) cancers as well as non-gender specific neoplasms including oral (Noonan, 2014) and colorectal (Goodwin et al., 2019) cancers. Indeed, evidence from five systematic reviews on cancer health- and help-seeking in men suggested that men are less likely to express emotions and concerns about their own health and experience greater fear and anxiety as a result (Braybrook et al., 2011; Fish et al., 2015; Reidy et al., 2018; Saab et al., 2018b; Yousaf et al., 2015). This is more pronounced among individuals who are socioeconomically deprived as well as those with low literacy and health literacy levels (Reidy et al., 2018; Saab et al., 2018b).

A cross-cultural comparison between nine countries found that delay in reporting LC symptoms ranged widely between seven days and six months (Cassim et al., 2019; Jensen et al., 2002). In keeping with barriers to help-seeking, cultural norms such as machoism and stoicism were identified as factors that would lead current study participants to delay reporting symptoms of concerns. These findings are not exclusive to the Irish context and have been reported across various socio-cultural contexts. Indeed, the role of cultural norms in enabling or impeding help-seeking in various health contexts including cancer is well documented among Lebanese men (Saab et al., 2014), Mexican men (Saab et al., 2017), and in the United States of America among ethnic minority groups including Asian Americans (Sorkin and Ngo-Metzger, 2014), African Americans (Bullock and Allison, 2015), and Latinos (Ishikawa et al., 2010).

4.1. Implications for research and practice

Future interventions ought to address attitudinal and psychosocial barriers to help-seeking for new symptoms, such as cancer fear and fatalism (Winstanley et al., 2016). Promoting population-level LC awareness, particularly in at-risk groups is complex, difficult, and requires coordinated and sustained efforts by government and policy makers. Given that over 1000 European citizens die from LC each day, the reward for such efforts is large (Lung Cancer Europe, 2019). Future research should develop an agreed understanding of what a whole systems approach in relation to promoting LC awareness and help-seeking means. Future research should also focus on public health messaging that would help at-risk populations get diagnosed and treated early. For instance, Saab et al. (2020) found that individuals at risk for LC favoured public health messages that are "Simple, clear, and honest; Worded positively; Incorporating a shock element; Featuring a celebrity, healthcare professional, or survivor; and Targeted (SWIFT)" (p.1). Participants also recommended using broadcast together with print media within national government-run campaigns in order to promote LC awareness and early detection. One example is the UK-based campaign 'Be Clear on Cancer' which successfully increased awareness of LC symptoms, reduced barriers to help-seeking, and increased GP consultations among high-risk individuals (Ironmonger et al., 2015;

Moffat et al., 2015; Power and Wardle, 2015). This campaign was also associated with an increase in the number of patients diagnosed with early-stage LC, and a decrease in cases of advanced LC (Ironmonger et al., 2015). A recent overview of the impact of 11 national 'Be Clear on Cancer' campaigns for various cancers including LC found that these campaigns impacted positively on help-seeking by patients and referral patterns by GPs (Lai et al., 2020). It was also found that some campaigns were associated with an increase in cancer diagnoses and higher proportions of cancers diagnosed at early stages (Lai et al., 2020).

Because LC has a broad symptom signature, promoting timely help-seeking is challenging (Cassim et al., 2019). While a few patients diagnosed with LC will present with 'alarm' symptoms such as haemoptysis (Chowienzyk et al., 2020), many others will present with symptoms of low predictive value. Thus, while raising awareness of LC symptoms, complementary strategies need to be developed. Healthcare professionals play a key role in ensuring timely further help-seeking; however, a UK study exploring factors impacting on pathways prior to referral for LC found that GPs offered little guidance on how to monitor symptoms or when to reconsult (Birt et al., 2014). Another UK study investigated why symptoms indicative of early-stage LC were not presented to GPs (Brindle et al., 2012). Using discourse analysis, it was found that questions using disease-related labels such as 'pain' and 'breathlessness,' were less likely to elicit symptoms than questions that used non-disease terminology like 'aches,' 'discomfort' or 'getting out of breath' (Brindle et al., 2012). Such questions ought to be considered by healthcare professionals, especially while dealing with individuals with low levels of health literacy. In the current study, doctors' negative attitude towards smokers was identified as a key barrier to help-seeking for LC symptoms. Therefore, healthcare professionals, regardless of discipline, ought to use a non-judgmental approach during consults for symptoms of concern. Addressing such barriers has the potential to help detect LC early (Birt et al., 2014).

4.2. Strengths and limitations

To the best of the authors' knowledge, this is the first study to provide a rich account of the psychological determinants of help-seeking among high-risk individuals living in socioeconomically deprived areas in Ireland. Trustworthiness was enhanced by selecting participants from a wide geographical area, using participants' own words to elicit their views and experiences, and having several researchers code the interviews and agree on the sub-themes and themes.

This study is not without limitations. Transferability was attempted by selecting participants from different geographical locations. However, participants were recruited using convenience sampling, which increases the risk of self-selection bias. In terms of data collection, there is a risk of some participants dominating focus group discussions. This risk was minimised by using icebreakers, agreeing on focus group rules *a priori*, having two experienced qualitative health researchers facilitate each focus group, and probing individuals who were not contributing to the discussions in order to ensure that all participants' voices were heard.

5. Conclusion

This study sheds light on awareness of LC and help-seeking intentions for symptoms of concern among high-risk individuals living in socioeconomically deprived areas. Overall, awareness of early signs and symptoms of LC was sub-optimal, and participants often falsely associated alarming symptoms such as haemoptysis and sudden weight loss with early rather than advanced LC. While healthcare professionals in general and GPs in particular were identified as key sources of help for symptoms indicative of LC, a number of participants had no intentions to seek medical help and preferred to self-medicate and adopt the 'wait and see' approach. Help-seeking delay was underpinned by various psychological determinants including symptom misappraisal, fear, denial,

perceived hypochondria, and machoism and stoicism in men.

Raising awareness of LC and promoting early help-seeking is associated with higher eligibility for curative treatment and lower mortality. Such outcomes can be achieved using whole systems approaches including nation-wide public health interventions. This study also highlights the need for healthcare professionals to adopt a non-judgmental approach during consults for symptoms indicative of LC. Clinicians also ought to cater for various literacy and health literacy levels by using lay terms to describe LC symptoms, emphasizing the importance of self-monitoring, and stressing the need for reconsults and follow-up for symptoms of concern when and if needed.

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CRediT authorship contribution statement

Mohamad M. Saab: Conceptualization, Methodology, Formal analysis, Investigation, Writing - original draft, Project administration, Funding acquisition. **Brendan Noonan:** Formal analysis, Investigation, Writing - original draft. **Caroline Kilty:** Formal analysis, Investigation, Writing - review & editing. **Serena FitzGerald:** Formal analysis, Investigation, Writing - review & editing. **Abigail Collins:** Conceptualization, Methodology, Writing - review & editing. **Áine Lyng:** Conceptualization, Methodology, Writing - review & editing. **Una Kennedy:** Conceptualization, Methodology, Writing - review & editing. **Maidy O'Brien:** Formal analysis, Investigation, Writing - review & editing. **Josephine Hegarty:** Conceptualization, Methodology, Writing - original draft.

Declaration of competing interest

None declared.

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