Motivation and preferences for learning of patients with COPD or asthma and their significant others in pulmonary rehabilitation: a qualitative study

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Curiosity and personal values and goals emerge as driving factors for learning motivation in pulmonary rehabilitation in patients with COPD or asthma and their significant others. This group expresses diverse information needs and learning preferences. https://bit.ly/433v6vW

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Abstract

Introduction An in-depth understanding of educational needs from the perspective of learners in pulmonary rehabilitation is lacking. To improve learning in pulmonary rehabilitation, understanding of factors that induce or enhance intrinsic motivation in both patients and their significant others is needed. Therefore, this study aims to gain in-depth understanding of what motivates patients with COPD or asthma referred for pulmonary rehabilitation and their significant others to learn and what their preferences are for education.

Methods For this qualitative study, a sample was taken from a previous quantitative study. Data was collected through one-time face-to-face semi-structured interviews. The interviews were transcribed and independently analysed by two researchers using thematic analyses.

Results Twelve patients and four significant others (56% female; age: 63±11 years) were interviewed. Participants expressed a variety of information needs and learning preferences. Subthemes that emerged within the theme of motivation for learning were: 1) curiosity, such as knowledge gaps and hope for new information; and 2) values and goals, such as own health, caring for loved ones and spending time with family.

Discussion To enhance intrinsic motivation for learning within pulmonary rehabilitation, autonomy of individuals should be supported by offering several learning topics and education adapted to preferences, while curiosity should be fostered by targeting information needs. Moreover, health education programmes should match with the personal values and goals of individuals, such as own health, caring for loved ones and spending time with family.

Introduction

Patient education is a paramount component of pulmonary rehabilitation. Currently, this is mostly offered using a one-size-fits-all approach [1] and, despite the important role of significant others in the management of chronic diseases, the focus remains solely on patients [2, 3]. Including significant others into educational interventions for patients with a chronic disease is important as it can positively impact psychological wellbeing and enhance disease management for both patients and their significant others [4, 5]. Educational needs in patients with COPD or asthma and their significant others are diverse [6–8],

underlining the need for personalised education. However, a thorough understanding of learners' educational needs in pulmonary rehabilitation is lacking. To improve learning, in-depth knowledge is needed about what drives patients in pulmonary rehabilitation and their significant others to learn about concepts related to pulmonary rehabilitation. Drive is characterised as human motivation [9], while a behaviour, such as learning, can be driven by intrinsic and extrinsic motivation. The former is what motivates a person to pursue their important life goals, such as physical and psychological wellbeing, while the latter is controlled by others and is beyond the person's own needs. Having intrinsic, rather than extrinsic, motivation increases the likelihood of an individual succeeding in the desired behaviour. According to the self-determination theory, intrinsic motivation can be improved if individuals experience feelings of autonomy, competence and relatedness [10]. Furthermore, motivation for learning can increase by fulfilling attention, relevance, confidence and satisfaction in education [11].

To the best of our knowledge, no in-depth research has been done to understand the perspectives of patients with COPD or asthma and their significant others about what drives them to learn about concepts related to pulmonary rehabilitation. Therefore, to improve learning in patients and their significant others, an understanding of the factors that induce or enhance intrinsic motivation in learners is important and needed.

This study aimed to gain an in-depth understanding of what motivates patients with COPD or asthma referred for pulmonary rehabilitation and their significant others to learn, and what their preferences are for education.

Methods

Study design

This observational study was performed using a cross-sectional qualitative research design. Data was collected between November 2022 and March 2023 at Ciro, a centre of expertise for patients with chronic pulmonary diseases in Horn, The Netherlands. This study received ethical approval from the Faculty of Health, Medicine and Life Sciences Research Ethics Committee of Maastricht University (FHML-REC/2022/106) and was conducted in concordance with the Consolidated Criteria for Reporting Qualitative Research (COREQ) [12]. All participants provided written informed consents

Population and eligibility criteria

A sample was taken from a previous quantitative study [6] comprising 121 patients with COPD or asthma referred for pulmonary rehabilitation and 67 of their significant others. Purposive sampling was used to ensure that the following characteristics are represented at least once: age categories below and above 60 years; both female and male genders; varying educational levels, categorised as low, medium, and high; and individuals diagnosed with either COPD or asthma. Eligible patients and their significant others who participated in this previous study and were willing to participate in follow-up research were approached and informed about this qualitative study during their first week of inpatient pulmonary rehabilitation. Patients were approached in-person by the researcher. Their significant others were approached by the researcher *via* an information letter given *via* the patients. Participants had a diagnosis of COPD or asthma and were referred for pulmonary rehabilitation or were a significant other, were aged 18 years or older, were able to participate in an interview and understood Dutch. Significant others were defined as "persons who spent most time with patients and/or provided most of the care, assistance and support" [13, 14]. The sample size was primarily dependent on the researchers' interpretative evaluation of the adequacy and quality of the data to address the research question during data collection [15]. Adequacy and quality were based on the comprehensive coverage of all topics outlined in the interview guide.

Data collection

Data was collected through a one-time face-to-face semi-structured interview. A self-developed flexible interview guide was used (Supplementary file 1). Questions measuring motivation for learning were based on the self-determination theory [10] and the attention–relevance–confidence–satisfaction (ARCS) model [11]. Educational preferences encompassed both information needs and learning preferences, which were assessed by inquiring about specific aspects, such as the desired information, preferred learning style, and preferences regarding digital learning, optimal learning moment and suitable learning environment. A.J.L. Muijsenberg conducted the interviews in a quiet and private setting at Ciro. Interviews were conducted between the fourth and sixth week of the 8-week pulmonary rehabilitation programme. Participants have gained some experiences with educational aspects during pulmonary rehabilitation by this stage in the programme, which facilitates a more informed and reflective interaction with participants to capture their experiences and perspectives. A phone interview was offered to significant others if they could not be physically present. Interviews took around 30–60 min and were audio recorded and transcribed verbatim. The data extracted

from the electronic patient file and the additional measures of the quantitative study [6] were used to describe the study population, including diagnosis; age; sex; educational level; health literacy (Dutch Health Literacy Survey–Europe Q16), with a cut-off ⩽12 points considered as low health literacy [16]); health status (COPD Assessment Test [17], with a cut-off ⩾10 points considered as highly symptomatic [18] for patients with COPD; Asthma Control Test [19], with a cut-off ⩽19 points considered as poorly controlled asthma [20], and Asthma Control Questionnaire [21], with a cut-off ⩾1.5 points considered as poorly controlled asthma [20] for patients with asthma); psychological profile (Supplementary file 2) [22] and learning style preference (unimodal: visual, aural, read/write and kinaesthetic (learning by doing); multimodal). It is important to note that participants' preference for learning style was also inquired about in the current study.

Data analyses

The characteristics of the sample were described using means with standard deviations or numbers with percentages, as appropriate. The transcribed interviews were independently analysed by A.J.L. Muijsenberg and S. Haesevoets using thematic analysis with a semantic approach [23, 24]. The content was analysed through inductive coding using the Atlas.ti software (ATLAS.ti Scientific Software Development GmbH, v9). The first step was open coding of three transcripts, in which A.J.L. Muijsenberg and S. Haesevoets independently searched for as many relevant keywords as possible [25]. These could be keywords that had been extracted from theory beforehand, but also new keywords. The second step was targeted coding and comparative analysis which focused on central topics and ordering [25]. Underlying dimensions were created by abstracting keywords around a topic into similarities, differences and variations. The third step was to develop an overview of the categories which resulted in a fixed analytical framework [25]. A.J.L. Muijsenberg and S. Haesevoets discussed the coding and reached consensus about it. Selective coding of the remaining transcripts was based on this fixed analytic framework (Supplementary file 3) and the two researchers discussed these afterwards [25]. Quotes were displayed with the participant's codes, in which codes with the letter "P" represented patients and codes with the letter "S" represented significant others. Quotes have been translated from Dutch to Englisch using a forward–backward translation procedure. To demonstrate information needs by patients and significant others, word clouds were generated (www.wordclouds.com). The bigger and bolder the word appears, the more often it was mentioned. When referring to both patients and significant others collectively, the term participants is used. When specifically addressing the group of individuals diagnosed with COPD or asthma, the term patients is used, and when specifically addressing the significant others, the term significant others is used.

Results

Participants

Thirty-one participants, of which 10 were significant others, were approached for interview. In total, 16 participants, of which four significant others consented to participate and were interviewed (table 1). One phone interview was conducted with a significant other. All patients with COPD were highly symptomatic and all patients with asthma had poorly controlled symptoms.

Motivation for learning

Subthemes that emerged within the theme of motivation for learning were: 1) curiosity, such as knowledge gaps and hope for new information; and 2) values and goals, such as own health, caring for loved ones and spending time with family (figure 1).

Curiosity

Knowledge gaps

For most participants, motivation for learning was induced by curiosity that was driven by knowledge gaps.

> Sometimes I think, it's just very important: why are you doing this or why is it better to do it this way? If I know why things can be done better this way, then it's also easy to do because then you know the goal behind it. (P028)

> What excites me about the lessons… just that you learn a little more. That you yourself, you are an expert by experience, but you still have questions about everything that has to do with your illness and everything. (P116)

> I've always been someone who likes to figure things out. How something is and why something is. (P014)

> I'm kind of curious so I'd say anything. Yeah, you know… I just want to know everything. Yes, I think it's all part of it. If you know something half, it won't help you much. (S088)

TABLE 1 General characteristics of patients and significant others

General characteristics	Patients (n=12)	Significant others (n=4)
Diagnosis and severity		
COPD	9 (75.0)	
Asthma	3 (25.0)	
Age, years (mean±SD)	62.9±11.9	61.5±9.0
18–40	1 (8.3)	0
41–60	2 (16.7)	1 (25.0)
61–80	9 (75.0)	3 (75.0)
⩾81	0	0
Female sex	6 (50.0)	3 (75.0)
Educational level		
Low	3 (25.0)	0
Medium	6 (50.0)	3 (75.0)
High	3 (25.0)	1 (25.0)
Health literacy[#]		
Low	2 (16.7)	1 (25.0)
Adequate	8 (66.7)	3 (75.0)
Psychological profile		
Fighter	2 (16.7)	3 (75.0)
Analyst	5 (41.7)	1 (25.0)
Optimist	3 (25.0)	0
Sensitive	2 (16.7)	0
Learning style unimodal	4 (33.3)	3 (75.0)
Visual	0	0
Aural	2 (16.7)	2 (50.0)
Read/write	1 (8.3)	1 (25.0)
Kinaesthetic	1 (8.3)	0
Learning style multimodal	8 (66.7)	1 (25.0)

Data originates from a prior study involving a subset of participants [6]. Data shown as n (%) unless otherwise specified. [#]: patients, n=10.

Hope for new information

For some patients, motivation for learning was induced by curiosity that was driven by the hope for new information, such as new techniques or new information about their disease which could help or might cure them.

> I just want, maybe that's something to hold on to, maybe that's the last straw, that something will turn up that will make me better, when I kind of know it won't. Maybe I will find something from which my illness will go away. (P047)

> If there are new things that indeed add something, then I really want to learn. (P099)

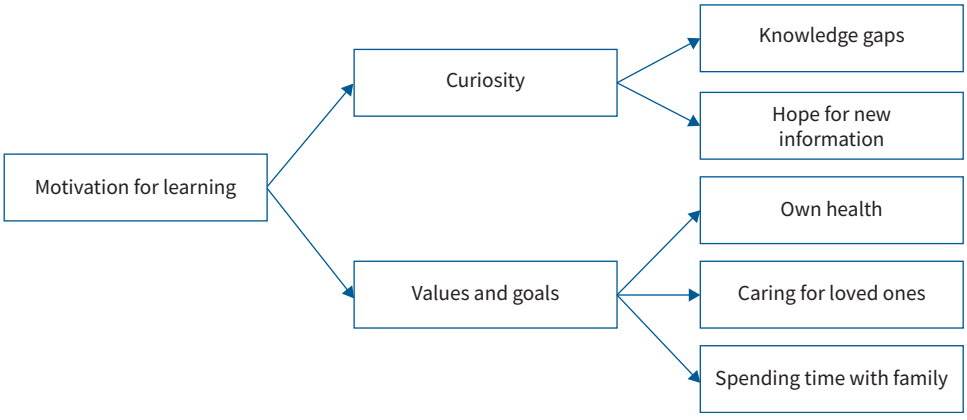

FIGURE 1 Motivation for learning.

Values and goals

Own health

Issues regarding patients' own health motivated almost half of the patients to learn, such as a deterioration of their disease.

> Before this period, I was getting worse [health] and then I thought, this can't go on like this. I want to learn more and still make something of what we can. If you need it during that time [the education], then you go harder, better, then you just try to understand it. (P011)

> Yeah, it's about you, so it's not that hard, is it? I mean, you also must know a little bit about what you're doing. I think that's important. (P033)

> I think it's very selfish in that regard, but I'm here for me. (P078)

Caring for loved ones

"Helping and supporting others" was expressed by some participants as motivators for learning.

> What encourages me? Just being able to help others. Everything that I can still learn that I can pass on to the other, that rather pleases me. Because now someone in my family has a similar problem, fortunately, in the early stages. If I can help them with the knowledge I'm still learning, I will. If I can still help other people with my knowledge, when I'm gone, then I'll leave very peacefully. (P047)

> How I can help her. That's my motivation. And that's just it. Purely that. (S078)

> Wanting to understand what is happening and what I can do to make it more bearable or better. To support her in that. I think that's important, that you're there for someone. (S116)

Spending time with family

Learning because of the goal to be able to spend time with family was expressed by a few participants as a motivator for learning.

> It actually encourages me from now on that you can do other things with the grandchildren again. (P078)

> I want to be able to go out more with my girlfriend, go to a restaurant or something like that. (P032)

> I would say: give and take, in good and bad times, you should be able to do so. You must choose things together or do what you can still do a little together. Because together is also fun, and not everything alone, isn't it? (S088)

Information needs

The identified information needs were heterogenous and varied among participants (figure 2 and figure 3). Most participants preferred to decide for themselves what information to learn.

Information about the disease was one of the frequently mentioned information needs by participants. Other frequently mentioned information needs were improvement of physical fitness by patients and how to support the patient by significant others.

> Things like: what is that disease and why does it sometimes deteriorate rapidly? Like in my case, I think that goes pretty fast, all of a sudden, and things like that. But you don't get much information about that. (P122)

> What do I want to learn? Yes, basically everything about my lung disease. How it continues, how it ends. (P116)

> Just condition, muscle strength. That you are getting back on track a bit. (P088)

FIGURE 2 Word cloud demonstrating information needs expressed by patients. Words in larger font sizes are more often mentioned by participants.

> I would like to know how I can support. That is important to me. The point is that I can support the patient [partner] and know how to do that. (S078)

Learning preferences

Learning style

Participants expressed a variety of learning style preferences. Most participants preferred to decide for themselves how to learn. Visual learning in combination with aural learning was mostly expressed with the example of digital movies. Reading was mostly expressed with the explanation of always having the option to go through it again. More than half of the participants expressed a preference for a combination of learning styles.

> But let's face it, moving image is of course much more challenging than looking at pictures. So, watching and listening, and text to go through it again. (P125)

> Conversations. So one-on-one. Yes, and then through, what do they call it, paperwork, notebooks, I don't care, just everything involved. (P047)

> Yes, it's both. It's reading and hearing. Because the moment she gives that [reading material] then she's also talking about it. They also explain it. Then you have it two times. And you always have a moment when you think "How did that work?" and then you can look at it again [reading material]. (P028)

Almost half of the participants had a preference for only one learning style, in which reading was most often mentioned.

> That's what I always ask for [reading]: can I also get it on paper? Because I'm older, I need repetition. (P078)

FIGURE 3 Word cloud demonstrating information needs expressed by significant others. Words in larger font sizes are more often mentioned by participants.

> Yes, because then you can react immediately [aural learning]. You can respond to a specific theme that touches you and for which you want an explanation. (P116)

> You can do the information transfer through paper. You can also do it orally. But if you are going to tell something orally, I think you can tell something for ten minutes and then the absorptive capacity in many people is gone. That's how simple it is. So, the best information is basically just reading. (S078)

> That I can read it, that I can read it through at home. I do like that. Then I remember it better, I think. (S011)

Almost all participants had a positive attitude towards digital learning and were willing to learn through this.

> Oh, I can handle that just fine. (P088)

> Yes, that is possible too. That's fine too. I had to do that for work too. (S011)

Just a few patients expressed dissatisfaction with digital learning.

> Yes, I do it, but I just don't like it. (P116)

> The computer actually passed me by. That didn't happen. That would be a pity, but yes. And I actually haven't had the time or need for it yet. No, that's not my thing yet. (P011)

Other learning preferences

Most participants preferred to learn alone in a quiet environment or at home. A minority of the participants preferred learning in a group or were indifferent about the learning environment. Even though, most participants expressed the value of opinions from others, some did not feel the bond with other individuals during learning or were dissatisfied with learning during social gatherings. All participants preferred to receive information from someone who has expertise with the content of the information.

Participants expressed a variety of learning preferences regarding the moment of learning. For example, participants mentioned to prefer learning in the morning, during the day, in the evening, between 10:00 and 14:00, at the weekend or depending on their schedule/time. Almost all participants preferred to decide for themselves when to learn, so that it aligned with their individual schedules and thereby avoiding a sense of obligation. Just a few patients preferred that learning should be planned for them in their agendas, because otherwise they would postpone or forget it.

Stimulating factors and barriers for learning

Participants expressed which factors made learning easier for them and which factors made it more difficult (figure 4).

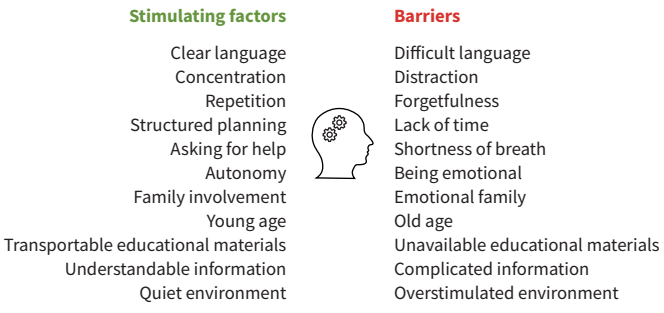

FIGURE 4 Stimulating factors and barriers for learning expressed by participants.

Discussion

Main findings

This descriptive qualitative study reports the perspectives of patients with COPD or asthma undergoing a pulmonary rehabilitation programme and their significant others regarding their motivation to learn, information needs and learning preferences. The findings indicate that curiosity, influenced by knowledge gaps and the hope for new information, as well as values and goals, such as one's own health, caring for loved ones, and spending time with family, motivated patients with COPD or asthma and their significant others to engage in learning. Moreover, participants expressed a variety of information needs and learning preferences.

Curiosity

Curiosity can be considered as an intrinsic motivator for learning due to the causal relationship between curiosity and learning [26]. Due to the challenges and complexities associated with a chronic disease, patients may develop a natural curiosity about their condition [27, 28]. These complexities create knowledge gaps or information needs, which represent areas of uncertainty and unanswered questions about the condition. Consequently, knowledge gaps might then serve as a motivator for learning to acquire the necessary knowledge. In accordance with previous studies of patients with COPD and their significant others, this study showed a variety in information needs among participants [29–33]. Information about the disease emerged as a frequently cited need in this study, which has also been reported as an important information need among patients with COPD before [34]. Moreover, some patients may have a desire for the latest and most accurate information regarding their condition. This hope for new information may be rooted in the belief that staying informed can lead to more effective strategies for symptom management and potentially even better treatment outcomes. For instance, searching for online information in the hope to find the newest treatment options was found earlier in patients with cancer [35]. Indeed, hope has previously been found to be a coping strategy and motivator for self-care in patients with COPD [36, 37]. In this context, hope for new information may serve as a motivator for learning, leading patients to actively seek out and engage with educational resources.

So, curiosity should be fostered, by offering information that attracts the brains attention, such as novel and surprising information or information that is characterised by information needs [26]. This also captures the attention concept of the ARCS model, since topics meeting the information needs of learners catch attention [11]. Due to its multidisciplinary nature, pulmonary rehabilitation possesses the capacity to offer educational content across a diverse array of topics [38]. Consequently, patients undergoing pulmonary rehabilitation and their significant others could have the option to select information aligned with their information needs or specific areas of curiosity. For instance, information pertaining to physical fitness may be sought from the physiotherapist, mental health insights from the psychologist, and details about medications from the pulmonary physician.

Values and goals

Individual's personal values and goals encompass the significance of certain aspects and achievements throughout someone's life and they could be considered as integrated regulation, which is most closely to intrinsic motivation [39].

In this study, valuing one's own health was found as a motivator for learning among patients. COPD and asthma often lead to substantial threats to an individual's wellbeing, which demands a proactive approach to self-care [40, 41]. Earlier research found that the recognition of health transitions motivated patients with COPD for self-care [42] which could be in concordance with valuing one's own health. In this context, valuing one's own health can be explained as a motivator for learning.

In addition, caring for loved ones has been found as a motivator for learning in participants. For patients, this could be explained by the fact that patients may be encouraged to care for loved ones by finding meaning to life again [43] in the context of helping others experiencing the same diagnosis. Furthermore, significant others of patients with COPD find themselves in a role where they become primary sources of support and assistance [2]. They are driven to acquire knowledge and skills relevant to the care of the patient, which enables them to provide care [44].

COPD and asthma often impose significant physical and emotional burdens on both patients and their significant others, leading to feelings of isolation, anxiety and depression [2, 45, 46]. Interactions with family members provide emotional support and a sense of belonging for both patients with a chronic disease and their significant others [47, 48]. Both patients with COPD and their significant others indicated that being together and doing shared activities had occurred less frequently due to the chronic disease [2].

In this context, spending time with family may serve as a motivational factor for learning since acquiring knowledge and skills may lead to the opportunities for social engagement again. A similar value as spending time with family has been found previously, in which relationships with significant others were identified as important for patients with chronic diseases [49, 50].

In practice, it is important that healthcare professionals consider these values and goals when developing and providing patient education. Offering a diversity of information topics and relatable examples helps refine educational content to ensure its alignment with personal values and goals. Pulmonary rehabilitation provides an environment for tailored patient education since it is based on comprehensive patient assessments [38]. By carrying out this assessment, it would be possible to pre-evaluate patients' and their significant others' perspectives on health, wellbeing and their expectations from care from multidisciplinary dimensions, such as from the medical, psychosocial and physical disciplines of pulmonary rehabilitation. Consequently, educational materials could make use of attractive subject titles, pictures or personal stories tailored to these perspectives, which include the values and goals of, for instance, own health and caring for and spending time with family.

Learning preferences

Approximately half of participants preferred a multimodal learning style and most participants preferred to learn at home and to receive information from someone with expertise. These preferences have been observed previously and vary in adults who receive health education [51]. Additionally, almost all participants preferred to decide for themselves what, when and how to learn which corresponds with autonomy. According to the self-determination theory, intrinsic motivation for learning could be enhanced by feelings of autonomy, competence and relatedness [39]. Therefore, to increase intrinsic motivation for learning, the sense of autonomy in patient education should be increased. In practice, autonomy can be increased by, for example, giving individuals freedom of choice in the timing and method of learning and by offering different options for information topics. This also captures the relevance concept of the ARCS model, since the way information is taught influences the relevance and should therefore be in concordance with learners preferences [11]. In this study, the importance of competence and relatedness in learning was not expressed by participants. Most participants did not express the importance of bonding with other individuals during learning. This could be explained by the fact that most participants preferred to learn on their own instead of in a group.

Methodological considerations

A strength of this study is its methodological approach and its interpretation of results, which were based on the self-determination theory and the ARCS theory.

Some results should be interpreted with caution. Since participants were only recruited from a specialised pulmonary rehabilitation centre, the generalizability to other settings may be limited. Moreover, even though the analyses have been done with as much objectivity as possible, observer bias as well as social desirability bias may have influenced the results. However, this has been partially addressed by having two researchers independently analyse the interviews. Furthermore, the number of significant others compared with the number of patients was low. This can be attributed to geographical constraints, as significant others faced challenges in reaching the designated interview location. Nonetheless, to enhance the inclusion of significant others, a phone interview was conducted with a significant other who was unable to physically attend the designated interview location. Additionally, the experienced difficulties of recruiting significant others emphasise the importance of making patient education accessible for them. For example, this can be achieved by providing educational options that can be accessed at home and in their own time. Moreover, no formal assessment of data saturation, defined as the point at which no new information emerges, was undertaken in this study. However, the interpretative nature of the analysis acknowledges the potential for continually discovering new meanings [15]. Therefore, this study clarified the interpretative judgement of the researcher as the rationale behind the determination of the sample size instead of explicitly assessing data saturation. Lastly, the word clouds representing the information needs have been generated without presenting numeric data of frequencies. From the clinical perspective, insight into the most relevant information needs is important and as qualitative data are not suitable for providing frequencies, the word cloud provides the opportunity to highlight most relevant needs without using numeric data.

Conclusions

Patients with COPD or asthma referred for pulmonary rehabilitation and their significant others are motivated to learn by curiosity and personal values and goals. They expressed a variety of information needs and learning preferences. To enhance intrinsic motivation, autonomy of individuals should be

supported by offering several learning topics and preferences while curiosity should be fostered by targeting information needs. Furthermore, the design of health education programmes should be structured to match with the personal values and goals of individuals, encompassing aspects such as own health, caring for loved ones and spending time with family. Pulmonary rehabilitation presents a platform for delivering personalised education by pre-evaluating individuals' values and goals and, due to its multidisciplinary nature, offering a diverse array of information topics.

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