

Eliciting symptoms interpreted as normal by patients with early-stage lung cancer: could GP elicitation of normalised symptoms reduce delay in diagnosis? Cross-sectional interview study

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ABSTRACT

Objectives: To investigate why symptoms indicative of early-stage lung cancer (LC) were not presented to general practitioners (GPs) and how early symptoms might be better elicited within primary care.

Design, setting and participants: A qualitative cross-sectional interview study about symptoms and help-seeking in 20 patients from three south England counties, awaiting resection of LC (suspected or histologically confirmed). Analysis drew on principles of discourse analysis and constant comparison to identify processes involved in interpretation and communication about symptoms, and explain non-presentation.

Results: Most participants experienced health changes possibly indicative of LC which had not been presented during GP consultations. Symptoms that were episodic, or potentially caused by ageing or lifestyle, were frequently not presented to GPs. In interviews, open questions about health changes/symptoms in general did not elicit these symptoms; they only emerged in response to closed questions detailing specific changes in health. Questions using disease-related labels, for example, pain or breathlessness, were less likely to elicit symptoms than questions that used non-disease terminology, such as aches, discomfort or 'getting out of breath'. Most participants described themselves as feeling well and were reluctant to associate potentially explained, non-specific or episodic symptoms with LC, even after diagnosis.

Conclusions: Patients with early LC are unlikely to present symptoms possibly indicative of LC that they associate with normal processes, when attending primary care before diagnosis. Faced with patients at high LC risk, GPs will need to actively elicit potential LC symptoms not presented by the patient. Closed questions using non-disease terminology might better elicit normalised symptoms.

ARTICLE SUMMARY

Article focus

- Why symptoms potentially indicative of lung cancer (LC) are not presented to general practitioners (GPs).
- Exploration of how and why some LC symptoms are normalised by LC patients.
- Use of discourse analysis to investigate communication factors involved in the non-presentation and normalisation of symptoms, and how symptoms might be better elicited in primary care.

Key messages

- Non-specific, episodic and non-progressive symptoms were normalised by patients with operable LC who felt well.
- Symptoms normalised by patients with operable LC were not presented to GPs during consultations before diagnosis. GP elicitation of normalised symptoms would lead to better-informed referral decisions.
- Closed questions using non-disease terminology were more effective at eliciting symptoms normalised by patients.

INTRODUCTION

Lung cancer (LC) is diagnosed too late in the UK and survival rates are lower than in most other Western European countries;¹⁻⁴ 86% are diagnosed at a stage when curative treatment is not possible and less than 25% survive 1 year following diagnosis.^{5 6} LC kills approximately 30 000 people a year in the UK so even modest improvements in the time to diagnosis could dramatically improve health outcomes.⁷ Despite successful national cancer screening programmes, most

ARTICLE SUMMARY

Strengths and limitations of this study

- This study used interviews to identify interactional factors which influenced symptom presentation within a research study, and it may be that symptom presentation occurs differently within everyday GP consultations; nonetheless our findings indicate that the symptoms normalised by patients within interviews were also the symptoms that consulting patients did not present to GPs. If these normalised symptoms were elicited by GPs, referral decisions would be better informed.
- Most LC patients are diagnosed with inoperable disease and so any sample of patients diagnosed with operable LC is unrepresentative of this patient population. However, research involving operable patients enables the investigation of communication about currently experienced early symptoms, rather than relying on retrospective accounts of early symptoms provided by patients with later-stage disease. Furthermore, the reasons these patients gave for non-presentation of symptoms concur with other studies of help-seeking for cancer symptoms, supporting the transferability of our findings.

tumours are diagnosed following presentation with symptoms,⁸ so it is vital to identify patients with significant symptoms early. The UK National Institute of Clinical Excellence (NICE) recommends urgent chest x-ray for patients presenting with any 1 of 10 unexplained or persistent symptoms⁹ but general practitioners (GPs) have to balance risks associated with unnecessary x-ray against possible late diagnosis, and make judgements about the relative validity of alternative explanations for symptoms. This is further complicated by the fact that LC is often preceded by chronic respiratory disease¹⁰ making detection difficult.

Recent evidence¹¹ indicates that most newly diagnosed LC patients do not recognise all of their cancer symptoms. Isolated single symptoms have low predictive value for LC¹² but patients seldom present multiple symptoms to GPs.^{13–14} Interview research has shown that LC patients normalise symptoms and delay seeking help^{15–16} and in the general population many symptoms are never presented to GPs^{17–18}. However, patients diagnosed with LC have been shown to report symptoms to their GP more frequently than controls 6–24 months before diagnosis¹² but it seems that a combination of cultural and communication processes combine, sometimes fatally, to prevent help-seeking^{13–19–20} for the full range of symptoms experienced by patients at an increased risk of LC.^{11–21}

Previous studies have identified symptom normalisation—the association of symptoms with normal processes—as an important factor in delayed LC diagnosis. However, research has not yet addressed the reasons for normalisation of LC symptoms, or investigated how normalised symptoms that are not presented to healthcare professionals might be better elicited. Structured interviewing has been used in primary care to improve psychiatric diagnosis but it is not clear if it could help to

elicit early LC symptoms. Our study examined how symptoms were normalised by patients and compared structured and unstructured elicitation of symptoms. By using a discourse analytic approach we were able to suggest ways that healthcare professionals might better elicit normalised symptoms, and investigate why they are not presented to GPs.

METHODS**Design**

Previous studies have focused on inoperable LC, but we were interested in how patients communicated early symptoms so we conducted interviews with patients awaiting surgical resection of LC (suspected or histologically confirmed). Previous interview studies with LC patients have relied upon retrospective accounts of early symptoms experienced before diagnosis. In contrast, we were interested in how patients communicate about, and negotiate the relevance of current early symptoms. In retrospective accounts patients might normalise symptoms to justify delays in seeking help so we also investigated the normalisation of symptoms that started following LC investigation. We used unstructured followed by structured interviewing to find out if this could elicit symptoms more effectively than open questions about changes in health, which have been found not to elicit all LC symptoms.¹¹

Participants

The interview sample for this study was drawn from 28 adult patients with a diagnosis of, or suspected of having, operable LC (probable: >90% or histologically confirmed) recruited to a questionnaire development study. Patients were either approached by the researcher following their first consultation with participating thoracic surgeons at a South England Trust, or were sent a letter and information sheet by the surgical team. Seventeen of 20 consecutive patients within three recruitment periods (07/2006–10/2007; 02/2008–05/2008 and 02/2009–05/2009) approached by a researcher agreed to take part. An opportunistic sample of 11 participants was recruited by letter (within the three recruitment periods). Twenty-eight patients in total were recruited and interviewed about their current and recent health and help-seeking behaviour.

This paper reports the analysis of 20 interviews with patients identified as having operable LC at the end of the study period (data from seven interviewees who received a non-malignant diagnosis after the interview were analysed separately and are not reported here. One patient diagnosed with advanced disease was also excluded). Characteristics of these 20 patients are given in [table 1](#).

Interviews

The unstructured (first) section of the interview used open questions to generate narrative accounts of

Table 1 Sociodemographic and disease characteristics of participants

Patients with operable lung cancer (n=20)	
Sex (male/female)	13/7
Age—years (median; range)	71.5; 41–86
40–49	1
50–59	1
60–69	6
70–79	10
≥80	2
Diagnosis	
Incidental	8
Symptomatic	12
Smoking status	
Current smoker	4
Ceased in the last 3 months	4
Former smoker (ceased >3 months ago)	11
Never smoker	1
Comorbidities	
Symptomatic COPD (spirometry +ve or clinical diagnosis)	8
Primary/secondary care COPD diagnosis (primary care diagnosis preceding secondary care LC investigation/diagnosis during secondary care LC investigation)	3/5
Asthma	5
Ischaemic heart disease	1
Congestive cardiac failure	1
Other cardiac problems	2
Socioeconomic status (index of multiple deprivation):	
Most deprived 50%	8
Least deprived 50%	12

COPD, chronic obstructive pulmonary disease; LC, lung cancer.

participants' experiences and changes in health status (see online supplementary appendix S1 for the interview checklist). Participants were asked to describe anything at all that they had noticed about their health, even if they thought it not relevant to their investigation for LC. The second part of the interview was semistructured and focused on the duration and characteristics of symptoms, and reasons for seeking or not seeking help. The third part of the interview used closed questions to explore symptoms and help-seeking using a list of potential LC symptoms compiled from Cancer Research UK⁶ information, NICE⁹ guidelines and a previous interview study with LC patients.¹⁵ Field notes were recorded after the interview. Interviews lasted between 1 and 2 h, took place in the participants' home (18/20) or a hospital setting (2), some involved the participant's partner (2) or carer (1), all were audio-recorded, transcribed verbatim, checked for accuracy and anonymised. An adapted version of Jefferson's transcription conventions²² were used (described in box 1).

Analysis

The first stage of analysis involved an iterative coding process using elements of the constant comparative

Box 1 Transcription notation Simplified and adapted version of jeffersonian transcribing conventions

- ▶ The speaker is identified by a participant identifier (P1–P28) followed by a colon. The participant's partner is indicated by a P following the participant identifier for example:

P24P: No I do not agree

- ▶ Round brackets indicate that the material in the brackets is either inaudible, for example:
- ▶ M: I () that
- ▶ Or there is doubt about its accuracy, for example:

M: I (could not tell you) that

- ▶ A micropause (a noticeable pause of less than 0.2 s) is indicated by a dot enclosed in brackets: (.)
- ▶ Non-verbal activities and noticeable pauses of 0.2 s or more are indicated within double brackets:

M: Yes ((laughter)) but ((pause)) I do not know

- ▶ Square brackets indicate that material has been removed, usually to protect the participant's identity, for example:

[] or [town]

- ▶ Three consecutive dots indicates that a section of transcript has been removed:

M: He ran up the hill...to the house at the top

- ▶ Square brackets between adjacent lines of speech mark the start and end of overlapping talk []

method to develop themes (initially identified by LB and checked by a second researcher, GL, who independently read a sample of transcripts and verified codes and themes). This iterative process continued until data saturation was achieved. All transcripts were revisited and deviant cases were sought.²³ Thematic analyses identified symptoms not presented to GPs, characteristics of symptoms and reasons given for non-presentation. Discourse analysis^{24 25} which considers language use in context, was used to examine how health changes were presented in patient–interviewer interactions; the discourse analysis was informed by ethnomethodology, an approach which focuses on how social action is accomplished within accounts. This enabled us to look at the implications of talks sequential and microorganisation for symptom presentation, and showed how normalised symptoms might be better elicited. We combined the thematic analysis and discourse analyses to explain normalisation and non-presentation of symptoms. The results section presents key findings about symptom presentation, including reasons for non-presentation, and the implications of question type and terminology.

RESULTS

Most participants described themselves as having good health; only four presented accounts of declining health preceding diagnosis, characterised by multiple symptoms and feeling unwell (see table 2).

Table 2 Accounts of general health**Feeling well despite symptoms**

P7	LR:	But you have had these headaches. Um. Would you say you've been feeling generally unwell?
	P7:	Not really
	P7P:	I don't know if you're feeling unwell
	P7:	No. Just odd now and again.
P10	P10:	I mean I've been quite healthy (.) I've got high blood pressure I mean I've had that ooh [>20 years]...so that's all fairly long going you know but I haven't had any actual illnesses or anything
P11	P11:	I didn't feel anything was wrong inside. I mean I had no inkling at all. Um. If I had had that x-ray, but I wouldn't have known because I (.) there was (.) I felt quite well really, it was only just you know this operation on my neck
P16	P16:	When I had the cough you know she said they'd picked up the shadow...I probably sat there for a few seconds you know trying to take it in but that wasn't, when she said that I didn't get the feeling then that there was something wrong (LR: No) because as far as I knew I hadn't got anything wrong with me, but it's so there you are.
P25	P25:	I was ill a lot last year but when I was taken into hospital and the antibiotics and the treatment I had and the months rest I had when I came home where I wasn't going to work (since then I've cut my hours down) I feel so well. But I honestly was not expecting anything like that to be said to me, because I feel so much better than I did last year... In fact I feel better now at the moment than I have done for a long time...you see once I've had my antibiotics or a bit of an inhaler I'm fine again, like I am now. So at the moment, I feel so much better that I think it's not making any sense to me.

Exceptions to feeling well despite symptoms—declining health

P17	P17:	About a year ago. "What's that? What's going wrong with me" you know and I was going like that. Everything goes tonta...feels as though I can't breathe you know and then I'd just (indicates short breaths) only for a second, and then it's gone and then I'd go back to breathing and everything like that,...And that was about a year ago, that's when I noticed "[] there's something wrong with you".
P19:	LB:	How would you describe how you feel now?
	P19:	Not perfect. No. I mean I'm tired now. This made me tired! That's shows you how and it wouldn't normally do that!
P20:	P20:	And it was afterwards I was thinking I shall be able to get back on me feet now but instead I seem to be going on a slow decline. And I started to lose weight and like I said, things started tasting funny and all this, and I'm saying "Ok". And then I'd have a cold and this cough that wouldn't go away and to be honest I used to be coughing nearly all the time and it was like having a cold 24 hours a day, seven days a week. I'd start to get really tired and as I say, I was quite busy on Tuesday and I was throwing out rubbish...and then I cleaned all me windows. And yesterday, I felt like I'd been run over by a ten ton truck! And I thought 'well this is not me' It's just not me...maybe it's mental, you know, your own brain saying 'your body's not very well, just slow down'
P26	P26P:	This last year she's deteriorated in many things.
	P26:	Well I think you can understand it though.
	P26P:	That's geriatrics for you isn't it?
	P26:	No it isn't you can understand it, when you've had a cough for this long. I mean it really takes it out of you, it really does. You try explaining that to the doctor!

Symptomatic diagnosis occurred for 13 participants and 7 participants claimed not to have any LC symptoms, describing incidental diagnoses made during the investigation of unrelated health problems, traumatic injury or screening (table 3).

Fifteen participants described further changes in health possibly indicative of LC (according to NICE guidelines/CRUK symptom list) that were not thought a reason for concern and had not been presented to their GP during LC investigations, despite the presentation of the trigger symptom or use of primary care services for other reasons. They did not associate these uninvestigated health changes with LC and they were elicited by closed questions about specific symptoms, but not by open questions about symptoms or changes in health (table 3).

Two types of symptom accounts were identified: 'symptoms as normal processes' and 'symptoms of disease/concern'. Examples of these accounts and their elicitation are provided in table 4. Participants reported uninvestigated symptoms, and produced normalised accounts of these, irrespective of patient sociodemographic characteristics, smoking status or route to diagnosis; there were no discernible differences in relation to table 1 characteristics. Exceptions appeared to arise only in the case of participants providing narratives of declining health. The association of symptom normalisation with narratives of good health is highlighted in table 3; those providing narratives of declining health tended not to normalise symptoms. Participants with incidental diagnoses also provided normalised accounts of uninvestigated potential LC symptoms, but were less likely to produce

Table 3 Patient reported symptoms and triggers to diagnosis for: (A) participants with symptomatic diagnoses who felt well or (B) provided narratives of declining health, and (C) for participants with incidental diagnoses

Participant	Triggers to diagnosis	Symptoms of concern/disease (elicited by open questions except where indicated)	Symptoms as normal processes (elicited by closed questions except where indicated)
(A) Participants with Symptomatic Diagnoses who felt well			
06	Severe cough >3 weeks	Severe productive cough (3–4 times a year of 2 days duration, for 5 years)	Increase in breathlessness and fatigue
08	Weight loss	Weight loss	*Weight loss—some weight now regained (open question)
12	Persistent cough; haemoptysis	Persistent, tickly, non-productive, mild cough; haemoptysis	Aches and discomfort: stiff neck and left shoulders; weight loss; some discomfort with coughing as time went on
016	Cough; fatigue; feeling unwell; appetite loss; weight loss	Appetite loss; weight loss – returned to normal; dry cough; feeling unwell	Increase in breathlessness; a feeling (not pain) ‘that something is going on’ in the chest’; fingers go numb
018	Chest infection; haemoptysis	Repeated cough; chest infections; regular sneezing and flu like symptoms; sore throat; fatigue; sore testicles; flushing across stomach; ache across back	Increase in breathlessness; pain in centre of chest; occasional coughing with chest infection
023	Weight loss; anaemia	Flu and a scratchy dry cough; night sweats; weight loss; anaemia; tiredness; sensitive gums; soft hair; taste change (closed question)	Twinges in fingers and hands
024	Haemoptysis; dyspnoea	Haemoptysis; night sweats	Cough; breathlessness and wheezing
025	Dyspnoea	Pains in legs and joints; fatigue, breathlessness	Chest pain recently when lying down.
027	Dyspnoea	Breathlessness on exertion	Occasional hot shooting pain in chest
(B) Participants with symptomatic diagnoses who provided decline (D) and Quest for diagnoses (Q) narratives (exceptions to the normalisation of symptoms not presented to GPs/elicited by closed questions)			
017 (D)	Chest/abdominal pain	Aching pain from indigestion; cough; pain across shoulders; aches; having less energy; breathlessness on resting/panic attacks <i>Elicited by closed questions:</i> breathlessness on walking and when lying down	
019 (D)	Anaemia	Sickness if over eat; bleeding in throat and vomiting large amounts of blood (now stopped). <i>Elicited by closed questions:</i> Pain in stomach; loss of appetite; tiredness; increase in breathlessness; pain in chest when breathing in.	
020 (D and Q)	Persistent cough	Weight loss; fatigue; taste change; hot and cold sweats; reduction in appetite (closed question)	breathlessness on physical activity; weight loss – some weight now regained (open question)
026 (D and Q)	Persistent cough; recurrent chest infections for the last 10 years	Regular chest infections and productive coughs; recent weight loss; cough triggered by eating, talking and cold air; dullish ache in back; coughing up occasional flecks of blood; fatigue and energy loss; night sweats—started at menopause but now every night (closed question)	

Continued

Table 3 Continued

Participant	Triggers to diagnosis	Symptoms of concern/disease (elicited by open questions except where indicated)	Symptoms as normal processes (elicited by closed questions except where indicated)
(C) Participants with Incidental diagnoses			
	<i>Triggers to diagnosis</i>	<i>Symptoms of concern/disease (elicited by open questions)</i>	<i>Symptoms as normal processes (elicited by closed questions)</i>
03	CXR following traumatic injury	Gradually increasing breathlessness not noticed until diagnosis.	Weight loss
07	Routine CXR on hospital admission		Fatigue
010	Routine CXR on hospital admission		Change in bowel movements, fatigue
011	CXR investigation of increased heart rate following surgery		Breathlessness; aches and pain back of left shoulder under arm and side of chest; fatigue
021	CXR investigation of weight loss and anaemia detected by health screen	Anaemia	Weight loss
022	CXR following traumatic injury		Cough; taste change; bowel changes
028	Imaging of kidney to investigate haematuria	Chest infection following investigation for LC	Breathlessness

*Occasionally, participants would provide a symptom of concern/disease account when describing previous help-seeking, but would then reinterpret and normalise the symptom if it had improved since seeking help. CXR, chest x-ray; LC, lung cancer.

symptoms of concern accounts than those with symptomatic diagnoses (see table 3).

The first results section—‘Reasons for non-presentation’—describes the main features of ‘symptoms as normal processes’ accounts (episodic/non-progressive symptoms or ageing and lifestyle-related explanations). ‘Symptoms of concern’ accounts are described in order to demonstrate exceptions to the normalisation of symptoms. The second results section examines the use of closed questions to elicit (normalised) accounts of symptoms not elicited by open questions or presented to GPs, and the implications of symptom terminology.

Reasons for non-presentation

Normal processes such as lifestyle and ageing were commonly used as explanations for not presenting symptoms to GPs. For example, breathlessness was frequently associated with being unfit, getting older, overactivity or seasonal changes rather than LC:

P18: I just put it down to me being too unfit for that particular run or circuit or down to age...I didn't associate that with anything other than me being old or unfit, one of those.

In these ‘symptoms as normal process’ accounts patients portrayed symptoms as part of everyday life processes and avoided claiming cancer causation:

LB: ..do you get any discomfort anywhere, do you have any aches or pains?

P11: No (.) only round me neck but that's just recently it's come on. I don't know whether it's to do with this problem I've got...I think it's a bit of arthritis there. And (.) you know (.) it's old age really I mean, because we do get these things I know, as you get older, (.) but just as I say this last couple of weeks it's got really really bad.

Some of those who described current ‘good health’ at odds with their diagnosis, also described episodic ill health, or long-term symptoms which had led to lifestyle changes and adaptation. Symptoms like breathlessness or cough might be more severe during a chest infection, but were not commented on if they persisted. Here, P25 did not mention breathlessness on climbing the stairs to her GP:

P25: It was getting the pains in my hands and my wrists... It was when it started here [in wrists], it started to hinder me with things...but I wasn't going [to the GP] through breathlessness ...because that had finished when I got better...You know within the week I was back to being able to breathe again. Apart from when I you know whether you get out of breath carrying the Hoover upstairs...[Husband] says “What have you been doing? []?” and I just say “Nothing just those stairs”.

The ability to improve did not appear to fit with the expected progressive pattern for a disease such as LC:

P25: ..[].once I've had my antibiotics or a bit of an inhaler I'm fine again, like I am now...Why don't I feel really, really ill now to understand this? How can you

Table 4 Comparison of 'symptoms of concern' and 'symptoms as normal processes' accounts

Symptoms of concern/disease accounts	Symptoms as normal processes accounts
<p>P6</p> <p>LR:...how [do] you think it all sort of started? P6:...we went merrily on our holiday, and the cough just got worse and worse and worse. Coughing 24 hours a day the whole of the five days we were away...I went to see a doctor [who prescribed antibiotics]...the antibiotics didn't touch it at all, so when we came back, I went to see one of my own doctors and he said 'you've probably got a chest infection. I'll give you some more antibiotics'...'if at the end of seven days it hasn't gone, then I think you'd better go and get an x-ray'.</p>	<p>LR: OK. So cough, we've done. Breathlessness? P6: ...That [the pacemaker] cured it...so at the moment I'm just left with the cough or whatever... LR: So the only times you get breathless really are then when you're coughing? P6: Yeah. LR: Do you notice (.) is there any other time now P6: Occasionally I get breathless walking up hill, but that's to be expected. P6P: And you did a bit Friday which was stress I think. P6: Yeah, Friday...It does occasionally happen when I'm sitting down...Up to recently I've been playing golf twice a week, so there can't be an awful lot wrong with me, but I do get occasionally short of breath...Just suddenly start breathing rather rapidly</p>
<p>P12</p> <p>LB: Do you want to just tell me how you came to be in Mr [] clinic and what were the events that P12: yes. I had a particularly persistent cough that wouldn't go away...although it was literally just a sort of a clearing the throat, that sort of thing...[then] I woke in the middle of the night with a cough, my mouth filled with what I thought was catarrh, went to the basin, spat it out (.) blood bright red and dark red. And it bled for about 10 or 15 minutes...and it hasn't bled since...Anyway, Monday...went to see GP...immediately gave me the ticket to go to the walk in x-ray[]</p>	<p>LB: Have you lost any weight at all? P12: A bit, mm. I would say less than half a stone P12P: We have a very active cruise, we do a lot of walking and sightseeing... P12: And then you know, we go to [UK holiday destination] most years. And we walk a tremendous amount. And I swim a lot there, don't I? So that's a very active holiday.</p>
<p>P16</p> <p>P16: I developed a cough and also that I didn't feel very well and I'd also lost some weight. I went to the doctors... [s/he] sent me for a blood test and an x-ray. And several days later [s/he] rang and said I want to see you and by this time I'd got my appetite back and my weight had come back up again...</p>	<p>P16 : I think perhaps if it had just been a cough, perhaps I wouldn't have bothered ... P16P: ... after you were feeling better, you'd put weight back on and you'd still got this funny cough, I think you could have gone on for months with that funny cough .[].. P16: LR: have you experienced any breathlessness at all? ((pause)) Or sort of thing like you P16: I play golf and parts of the course are a bit steep and I must admit I get a bit puffed going up there but yeah it's not serious I just got to take it easy... as you get older so you can't do the things you did when you were a bit younger so...quite often you put things down to change of your age and lifestyle and it wasn't that significant...I really wouldn't say I get breathless, I mean you [participant's wife] couldn't keep up with me.</p>
<p>P23</p> <p>P23: and then we got to Christmas, and we were partying etc and to be quite honest, I should have put on more weight than I did. So I started to think 'well what's going on?' About [] months ago I had a colonoscopy and had a few polyps removed etc...I started to get night sweats, totally different from hot flushes...so I thought 'oooh this is a bit odd'.</p>	<p>LB: Have you suffered from any backache or shoulder ache? P23: No. LB: Anything that you thought might be something else wrong? P23: I've had perhaps the odd twinge [in fingers] that I would put down to arthritis while doing the garden or something but—this is the annoying fact, I am quite healthy; well I think I'm quite healthy, and so no I wouldn't say I've had aches and pains.</p>

Continued

Table 4 Continued

Symptoms of concern/disease accounts	Symptoms as normal processes accounts
<p>P24</p> <p>P24: I started coughing up blood and I was already at Dr []s clinic and when I told [her] I was coughing up blood, s/he referred me to the chest clinic which is next to Oncology, so that made me feel a bit suspicious...By that time I was admitted to hospital because I was coughing up what I thought was a lot of blood, and I had a lot of problem breathing...Dr [] came over to see...and he changed my inhalers and took me off beta blockers and transformed my life!</p> <p>Incidental Diagnosis</p> <p>P3</p>	<p>LB:...when you were having breathing problems, did you ever have any wheezing with it?</p> <p>P24: Oh I do wheeze a bit in bed now. It's just you get used to the noises that your chest makes don't you really? I just think 'oh shut up'. I mean I do sleep very, very well unless I'm depressed...Sometimes just when I lie down I'll wheeze a bit and that's obviously changing from upright position to lying down but and not to any extent.</p> <p>LR: Er, so have you had any weight loss at all?</p> <p>P3: Yes. The lady [] that dances with me, she's been making off for months now that I'm losing weight.</p> <p>LR: Yeah?</p> <p>P3: Yeah. So I expect to lose weight in the summer months because you're more active over the allotments. .. plus the days are longer so you spend longer away from home so you don't eat so much, but I used to be [] stone, but when she weighed me yesterday with my clothes on, she said I was [1.5 stones less]</p> <p>LR:...you think that's just over the summer or ?</p> <p>P3: I reckon that's over the last 2 years.</p> <p>LR: Yeah?</p> <p>RES: Yeah. I reckon about the last 2 years, because I always said [1.5 stone heavier than current weight] stones is too heavy for me. And then people would say it's a beer gut</p> <p>LB: Have you had any other types of cough that have lasted more than 3 weeks?</p> <p>P28: No.</p> <p>LB: No. Would you say you had a smokers cough...</p> <p>P28: No I wouldn't actually! Would you? No.</p> <p>P28P: Not really.</p> <p>P28: No, never hacking coughs or anything.</p> <p>P28P: not a dry cough like ()</p> <p>LB: Sorry you didn't have a dry cough?</p> <p>P28P: No. No. ((pause)) No more than a lot of people have got you know. In the day and you know</p>
<p>P28</p>	

have this and get better and feel better, get ill but then you get better, well how can you do that?

These normalised accounts, by simultaneously presenting alternative non-disease explanations, such as ageing, for health changes, also helped construct the participant as healthy. Exceptions to the use of normalised accounts for uninvestigated symptoms were found in four interviews where patients had declining health (consisting of multiple symptoms and feeling unwell); two of these four patients also provided 'quest for diagnosis narratives' in which they had battled, or were still battling, for a diagnosis in the face of clinical ignorance or clinical delay. In the interviews they described most of their health changes in response to open questions (table 3: exceptions to the normalisation of symptoms), including

symptoms not presented to GPs, and did not normalise these symptoms. Even symptoms presented in response to closed questions were most often not normalised:

LB: So have you noticed any changes in breathing or breathlessness?

P19: Yes I am definitely more breathless now...I am not normally that breathless!

LB: ...and before that, how would you describe your breathlessness?

P19: Well it's never been really too bad, as long as I've had my inhalers...So it's just recently that I am beginning to get a bit more breathless and I don't think that's associated with the asthma.

Participants who presented themselves as well, normalised non-specific, non-progressive and episodic symptoms.

Using closed questions to elicit symptoms not elicited by open questions

Symptoms interpreted as normal by participants tended not to be described in response to open interview questions (tables 3 and 4) and were not presented to GPs. For example, P22, who had been investigated by his GP for a bowel disorder in the weeks before diagnosis, described an absence of symptoms he associated with LC:

P22: No as I say this was a complete shock to find out that it was on the lung. As I said, we would never have known anything about it if I hadn't fallen off that thing. I suppose it would eventually with finding this I suppose I could have lost weight or gone awful thing one to the doctor "well we'll have to find out what's causing it" but no nothing.

However, when asked specifically about long-term cough, he revealed that he had experienced a cough for 4–5 months:

P22: Well I've got a cough now. Every now and again I cough and get a little phlegm up.

LB: ... And is it something that you ever went to your doctor about?

P22: No.

LB: No.

P22: No I've never had to do that.

Accounts produced in response to closed interview questions about specific symptoms displayed two common structures for symptom reporting: 'Affirmation/Normalisation' and 'Delayed Affirmation/Normalisation'. The symptom referred to by the interviewer might either be affirmed but normalised ('Affirmation/Normalisation') or initially denied and then normalised ('Delayed Affirmation/Normalisation'). When closed questions phrased health changes in ways which did not necessarily indicate disease, the participant was more likely to answer affirmatively, or describe a health change, but then suggest the symptom was normal and not related to LC (Affirmation/Normalisation). In contrast, questions using disease-related terms—for example, 'pain'—produced an immediate denial or pause (non-response) followed by normalisation (delayed affirmation/normalisation):

LB: ...have you had any chest pain at all that you can describe?

P12: No, not really. I mean as the cough's got shall we say more persistent and sort of shall we say worse yes (.) I can feel it a bit (.) but I mean I can't feel it now...if you

look at the x-rays you think 'oh blimey!' but you wouldn't know it was there!

Reformulation of the question, involving a shift from disease to non-disease terminology, could elicit normalised accounts of symptoms—as in these examples where a change in terminology shifting from 'pain' to 'aches' and 'discomfort', and shifting from 'breathlessness' to 'not being able to get your breath' leads to elicitation of the symptoms:

Excerpt 1:

LR: Have you had any pain anywhere?

P16: None at all. No

LR: ...have you experienced any sort of aches or general sort of discomfort at all? ...

P16: No, not serious no. Well ...sometimes I have a feeling that something's going on, but it's not there all the time, you know

Excerpt 2:

LR: And have you experienced breathlessness? ((pause))

P18: ((intake of breath))

LR: Just feeling like you haven't been able to get your breath quite so easily?

P18: I would go up a couple of flights of stairs quite randomly, I would feel out of breath. I would never usually be like that, so yes, for a fit guy I would go ooh I'm breathless...but then you know I shouldn't have really bothered about it at all. But then again I have put on a slight bit of weight haven't I?

In contrast to disease-related terminology, terminology not strongly associated with disease such as 'aches' or 'discomfort' rather than 'pain' produced affirmation and then normalisation (affirmation/normalisation):

LB: And have you had any kind of aches or discomforts anywhere?

P12: Well I have been complaining about a stiff neck haven't I...and also this shoulder...but I mean I can play golf, so it's not that bad!

Similarly, the use of terms that imply 'breathing changes' or 'getting out of breath more easily', rather than 'breathlessness', produced an affirmation/normalisation response structure:

LB: ...what about breathing changes, or have you ever noticed at all that you can become more breathless than you would have done say a few years ago when you were doing something?

P11: I do now. This past (.) oh couple of months I suppose. I get more breathless if I (.) if I hurry around

too much you know...but normally you know, I don't run around! (LB: no no) If I remember my age...I don't sort of get out of (.) breathless or anything like that, it's only if I'm (.)...overdo things really.

Even though closed questions using disease-related terminology might elicit previously unmentioned health changes, closed questions using non-disease terminology did so more effectively.

DISCUSSION

Eliciting 'hidden' symptoms

Most of our sample described themselves as feeling well, despite going on to have a diagnosis of operable LC. Patients who felt well had experienced a range of health changes indicative of LC but they did not tell their GPs about many of these, despite making use of primary care services. Instead they framed these symptoms as normal features of lifestyle and ageing processes.

Delay in LC diagnosis in the UK has been blamed upon patients' failure to recognise early symptoms.²⁶ However, our research indicates that normalised symptoms can be elicited by closed questions. This runs counter to current educational and communication practice which encourages open and expansive questioning. Whereas open questioning is necessary to elicit symptoms perceived as abnormal by the patient, normalised symptoms will remain hidden. Once elicited by closed questions, normalised symptoms are often quickly obscured within accounts which provide every day explanations for health changes. This means that interviewers (or health professionals) have to probe normalised accounts to uncover hidden symptoms.

Questions using disease-related symptom terminology, such as 'chest pain', or 'breathlessness', appeared to have limited potential to elicit potential LC symptoms experienced by those with operable LC. Our analysis suggests that to get at these symptoms we need to ask closed questions without referencing disease-related symptom labels. Again this runs counter to some guidance such as the NICE referral criteria terminology which uses disease-related terms. Furthermore, contextual factors and framing of the patient's presentation are known to influence GPs' diagnostic reasoning;²⁷ patients who present themselves as well and without declining health might less likely raise concern and be referred for an investigation of potential cancer symptoms.

Recent survey research looking at public awareness of cancer symptoms in the UK concluded that levels of knowledge are low for many potential cancer symptoms.²⁸ These findings have informed regional National Awareness and Early Diagnosis Initiatives²⁹ materials designed to educate the public about cancer symptoms. It may be argued that participants in our study simply did not recognise the significance of symptoms such as breathlessness. However, participants did not report lack of knowledge as the reason for symptom normalisation

and non-presentation. Furthermore, the accounts produced by participants avoided personal claims of LC aetiology for changes in health, even if this was raised as a possibility in the interview. Alternative non-LC explanations for symptoms were provided that had social legitimacy. Our work suggests that lists of symptoms alone are unlikely to prompt patients to reveal multiple non-specific and normalised symptoms, especially when they are asked to give unstructured accounts. Furthermore, our research indicates that LC risk scores provided by symptom-based clinical decision support aids (eg, RATS³⁰) are likely to be influenced by how symptoms are elicited within the consultation.

Patient-centred medicine attempts to honour patients' experiences and concerns—presented in their own terms. It has been accompanied by more open consultation styles and a shift away from interactions directed by the health professional. For patients with potential LC this may not be the best way to elicit symptoms. Instead routine medical consultations involving those at increased cancer risk³¹ might better be restructured to enable the presentation of health changes which appear normal or unproblematic to the patient. This would require the clinician to be aware of the risk of LC in all patients presenting to their service with symptoms seemingly unrelated to LC. The elicitation of normalised symptoms in patients at increased LC risk might then facilitate GPs' chest x-ray referral decisions.

Strengths and limitations

This study used interviews to identify interactional factors that influenced symptom presentation within a research study. The systematic and in-depth study of language of the type reported in this article can lead to critical insights about conventions used in conversation that are transferable between settings.³² However, it may be that symptom presentation occurs differently within everyday GP consultations; closed questions involving non-disease terminology might not be as effective at eliciting normalised symptoms within primary care practice. Further research involving GP consultations will be required to establish how effective these methods of symptom elicitation are within primary care. Nonetheless, our findings indicate that the symptoms normalised by patients within interviews were also the symptoms that consulting patients did not present to GPs. If these normalised symptoms that are potentially indicative of LC were elicited by GPs, referral decisions would be better informed.

The participant group included patients with an established or probable LC diagnosis. This may influence symptom presentation in the interview as an LC diagnosis is already suspected. However, the normalisation of symptoms that started after diagnosis within this study suggests that normalisation is not justifying delays in diagnosis; the association of episodic, non-specific symptoms with normal processes appears commonplace for

those feeling well, even when LC provides a potential explanation for symptoms.

NICE referrals guidelines for suspected LC are based upon a weak evidence base; therefore, we do not know the likelihood that the symptoms not presented to GPs were caused by LC. However, these guidelines represent the best evidence currently available to inform referral for LC investigation. If these non-specific symptoms experienced by patients at increased LC risk were elicited in primary care, GPs would be better able to operationalise NICE guidelines. A prospective study may eventually determine the utility of these symptoms in the early diagnosis of LC and the efficacy of treatment (including surgery).

The majority of LC patients are diagnosed with inoperable disease and so any sample of patients diagnosed with operable LC is necessarily unrepresentative of the whole population of LC patients. It may be that our participants were more symptomatic in the early stages, or more likely to seek medical help, than those diagnosed with inoperable disease. However, this makes it all the more compelling that these participants still experienced a number of symptoms that they did not report. The reasons these patients with LC give for non-presentation of symptoms concur with other studies of help-seeking for cancer symptoms,¹⁹ supporting the transferability of our findings. Furthermore, our finding that those who reported good health tended to normalise non-specific, episodic and non-progressive symptoms might have implications for improving the earlier detection of other cancers where patients describe good health in the early stages and for patient-clinician communication more generally.

CONCLUSIONS

Even though LC patients are more likely to attend their GP with potential symptoms in the year before diagnosis than healthy controls, our findings indicate that many non-specific symptoms are not presented within these consultations. The use of non-disease related symptom labels in combination with some closed questioning appears to improve symptom elicitation.

Eliciting and investigating normalised symptoms—to uncover the invisible part of the illness iceberg,^{17 18} while not feasible for all patients attending primary care, would be possible for those identified as at increased LC risk.³¹

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REFERENCES

1. Laroche C, Wells F, Coulters R, et al. Improving surgical resection rate in LC. *Thorax* 1998;53:445–9.
2. Coleman MP, Gatta G, Verdecchia A, et al. EUROCARE-3 summary: cancer survival in Europe at the end of the 20th century. *Ann Oncol* 2003;14(S5):v128–49.
3. Richards M. EUROCARE-4 studies bring new data on cancer survival. *Lancet Oncol* 2007;8:752–3.
4. Imperatori A, Harrison RN, Leitch DN, et al. LC in Teesside (UK) and Varese (Italy): a comparison of management and survival. *Thorax* 2006;61:232–9.
5. ONS. Bulletin: Cancer Survival in England, 2005–2009 and followed up to 2010. 26 April 2012. <http://www.ons.gov.uk/ons/rel/cancer-unit/cancer-survival-rates/2005-2009-followed-up-to-2010/> (accessed Aug 2012).
6. Cancer Research UK. Cancer Help UK. *Information service about cancer and cancer care*. <http://www.cancerhelp.org.uk/help/default.asp?page=2964> (accessed Aug 2012).
7. Richards MA. The size of the prize for earlier diagnosis of cancer in England. *Br J Cancer* 2009;101(Suppl 2):S125–9.
8. Hamilton W, Peters TJ. *Cancer diagnosis in primary care*. Oxford: Churchill Livingstone, 2007:1–200.
9. National Institute for Health and Clinical Excellence. The diagnosis and treatment of LC (update). (Clinical Guideline 121) 2011. <http://guidance.nice.org.uk/CG121> (accessed 1 Aug 2012).
10. Young RP, Hopkins RJ, Christma T, et al. COPD prevalence is increased in lung cancer independent of age, gender and smoking history. *Eur Respir J* 2009;34:380–6.
11. Smith SM, Campbell NC, MacLeod U, et al. Factors contributing to the time taken to consult with symptoms of lung cancer: a cross-sectional study. *Thorax* 2009;64:523–31.
12. Hamilton W, Peters TJ, Round A, et al. What are the clinical features of lung cancer before the diagnosis is made? A population based case-control study. *Thorax* 2005;60:1059–65.
13. Heritage J, Robinson JD, Elliott MN, et al. Reducing patients' unmet concerns: the difference one word can make. *J Gen Intern Med* 2007;22:1429–33.
14. Barry CA, Bradley CP, Britten N, et al. Patients' unvoiced agendas in general practice consultation: qualitative study. *BMJ* 2000;320:1246–50.
15. Corner J, Hopkinson J, Fitzsimmons D, et al. Is late diagnosis of lung cancer inevitable? Interview study of patients' recollections of symptoms before diagnosis. *Thorax* 2005;60:314–19.
16. Tod AM, Allmark P, Craven J. Diagnostic delay in lung cancer: a qualitative study. *J Adv Nurs* 2007;61:336–43.
17. Wadsworth M, Butterfield W, Blaney R. *Health and sickness: the choice of treatment*. London: Tavistock, 1971:1–114.
18. Scambler A, Scambler G, Craig D. Kinship and friendship networks and women's demand for primary care. *Br J Gen Pract* 1981;26:746–50.
19. Smith LK, Pope C, Botha JL. Patients' help-seeking experiences and delay in cancer presentation: a qualitative synthesis. *Lancet* 2005;366:825–31.
20. Andersen RS, Paarup B, Vedsted P, et al. 'Containment' as an analytical framework for understanding patient delay: a qualitative study of cancer patients' symptom interpretation processes. *Soc Sci Med* 2010;71:378–85.
21. Macleod U, Mitchell ED, Burgess C, et al. Risk factors for delayed presentation and referral of symptomatic cancer: evidence for common cancers. *Brit J Cancer* 2009;101(Suppl 2):S92–101.
22. Jefferson G. Glossary of transcript symbols with an introduction. In: Lerner GH, ed. *Conversation analysis: studies from the first generation*. Philadelphia: John Benjamins Publishing Company, 2004:13–23.
23. Silverman D. *Interpreting qualitative data, methods for analysing text talk and interaction*. London: Sage Publications, 2001:1–323.

24. Roberts C, Sarangi S. Theme oriented discourse analysis of medical encounters. *Med Educ* 2005;39:632–40.
25. Roberts C. What counts as discourse analysis and what use is it? *BMJ* 2008;337:a879–1.
26. Corner J, Brindle L. The influence of social processes on the timing of cancer diagnosis: a research agenda. *J Epidemiol Community Health* 2011;65:477–82.
27. Stolper E, Van de Wiell M, Van Royen P, *et al.* Gut feelings as a third track in general practitioners' diagnostic reasoning. *J Gen Intern Med* 2011;26:197–203.
28. Robb K, Stubbings S, Ramirez A, *et al.* Public awareness of cancer in Britain: a population-based survey of adults. *Brit J Cancer* 2009;101(Suppl 2):S18–23.
29. National Awareness and Early Diagnosis Initiative (NAEDI). <http://info.cancerresearchuk.org/spotcancerearly/naedi/AboutNAEDI/> (accessed Aug 2012).
30. Hamilton W. The CAPER studies: five case-control studies aimed at identifying and quantifying the risk of cancer in symptomatic primary care patients. *Brit J Cancer* 2009;101(Suppl 2):S80–6.
31. Cassidy A, Myles JP, Van TM, *et al.* The LLP risk model: an individual risk prediction model for lung cancer. *Br J Cancer* 2008;98:270–6.
32. Heritage J. The interaction order and clinical practice: Some observations on dysfunctions and action steps. *Patient Educ Couns* 2011;84:338–43.