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BMJ Open Micro-phenomenological approach to explore the patient experience during an initial spirometry examination to diagnose COPD in general practice in France

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ABSTRACT

Objectives To explore the patient experience of a spirometry test used to confirm chronic obstructive pulmonary disease (COPD) diagnosis in patients with suspected smoking-related COPD.

Design This is a qualitative study, performed with open interviews in adults following a routine spirometry test to confirm COPD diagnosis. Data were analysed with a phenomenological-inspired micro-phenomenology approach.

Participants Eligible patients were recruited through their general practitioner, 10 were interviewed.

Setting Primary care in Centre-Val-De-Loire area, France, in 2018.

Results Participants reported the spirometry test experience as being unfamiliar but gave meaning to the symptoms they experience. Participants expressed a desire to perform the test well and a willingness to confront their state of health. After the spirometry had been completed and the results announced, participants moved through stages of grief from their pre-spirometry self and symptom perception to a state of acceptance. Overall, participants expressed a narrative of an evolving cognitive and corporeal awareness during this spirometry experience. The verbatim quotes describe a cognitive rupture with their chronic illness usually considered as a 'way of life'.

Conclusions A spirometry test goes beyond a diagnostic value, providing patients with an opportunity to gain awareness of their own state of health, reframe their breathlessness-related limitations and thus begin to accept the disease. These awareness gains may be considered as small steps towards health behavioural change. Spirometry may have educative potential and support lifestyle changes.

INTRODUCTION

Chronic obstructive pulmonary disease (COPD) is currently the third leading cause of death in the world, and in France, an estimated 3.5 million people are affected. The annual social cost is €3.5 billion and mortality is 16 000 patients per year.^{1,2} This burden made COPD a public health priority topic in 2018.³

Strengths and limitations of this study

- To avoid subjective bias, the researchers coded the verbatim quotes separately and then cross-checked their findings.
- This interview method allows participants to express themselves freely about their real-life experience; thus, it decreases the risk of sociability bias and increases the internal consistency.
- The use of spirometry is not widespread in primary care in France, which may account for the small number of participants.
- The elicitation interview method may have been limited in this specific population due to participant low level of insight into the procedure. This may account for the unusually short interview length compared with the descriptive phenomenological approach.

COPD is a complex, systemic disease that progresses slowly and insidiously, gradually reducing physical activity levels. Phenomenological studies suggest that COPD involves physical, social, psychological and emotional components, meaning patients adapt their lifestyle to their respiratory status over time.⁴⁻⁶ This adaptive strategy draws people living with COPD into a downward spiral of physical and psychosocial deconditioning that greatly impacts their quality of life.⁷ Also, the slow disease progression enables many patients to avoid accepting their declining health and eventual mortality.⁸ Although some people with COPD engage coping strategies, many do not and instead, become psychologically and emotionally distressed, continuing to deny their ill health.⁹ Most patients express 'accepting' COPD as a 'way of life'.¹⁰ Using this acceptance strategy means that people adapt their daily living activities to their reducing breathing capacities. However,

this strategy reinforces the denial coping mechanism, preventing patients from becoming aware of their disease and identifying opportunities^{4 11–13} which may slow down further deterioration of their condition. For an individual to become aware that their feeling of being ill is a disease, they require a clear diagnosis. Understanding the diagnosis allows individuals to accept the symptoms and act to slow the progression associated with COPD.^{14 15} Breaking with denial and recognising personal limitations related to their symptoms forces patients to deal with the illness.^{6 16}

Disease acceptance is the first step towards engaging patients to manage their breathlessness.¹⁷ When patients are empowered to manage their health, they experience less exacerbation, adhere better to medication and have better quality of life.^{17–19} Some health behavioural change models examine patient experience as part of the decision-making process with an identified tipping point of opportunity for change.²⁰ One tipping point for patients with a chronic condition is the minimum belief needed in order to make changes that improve their quality of life. For example, the importance of the problem in the patient's life, the level of opportunity in their lifetime to take action and self-confidence in their ability to achieve this change.

Spirometry is required to diagnosis COPD. When COPD is diagnosed early, patients report less exacerbation compared with undiagnosed patients.^{21 22} Thus, using spirometry for early COPD diagnosis is justified in primary care.^{23–25} Although the validity and feasibility of spirometry for COPD diagnosis have been shown in primary care,^{26 27} its use is suboptimal in France, requiring a motivated clinician^{28–30} and patient collaboration to correctly perform the forced exhalation manoeuvre.

Little is known about the effect the first spirometry test has on raising patient awareness about their symptoms in primary care. Although concepts such as 'Lung Age' have been used to foster smoking cessation,³¹ spirometry has yet to be shown to motivate patients to change their behaviour and accept their diagnosis. These techniques may be useful for a stepwise improvement in the delivery of care to patients with chronic respiratory conditions.

The aim of this study was to explore the patient experience following a spirometry test in primary care to determine if this experience could meet criteria for health behavioural change.

METHODS

Study design

The phenomenological interview

Micro-phenomenology is a novel analytical technique to measure the introspective, personal view of an experience by exploring visual, emotional and auditive experiences around the reference event.^{32–34} This approach was inspired by the more complex phenomenological approach, which challenges the concept of disease, whereby signs and symptoms are mediated by cultural ideas of illness.³⁵ The interview technique was inspired

by an explanatory interview developed by the French psychologist Pierre Vermersch. Using this technique to elicit the patient experience, the interviewer evokes a past experience within the interviewee, who in turn re-enacts the experience during an open interview. This technique allows researchers to explore the reference event from the pre-reflected consciousness (implicit) to the thoughtful consciousness (explicit).³⁶ This micro-phenomenology technique has previously been shown to evoke experiences commonly encountered in primary care, such as acute onset of pain in chronic pain diseases.³⁷

Participants

Ten adults who had spirometry-confirmed, smoking-related COPD participated in this study of which, six were men and four were women, aged between 40 and 76 years (mean 59). The mean age was 59 years (range: 40–76 years) and lung function (mean forced expiratory volume in one second) was 62% (range: 35%–85%). Seven were active smokers and three were ex-smokers and a smoking history that ranged from 10 to 40 pack-years (mean 26). Participants were excluded if they had a history of asthma, advanced heart failure, pre-existing COPD diagnosis, did not speak French or had dementia. The snowball sampling method was used to ensure a diverse selection of patient characteristics was obtained: age, gender, socio-economic status. Six participants lived in a rural environment, four had retired, five were in current employment and one was unemployed. Among those with current or previous employment, six were manual workers, three were office-based workers and one was a health professional. All but three participants were being treated with inhaled therapy for their respiratory symptoms.

Patient recruitment

Patients with suspected COPD were recruited by general practitioners (GPs) in two rural and one urban general practice in the Centre-Val-de-Loire region of France. All GPs were experienced with spirometry and were practising in multidisciplinary care centres. Once a GP had informed an eligible participant about the study, the researcher (AB) approached them by telephone. All interested participants took part in the interviews.

Study procedure and data collection

The research team (MB, AB and MP) developed an open interview guide with phenomenological prompts and probes focused on the spirometry test experience. A pilot test was unnecessary for an open interview. Patients were not asked to explain or make sense of the reference event. Speech authenticity was respected, and follow-up prompts were intended only to encourage participants to recount their personal experience. Data saturation was not required for this micro-phenomenological approach as the objective was to identify and understand shared features in this lived experience. Thus, a sample size of 10 patients was considered sufficient to elicit common structures.

The interviews were conducted up to 3 months after the spirometry test was performed and took place in the patient's usual primary care setting. The investigator (AB) introduced himself as a medical student specialised in general practice. He had no previous connection with the participants. After providing their consent to participate in the study, participants were asked to describe their thoughts at three specific time points: before spirometry, at the time of spirometry and at the announcement of results. The interviews were performed once and recorded with a mobile phone, the verbatim quotes transcribed, anonymised and labelled. Additional field notes were made during the interviews and included in the analysis. The participants were given the opportunity to stop at any time and were informed that their responses and personal information would remain anonymous. No time limit was expected for the interview apart from the defined time points. The interview was structured according to Vermersch.³⁶

Reliability criteria

The investigator AB was trained in micro-phenomenological technique and all researchers involved in data collection and analysis had previous experience in conducting qualitative research studies.

To avoid subjective influence, investigators remained impartial, laying aside theoretical knowledge, a priori and the expected answers. Analysts remained impartial and willing to be surprised by the results.

Data analysis

The analysis was performed in accordance with the process described by Valenzuela-Moguillansky *et al.*³⁸ The coding framework consisted of six steps as outlined in table 1. Before data analysis, investigator triangulation was performed to obtain a comprehensive picture. The results a priori were elucidated from four investigators: two GPs, one physiotherapist and one narrative medicine specialist. The investigators used an iterative process and were careful to allow the themes to emerge from the data. After consensual discussion among investigators, these

data were converged and grouped into three categories, according to the description criteria for experience in the phenomenological approach (cognitive, perception and feeling).³⁹ These three categories provide a conceptual framework in which patients make health behavioural changes.

Patient and public involvement

Patients and/or the public were not involved in the design, or conduct, or reporting, or dissemination plans of this research.

RESULTS

Ten people agreed to participate and were interviewed. The interviews were carried out between 26 July 2017 and 18 March 2018 with a mean duration of 27.15 min (range: 20–37 min). The transcripts were numbered EX–EY and the emergent categories are presented here in chronological order before, during and after the spirometry text experience. To illustrate the context for the reported experiences, the emergent categories derived from the data are presented chronologically: before, during and after spirometry, in the present tense, including only meaningful words.

Before spirometry

Before their first spirometry, the participants described feeling as if they were getting involved in a mysterious experiment. Although willing, they felt apprehensive about discovering the reason for their ill health. "There's a moment you have to...dot the i's and cross the t's, see what happens, so here we go...let's go" (E1). Discovering the device was a new, unusual experience for these patients: "I was not used to doing this ... these tests ..." (E3), "...because I did not know that stuff" (E8). For some, having confidence in their doctor made the feeling of uncertainty for the future diagnosis more bearable. "... after all, we never know what is in store for us, ... so we look everywhere but ... it's my doctor, I'm confident ..." (E7). Patients also reported feeling apprehensive about

Table 1 The six steps of coding framework

Steps	Objectives
Step 1: listen, read and reread the interview	Data immersion and entry into the participant's world (comprehensive approach)
Step 2: initial annotations	Produce a set of comprehensive and detailed notes and comments on the data considering the semantic content of the speech as well as the language used by the participant
Step 3: develop emerging themes	Produce themes reflecting both the participant's discourse and the analyst's active interpretation process
Step 4: identify links between emerging themes	Produce a structure capable of reflecting the most interesting and important aspects of the participant's story by grouping and linking the themes produced in the previous step
Step 5 and 6: move on to the next case and search for links between the interviews	Apply steps 1–4 on a new interview then search for links between the different interviews selected for analysis

breathing into the device. “Then suddenly I was told: ‘Ok, we will have you blow in the machine’” (E1). “In fact, it’s super scary! I say to myself I hope it’s okay ... I’m not going to be too sick ...” (E9). “We know but we do not want to know; we have strong doubts” (E1). Patients also experienced somatic symptoms of stress before breathing into the device. “I’m starting to stress” (E10), “my heart is beating at 150” (E1). “I had the feeling my whole body was tense” (E1). “Few sweats and knots in the stomach” (E9). “My stomach is tying itself in knots and I say to myself, ‘this is happening ... well, what are we going to find?’” (E10). Patients also expressed feeling stressed about the expected outcome of the examination. “We know, but we don’t want to know; we have strong doubts” (E1). “I tell myself: ‘I hope it’s okay ... I mean ... I’m not going to be too sick’ ...” (E10).

During spirometry

The participants described the spirometry test as being strange, unsettling and painful. The emergent lexical field portrayed the spirometer as discovering a new and unimportant object. “It is a tool” (E3), “...he makes me blow in the, I don’t know what...” (E4), “I blow again in the thing” (E4). As an appropriation strategy, some patients give the device a nickname. “I call it a toy ... precisely which are design to do the test...to blow in ... in the trumpet ...” (E8).

The participants described the forced expiratory manoeuvre as an uncomfortable experience. “This horrible thing really tried me” (E8). “It makes me cough like an animal” (E4). “It’s too big for me” (E4). “I felt like there was no resistance ...in the device” (E2). Some even described the manoeuvre as being painful to exhale so strongly. “It hurts my head to have blown like that...” (E5). “It makes my head turn...” (E7). Nevertheless, patients were engaged and motivated to achieve the best result possible. “I tried to blow out and hold as long as possible ...” (E2). “I think I’ve reached the end” (E5). “I have no more oxygen in my ... in my lungs” (E6). “I’m empty...” (E3). “I breathe until I feel that I can’t breathe any more” (E3). Some felt a desire or an anxiousness to perform well. “I feel like I’m not good at blowing” (E2). “As long as I stand tall... well in the rank, and the results are good, that’s fine” (E5).

Participants expressed having a heightened awareness about their health status.

The participants voiced that spirometry made them conscious that there was a problem with their health. “I understand it ... since I felt it ...” (E3). “I’m not surprised ...” (E7). “It affects you” (E1). Furthermore, they expressed a realisation of their limitations. “By the finding, I had trouble expelling a lot of air” (E3). “...the inside of it ... makes a noise ...” (E9). “I say to myself ... I’ve lost my breath ...” (E9). “Well, it’s when I heard my lungs that ... that I knew I did not blow well” (E9).

After spirometry

The participants also voiced being apprehensive about getting the results and felt conflicted between wanting

to have a diagnosis and being afraid of the diagnosis. Feelings of grief were expressed when asked to recall the moment the spirometry results were announced. These expressions of grief naturally emerged according to the stages described by Kubler-Ross:⁴⁰

Shock

I tell myself it was not good news ... (E3)

Well, the end of consultation... the rest was much less important for me ... (E3)

Denial

For me it’s not suitable ... it’s the system I do not say the device ... it’s the system ..., well after I say ... he is kidding. (E8)

I thought this was a joke. (E5)

Sadness and cognitive saturation

Well, I tell you I felt shame, sadness. (E1)

I was glad when it ended, I think I had had enough for that day, I had heard enough. (E1)

Anger and shame

It’s very distressing (tears)... but there is more to this side ... this mortifying side lasts longer. (E1)

If you are told that you have weakness somewhere... it’s a little upsetting. (E2)

I’m afraid that ... I’ll have cancer. (E10)

Well, it breaks my heart ... I have a friend who died of that because of cigarettes ... a heart attack. (E6)

Expectation of more information

I think ... I was expecting more explanations ... (E7)

I’m thinking ... I’m going to try to smoke less ... (E9)

I’m thinking about stopping smoking... (E6)

I think I should try to quit. (E10)

I tell myself that I smoke too much. (E9)

Pain and depression

It is like a sentence of the condemned. (E1)

Rebuilding

You know, when you have to go to war... well, it’s a bit similar. (E1)

I can cope with COPD. (E1)

I tell myself she’s right. (E6)

Well... I feel like I’m starting to realise. (E10)

Now, I can look to the future. (E1)

The consultation even enabled some participants to accept the disease

There’s a kind ... of ... I would call it: acceptance. (E1)

Well, it is a diagnosis that I expected. (E7)

He tells me it’s a ... it’s a chronic bronchitis. (E9)

The consultation that follows the spirometry test is also a meaningful part of the patient’s experience.

He concludes that I do not have asthma (...) it somehow reassures me. (E3)

I felt a little improvement with his medication ... so what happens to me is that well ... that reassures me a little bit. (E3)

DISCUSSION

Summary of findings

Before the spirometry experience, the participants were willing but expressed feeling apprehensive about discovering the reason for their ill health. During the spirometry experience, the participants described the spirometry test as being strange, unsettling and painful. After the spirometry experience, the participants also voiced renewed apprehension about the results and felt conflicted between wanting to have a diagnosis and being afraid of the diagnosis.

We observed that these elicited reports of the spirometry experience combined three characteristics of health behavioural change models: importance, opportunity and confidence.⁴¹ Importance refers to the magnitude of the problem for the patient, opportunity refers to the timing to take action and confidence is the self-belief in success. Combining these three behavioural change characteristics motivates people living with a chronic disease to engage in self-management with shared decision-making.^{42 43}

Our findings highlight that apart from being a diagnostic tool, spirometry is an important step for participants. In fact, the participative nature of the spirometry test, elicited as a sense of urgency, encourages the patient's drive to become actively involved in their health. This active participation was illustrated by the desire participants expressed to perform well: "I tried to blow in and hold for as long as possible" (E1). Spirometry also enabled the participants to confront the state of their own health and their limits. "I understand," "I heard my lungs," "I'm not surprised." These results show that participants understood their lungs were the source of their ill health, unlike other qualitative research studies using thematic analysis, which suggested that patients passively accepted and resigned themselves to their circumstances.¹¹ When patients actively participate in measuring their physical limits, they gain awareness about the impact of the disease. "What are we going to find?" (E10). This shows that the patients understand the importance and magnitude of their disease as described in the motivation interviewing model.⁴⁴

We also found that participants expressed this spirometry experience as an opportunity to act. They described the experience as being uncomfortable but resembled the symptoms with which they live daily. These illness perceptions are meaningful as they refer to their own life experience. After spirometry, patients expressed a cognitive intention to stop smoking. "I should try to quit" (E10).

Lastly, although the participants expressed feeling strange about the spirometry test and were forced to struggle with their symptoms, they gained confidence in their ability to manage their health with the support of their doctor, "We never know what is in store for us, but ... it's my doctor, I'm confident" (E3). Also, verbatim quotes from the debriefing indicated that participants were confident in their ability to reduce or even stop smoking, which is an important step in the process of changing behaviour.⁴¹

Strengths and limitations of the study

To our knowledge, this is the first phenomenological study on spirometry for COPD conducted to date. Micro-phenomenological analysis from open elicitation interview has been used in the fields of psychiatry, pedagogy and neuroscience, however few studies have applied this technique in primary care.³⁴

Although this micro-phenomenological-inspired analysis is limited by the qualitative nature of the study, the open elicitation interview gave us access to participant emotions during spirometry in a primary setting. Although we were aware that researcher attitudes may have influenced the data interpretation, investigator triangulation reduced this possibility of bias. Also, by employing an open elicitation interview, participants were able to retell their experience as they lived it, in their own words. This decreased the potential for sociability bias and increased the internal consistency.

The time frame explored through the interview was limited to the short period around the spirometry examination, and some participants had little insight into the spirometry experience. This may account for the unusually short interview length for a micro-phenomenological approach, which typically lasts for at least 1 hour. Other elements surrounding the spirometry experience such as the context of realisation or the relationship with the health professional involved in the spirometry test experience could have been further explored.

Although the sample size was small, it was within the recommended limits for the descriptive phenomenological approach and may have been restricted by the limited use of spirometry in primary care in France.^{25 45}

Thus, the experiences the participants reported appear to stimulate the right combination of these three characteristics of health behavioural change models.⁴¹ This suggests that spirometry can instigate health behavioural change and may be a key moment for patient empowerment in COPD.

Although there have been no other reports of spirometry experience using micro-phenomenology, our results are consistent with the life history of a patient with COPD and may provide a breakthrough point for change. These findings indicate that a change occurs when people with confirmed COPD have a spirometry test. These people change from a state where they are willing but apprehensive about the diagnosis, and advance to a state of acceptance. This process is similar to the stages of grief

described by Kubler-Ross and reformulated by Boer⁴⁶ in the COPD and corresponds with the stepwise processes of the change model described by Prochaska and Velicer.²⁰

The micro-phenomenological-inspired approach adopted in this study enabled us to explore the participants' emotional experience during spirometry in primary care settings with the empathic support of their own GP. Our data on perception, cognition and emotion suggest that spirometry testing may be an optimal time for primary care clinicians to support their patients to make behavioural changes, such as increasing physical activity or reducing smoking. This reflects similar accounts where lung function testing is an opportune moment to change patient attitudes toward smoking cessation.^{47 48}

Comparison with existing literature and implications for clinical practice

The unique choice of combining a micro-phenomenological analysis and an open elicitation interviewing technique highlighted that spirometry is not only a useful diagnostic tool, but also a tool to empower people with COPD to drive behavioural change. This is consistent with other studies that have explored the patient experience of a technical act where patients were more concerned with the attitude of the team and the personal attention they received.⁴⁵ Moreover, a recent paper on mobile health in COPD showed that personalised feedback is needed to engage patients.⁴² These results highlight the various fields involved when patients experience a medical act. This suggests that there is a need to investigate the patient experience of other technical gestures in primary care to promote self-confidence in patient self-management, facilitated by a health professional's caring attitude. Physicians should allow adequate time and listen to patients' stories, and thus develop a shared understanding of the temporal aspect of the illness and patients' needs and concerns.

CONCLUSIONS

Although this study is exploratory, our findings suggest that spirometry gives patients with COPD an opportune support for behaviour change. Spirometry may allow people living with COPD to recognise their own limitations, adapt their activities to their lung capacity and to modify behaviour.

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Data availability statement Data are available upon reasonable request. The full dataset is available from the corresponding author.

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