A focus group study about healthcare professionals' perspectives on patient education in pulmonary rehabilitation

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Key recommendations for optimising patient education in pulmonary rehabilitation include personalised strategies, integrating e-health to complement face-to-face education, strengthening interprofessional collaboration and involving significant others https://bit.ly/3Hnu1bA

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Abstract

Introduction Learning-centred education is a paramount component of pulmonary rehabilitation. A variability in educational needs exists among patients with a chronic respiratory disease referred for pulmonary rehabilitation and their significant others. Healthcare professionals play a crucial role in meeting these needs by facilitating opportunities for learner-centred education. This study aimed to explore the perceptions of healthcare professionals involved in pulmonary rehabilitation regarding optimisation of patient education for people with a chronic respiratory disease referred for pulmonary rehabilitation and their significant others.

Methods Focus groups were conducted, which took place on-site at Ciro, a centre of expertise for patients with chronic organ failure, and online. Focus groups consisted of 1) an interprofessional team of healthcare professionals affiliated with Ciro; and 2) hospital-based healthcare professionals who refer patients to Ciro for pulmonary rehabilitation. Focus groups were audiotaped, transcribed verbatim and analysed thematically by two independent researchers.

Results Three focus groups were held, involving 17 healthcare professionals representing various disciplines. Four main themes were identified: facilitators for optimal patient education, barriers for optimal patient education, involving significant others in patient education and healthcare professionals' preferences for education.

Discussion To enhance patient education in pulmonary rehabilitation, key recommendations include adopting personalised education, integrating e-health applications to complement face-to-face education and strengthening interprofessional collaboration for continuous and accessible education for both patients and their significant others.

Introduction

Pulmonary rehabilitation (PR) is a comprehensive, personalised intervention designed to improve the physical and psychological well-being of people with chronic respiratory diseases [1]. Patient education is a key element of PR, which aims to help people with a chronic respiratory disease to effectively manage their condition, adopt and sustain healthy behaviours and adhere to recommended health practices [1]. Involving significant others in patient education is essential, as it improves disease management and positively affects the psychological health of both patients and their significant others [2, 3].

To enhance knowledge acquisition, education should be learner-centred [4, 5]. Currently, patient education within PR primarily consists of universal didactic learning [6]. Recent studies among patients in PR and their significant others have highlighted variability in educational needs among patients referred for PR and their significant others [7, 8]. Specifically, these studies have identified diverse information needs and preferences related to learning styles, timing and learning environments [7, 8]. Consequently, to optimise patient education, it is essential that patient education addresses these individual needs and preferences [5].

Healthcare professionals (HCPs) play a crucial role in meeting these needs and preferences by facilitating opportunities for learner-centred education [5, 9]. PR involves a collaborative, interprofessional team that includes physicians, physiotherapists, respiratory therapists, nurses, psychologists, exercise physiologists, dieticians, occupational therapists and social workers [1]. Each discipline has an essential role in providing patient education [1]. Furthermore, HCPs who refer patients to PR often have a comprehensive understanding of the multifaceted challenges patients face and have a crucial role in the advocacy of PR [10]. Therefore, input from these key stakeholders is essential for the development and improvement of learner-centred patient education.

The study's objective was to explore the perceptions of HCPs involved in PR regarding optimisation of patient education for people with a chronic respiratory disease referred for PR and their significant others.

Method

Design

This cross-sectional qualitative study was performed between November 2023 and February 2024. Focus groups were conducted at Ciro, a centre of expertise for patients with chronic organ failure, Horn, the Netherlands or online *via* Microsoft Teams. This study was conducted in accordance with the Consolidated Criteria for Reporting Qualitative Research (COREQ) [11] and received ethical approval from the Research Ethics Committee of the Faculty of Health, Medicine and Life Sciences of Maastricht University (FHML-REC/2023/058). All participants signed informed consent.

Participants and recruitment

Using purposive sampling, focus groups consisted of 1) an interprofessional team of HCPs working at Ciro, including nurses, physicians, physiotherapists, sports trainers, occupational therapists, psychologists and dieticians; and 2) hospital-based HCPs who refer patients to Ciro for PR, comprising pulmonary nurses and pulmonologists [12]. Participants were recruited in person and *via* email. Recruitment of the interprofessional team from Ciro was facilitated through participation in an existing education project group and through direct outreach to colleagues within their respective disciplines. Hospital-based HCPs who refer patient to Ciro were recruited *via* existing contacts.

Current education during PR at Ciro

Currently, patient education in PR at Ciro is delivered through password-protected online videos, ranging from 15–45 min in length. In these videos, HCPs from Ciro provide discipline-specific information using PowerPoint presentations. For instance, the pulmonologist explains lung function, while the physiotherapist highlights the importance of physical activity. All patients receive the same set of videos. Hospital-based HCPs involved in this study also use these videos to deliver patient education to those undergoing outpatient rehabilitation in hospitals affiliated with Ciro. In addition, patient education is provided during individual and group treatment sessions. To complement this approach, small group sessions are held at Ciro for specific patients, addressing topics such as anxiety and the correct use of inhalation medication.

Data collection

Data were collected through three focus groups, a methodology selected to encompass over 80% of the anticipated themes [13]. Each group aimed to contain approximately six people [14]. Two focus groups with the interprofessional team from Ciro were conducted on-site at Ciro and recorded with an analogue audio recorder. The focus group involving hospital-based HCPs who refer patients to Ciro for PR took place online *via* Microsoft Teams and was recorded *via* this software. Each focus group was moderated by AJLM and SH and lasted approximately 1.5 h. A self-developed focus group guide was used, which addressed topics such as optimising patient education within the context of PR, preferences regarding the format of educational interventions, personalised education and the requirements for implementing new educational approaches (supplementary material). These topics were based on and served as a supplement to preliminary research that investigated the educational needs of people with COPD or asthma and their significant others through questionnaires and interviews [7, 8].

Analysis

All focus groups were audiotaped and transcribed verbatim by AJLM. A thematic analysis was performed by two independent researchers (AJLM and SH) using Atlas.ti software (Scientific Software Development, v.9). Coding was performed independently by two researchers (AJLM and SH). The first step was inductive coding and consisted of exploratory searching for as many as possible relevant keywords [15]. It could be keywords that had been extracted from the prespecified topics in the interview guide, but also new keywords. Inductive and deductive coding have been used interchangeably which ensured that all relevant information was captured, regardless of whether it aligned with prespecified concepts, thus allowing for an open-ended exploration of the data. After coding the transcript from the first focus group, AJLM and SH discussed the coding and reached consensus. Subsequently, they continued with coding the remaining transcripts independently in the same manner. The next step consisted of targeted coding and comparative analysis, in which central topics were extracted and ordered from the three transcripts [15]. The two researchers discussed the coding and reached consensus as a third step [15]. The quotes were translated from Dutch to English using forward–backward translation. The following quantifiers were used to describe the results: “a few” indicating two or fewer participants, “several” indicating three to four participants and “many” indicating five or more participants.

Results

Participant characteristics

In total, 14 HCPs from Ciro and nine hospital-based HCPs were approached. Two HCPs from Ciro and one hospital-based HCP declined to participate, and three hospital-based HCPs did not respond to the invitation. Consequently, three focus groups were held, involving 17 HCPs representing various disciplines (table 1). Researchers determined that data saturation was reached after conducting three focus groups [13]. Indeed, the last focus group did not reveal significant new insights.

Themes

Analysis of the focus groups resulted in four main themes: facilitators for optimal patient education, barriers for optimal patient education, involving significant others in patient education and HCPs’ preferences for education (tables 2–4).

Facilitators for optimal patient education

Participants revealed that various factors could enhance patient education by considering individual learning experiences and HCPs’ practices in providing education (table 2).

Individual learning experiences

According to many participants, repetition of information and autonomy in choosing what to learn may stimulate learning.

> “In many different disciplines, similar topics are often repeated. […] You can also see that repetition is very important.” (F01)

> “Actually, it would be nice if those videos were divided into smaller sections. That way, they can pick out what they want instead of watching a video for an hour or however long it lasts [so they are not required to learn everything].” (F04)

TABLE 1 Focus group participants’ characteristics

Focus group	Focus group 1 with HCPs from Ciro	Focus group 2 with HCPs from Ciro	Focus group 3 with hospital-based HCPs
Sex	Female (n=5) Male (n=1)	Female (n=6) Male (n=0)	Female (n=4) Male (n=1)
Profession	Psychologist (n=1) Physiotherapist (n=1) Occupational therapist (n=1) Sports trainer (n=1) Physician (n=1) Dietician (n=1)	Respiratory nurse (n=1) Physician in training (n=1) Pulmonologist (n=1) Physiotherapist (n=1) Occupational therapist (n=1) Dietician (n=1)	Respiratory nurse (n=3) Pulmonologist (n=2)

HCP: healthcare provider.

TABLE 2 Facilitators and barriers for optimal patient education

Patient education	
Facilitators	**Barriers**
Individual learning experiences	
■ Repetition of information ■ Feeling of autonomy in what to learn ■ Learning from and feeling understood by peers ■ Gaining practical experience ■ Acceptance of condition ■ Intrinsic motivation ■ Experiencing social support	■ Not understanding the information ■ Existing misconceptions ■ Unhelpful habits in daily life ■ Experiencing group pressure ■ Feelings of shame ■ Discrepancies between learning environment and the real world
Healthcare providers' practices in providing education	
■ Offering personalised education ■ Listening to patients ■ Verifying comprehension of information in patients ■ Fostering interprofessional collaboration ■ Involving significant others ■ Providing (digital) education materials to review later ■ Delivering short educational modules ■ Easy and simple language ■ Interactive education methods	■ Providing an overload of information ■ Providing mandatory education requirements ■ Allocating insufficient time for education ■ Failing to come back at educational content to address comprehension ■ Lack of interprofessional collaboration ■ Providing generalised rather than personalised education

Additionally, many participants noted that factors such as learning from and feeling understood by peers, gaining practical experience, and acceptance of their condition might influence the willingness to accept new information.

> "They often come up with tips themselves, like 'I once did this, maybe you could try it too.' That's why we are now bringing inhalation education back into those small groups, so they can learn from each other." (F07)

> "I think that education can and should also be experiential. Often, people need to figure things out for themselves. For example, with a walking aid 'Oh yes, I have more energy'." (F01)

> "They must accept that things won't go as they used to and dare to admit 'I do need to do things differently'." (F03)

Furthermore, intrinsic motivation as well as experiencing social support might stimulate learning according to a few participants.

TABLE 3 Facilitators and barriers for involving significant others in patient education

Involvement of significant others in patient education	
Facilitators	**Barriers**
■ Multiple orientation days ■ Online education options ■ Education sessions in the evening ■ Education sessions during patient pick-up times ■ Casual atmosphere ■ Travel reimbursement ■ Themes specifically focused on significant others ■ Clear communication	■ Distance ■ Lack of direct contact between HCPs and significant others ■ Patients with a lack of a social network ■ Patients who do not want to burden their significant others ■ Patients who desire time apart from their significant others ■ Patients who experience a lack of understanding from their significant others ■ Time scheduling difficulties of both HCPs and significant others ■ Lack of continuity in care among HCPs

HCP: healthcare provider.

TABLE 4 HCPs' preferences for patient education

Format of education	Preferences of HCPs
Learning style	Offering multiple learning methods
Digital learning	■ As a complement to face-to-face ■ Proactively offering ■ Offering support ■ Addressing questions afterwards in person
Location	At home or in the PR centre (*e.g.* consultation or patient rooms)
Timing	■ Tailored to patients' needs ■ Offering education only during PR period

HCP: healthcare provider; PR: pulmonary rehabilitation.

> "In all forms, you always have people who either don't watch the videos or fall asleep or yawn during the group education. And you always have the interested people, regardless of the form you offer." (F16)

> "That [involvement in education] partly depends on the person, but also on their social environment. It's about how warm their relationships are, whether they [their significant others] want to collaborate on improvement and the feeling of support at home. This can greatly help them be open to our advice." (F14)

HCPs' practices in providing education

From the perspective of HCPs' practices in providing education, several strategies could facilitate optimal patient education. Many participants mentioned offering personalised education tailored to the patient's needs as facilitator, such as tailoring on information needs and providing different education formats to meet multiple learning styles.

> "People have a specific problem and a particular question in their minds. If you do not provide an answer to that and only address other questions, they may only listen halfway or not at all. So, it would be nice if we had 10 topics ready and asked: 'what would you like to discuss?' to help them focus more." (F15)

> "I also believe it is important to have education available in various formats. As a facilitator of PR, offering personalised education and assessing each patient to determine what they need and what suits them best is crucial. This approach can vary from patient to patient." (F11)

For personalised education, several HCPs expressed that they should actively listen to the patients.

> "Listen to what people need." (F06)

> "So, first, you need to listen carefully to what the patient is experiencing and then determine what to offer based on that." (F02)

Moreover, many participants highlighted the importance of verifying patients' comprehension to ensure that the information has been effectively conveyed.

> "I just find it most effective to collaborate with the patient and observe their reactions. This way, you can also assess whether they understand what you're saying. You can ask them to 'repeat it back' to ensure comprehension." (F10)

Additionally, many participants emphasised that fostering interprofessional collaboration is essential for optimal patient education.

> "I realise I need to know much more about what you all are discussing to follow-up on it, use the same words, and apply the same techniques. There are many ways to explain things, so I think it is important that we all consistently use the same metaphors, the same words, and the same techniques." (F05)

Furthermore, many participants revealed that involving significant others in the educational process could help patients apply knowledge.

> "In PR, we do have orientation days where partners or family members join. However, we do not involve them very intensively during the rehabilitation process. Of course, you can involve them before and after, but, the environment is much more important in effectively applying the information than either the patient or us, because we only see them for a short time period." (F14)

Last, providing (digital) educational materials to review later, delivering short educational modules, employing easy and simple language, and utilising interactive education methods were reported by many participants to enhance patient education.

> "I think it is also an exchange of information. It is not just us doing all the talking; the patient is also asking questions, making it more interactive [to optimise education]." (F04)

Barriers for optimal patient education

Barriers to patient education could arise from both individual learning experiences and HCPs' practices in providing education (table 2).

Individual learning experiences

Many participants highlighted that an individual barrier for learners is difficulty with understanding the information (*i.e.* low literacy, limited digital skills and/or cognitive impairments).

> "The disease itself does not determine what people do or do not remember; it is the individual behind it. Numerous factors can play a role in this, such as low literacy, low digital skills, and other influencing aspects […]." (F14)
>
> "Sometimes, of course, there are difficulties with patients who have significant cognitive issues. This raises the question of whether someone is capable of learning. You explain everything, but it just does not stick." (F01)

Additionally, a few participants noted that existing misconceptions and unhelpful habits in daily life may negatively influence the willingness to accept new information.

> "Recently, someone did a lot of research on the internet and ended up drawing the wrong conclusions for herself. So, then you spend a lot of time trying to correct that." (F02)
>
> "What ties into that is that people have certain habits, such as their pace of movement and how they manage tasks at home. This can also be quite limiting when trying to show them how they can better organise things differently." (F02)

Moreover, a few participants indicated that experiencing group pressure, feelings of shame and discrepancies between the learning environment and the real-world context can hinder a patient's ability to apply knowledge.

> "Or shame, for example, knowing they need to take a break but feeling uncomfortable because they don't want others to see them standing still." (F02)
>
> "When you look at the patients who return regularly, it is often because things go wrong again at home. They struggle to apply the skills they learned here [in Ciro] in their home environment." (F02)

HCPs' practices in providing education

Similarly, HCPs faced barriers that impede patient education. Many participants identified barriers, such as providing patients with an overload of information and mandatory education requirements.

> "Patients are often overwhelmed by the amount of information they receive. Each professional imparts knowledge from their own area of expertise, but many patients struggle to retain all this information." (F08)

> "At that time [mandatory group education in the past], they felt very much like they were obligated to attend. Sometimes, they would express, 'I'm here because I have to be, not because I want to be'." (F12)

Additionally, many participants expressed that insufficient time allocated for education and failing to come back at educational content to address comprehension may hinder patient education.

> "It [discussing education with other disciplines] takes a tremendous amount of time. I really find time to be a significant barrier." (F11)

> "I don't ask that question [to teach back] anymore because your time is essentially over." (F03)

Finally, many participants mentioned barriers for patient education that were in line with the facilitators mentioned earlier. For example, fostering interprofessional collaboration was perceived as facilitator, while a lack of interprofessional collaboration was perceived as barrier.

> "I think what I observe does not necessarily mean that others see it the same way. So, I might present it [the education] differently to the patient, while someone else [other HCPs] might present it in another way. It's actually quite a pity that we all have to figure this out separately, when we could be doing it much more collaboratively." (F11)

Involving significant others in patient education

HCPs recognised the importance of involving patients' significant others in education. Various factors might improve their involvement in patient education (table 3). Many participants revealed that involving significant others in patient education could be facilitated by offering multiple orientation days, either in group settings with other significant others or individually with the patient. Additionally, many participants reported that providing online education options and scheduling education sessions in the evening or around patient pick-up times could enhance accessibility. Furthermore, creating a casual atmosphere, offering travel reimbursement, education themes specifically focused on significant others, and clear communication, including official invitations, were mentioned by a few participants to further encourage engagement.

> "The time of the day is crucial. If there are many working partners, evening sessions are better. For patients, evenings might not be ideal. I also believe it is important to officially invite them and clarify in advance when the sessions will be held. A cup of coffee always works wonders." (F15)

> "You might also include the topic 'what it means for the partner' during such an evening session. It should not just be about what it means for the patient, but also what it means for the partner and what the partner can do for the patient. We all recognise that the environment is very important in how a patient with COPD functions." (F15)

> "Perhaps also communicating from the very beginning that, for example: 'we expect this, and we also offer that [involving a significant other]' during the initial conversation with the doctor. It is all still unclear and optional." (F01)

However, various barriers could hinder the involvement of significant others (table 3). Several participants indicated that the distance significant others must travel to attend sessions and a lack of direct contact between HCPs and significant others can be prohibitive. Social factors could also impede the involvement of significant others according to several participants, such as patients who lack a support network, do not want to burden their significant others, desire time apart from their significant others or experience a lack of understanding from their significant others. Furthermore, time scheduling difficulties were mentioned by a few participants to impede the involvement of significant others in patient education. Additionally, a few participants noted that lack of continuity in care among medical staff can disrupt the communication with significant others.

> "It is often a logistical issue as well. The children [of the patient] are often working, and you must consider the availability of the disciplines. For example, if the daughter can only come on Wednesdays, it becomes difficult if you [HCP] are never here on Wednesdays. So, logistically, it can be a problem." (F07)

> "A barrier for the medical staff to properly inform significant others during orientation days is the lack of continuity. It is too often: 'oh, who is on the ward today? That person will have the conversations today' but it is not necessarily the person who knows the patient best, who has discussed things beforehand, and is thus very well prepared for such a conversation. So, if you want to do that well, it requires good preparation." (F05)

HCPs' preferences for patient education

Participants expressed preferences regarding the format of patient education (table 4). Several participants revealed preferences for both one-on-one education, as it allows personalised education tailored to the specific needs of each patient, and small group education, as it facilitates peer learning and saves time for HCPs. Moreover, offering multiple learning methods to accommodate diverse learning styles was considered important by many participants.

> "I believe a mixed approach—combining visual, one-on-one and group methods—is the most effective. Offering information from different angles seems to be the optimal way." (F16)

Digital learning was viewed positively by many participants as it is a valuable complement to face-to-face education. Currently used approaches to digital education varied, with some HCPs only referring patients to digital resources, while others review the material together with the patient. Furthermore, proactively offering digital education, offering support if necessary, and afterwards addressing any questions that arise, were considered crucial by many participants.

> "I really see that [digital education] as a strength, as support. Of course, it starts here [in Ciro], but it is very nice to offer it as additional support." (F08)
>
> "You can refer them to where they can find digital education. But if you point that out to them, I think you should also ask follow-up questions like: 'What did you think of it? Do you have any questions? Do you know how to use it?' Simply saying: 'the information is there, and that's it' is not enough." (F15)

Several participants expressed that the location and timing of educational sessions should be tailored to the patient's specific needs and circumstances.

> "I ask them which they prefer, because some people like to watch it [the videos] at home, while others prefer to focus on family life on the weekend and not on rehabilitation. […] Some people think it's fine to do this for half an hour during the program, so I schedule that, or they arrange it themselves, sometimes in the evening." (F11)

Furthermore, participants revealed a willingness to be involved in patient education. However, several participants preferred answering questions in person instead of answering online questions, as this would increase their workload. Additionally, many participants indicated that their role in offering, referring to, and discussing (digital) education should occur only during the rehabilitation period as they did not perceive themselves as responsible for ongoing education post-rehabilitation.

> "You're always working on that [patient education] in daily practice, and I think everyone is involved. […] If you want someone to practice something, you'll need to provide some explanation first, or at least explain the reasoning afterward." (F03)
>
> "If they have questions, they can simply ask them during consultations or whenever it is necessary. I do not want to be overwhelmed by questions via email." (F08)
>
> "Then [after rehabilitation] the responsibility lies with the general practitioner." (F08)

Discussion

Main findings

This study explored the perspectives of HCPs working in PR regarding optimising patient education for patients with a chronic respiratory disease undergoing PR and their significant others. Four themes were identified: facilitators for optimal patient education, barriers for optimal patient education, involving significant others in patient education and HCPs' preferences for education. To the best of our knowledge, this is the first study that identified facilitators and barriers of patient education for people with a chronic respiratory disease and their significant others, as perceived by HCPs in PR. By examining these perspectives, this study provides valuable insights into the challenges and opportunities for improving educational strategies within this population.

From the perspectives of HCPs, multiple facilitators and barriers for optimal patient education in PR were identified, which largely align with previous findings involving patients, their significant others or HCPs [16–18]. For instance, a scoping review study identified barriers for learning, such as low health literacy, cognitive deficits, lack of autonomy, resistance to change, limited prior knowledge and inadequate communication of HCPs, which have been observed before in patients and their significant others receiving health education [16]. Additionally, cognitive issues, information overload, not understanding the information, lack of interprofessional collaboration and time constraints of HCPs to assess patient comprehension were previously identified through interviews with HCPs as barriers for effective self-management in patients with COPD or asthma [17]. Furthermore, previous research involving interviews with patients with COPD, significant others and HCPs identified a lack of patient-centredness and poor coordination within healthcare teams as barriers to successful PR [18]. In addition to these findings, factors that were not identified in this study but have been reported to potentially hinder learning in patients with a chronic respiratory disease and their significant others include breathlessness, emotional distress, old age and learning in an overstimulating environment [7].

Moreover, understanding the information, repetition and autonomy have previously been recognised as facilitators for learning among patients with COPD or asthma, as well as their significant others [7]. Another identified facilitator for optimal patient education was the involvement of significant others [7]. The important role of social support in enhancing quality of life and self-management for people with chronic respiratory diseases has been demonstrated before [19]. People with chronic respiratory diseases rely heavily on the assistance, care and emotional support provided by their significant others [20, 21]. Involving these significant others in patient education is crucial, as it is expecting to improve disease management and to positively impact the psychological health of both patients and their significant others [2, 3]. Our study reinforces this by highlighting the importance HCPs place on involving significant others in education to optimise patient education in PR. Consistent with earlier research from the perspectives of HCPs, we identified several factors that could influence the involvement of significant others in patient education [22]. For example, time scheduling difficulties by both the significant others and the HCPs and the relationship between patients and their significant others have been identified previously as barriers for involving significant others of older adults in hospital care [22]. Moreover, factors that affect the learning process in significant others may also impact their involvement in patient education. For instance, previous research indicates that significant others of people with chronic respiratory diseases tend to have a higher prevalence of low health literacy compared with the general population [23]. This may influence their ability to engage with educational materials and support patients in understanding health information.

Recommendations

Based on the findings of this study, several recommendations can be made to optimise patient education in PR. HCPs should prioritise personalised education tailored to the individual information needs and preferences of both patients and their significant others [7, 17], which is also in line with HCPs' preferences. The importance of repetition and autonomy in the learning process should be emphasised, for instance, by providing (digital) education materials to review at a later time and at one's own convenience [7, 17]. E-health applications offer valuable opportunities for personalised education by adapting information to meet individual information needs and providing different learning styles to meet individual preferences [5]. Moreover, these applications provide continuous access to educational resources, enabling repetition and allowing patients to engage with the materials autonomously [5]. As highlighted by the HCPs in this study, digital applications in PR should complement, rather than replace, face-to-face education. For instance, engaging in face-to-face education is still important as it contributes to learning from and feeling understood by peers, which HCPs have identified as facilitators for optimal patient education. Furthermore, e-health applications may facilitate the involvement of significant others in education. The benefit of offering online education to significant others lies in its ability to reach a wider audience, while eliminating scheduling difficulties caused by time constraints [24].

Additionally, to overcome the barrier of not understanding the information due to low health literacy and cognitive limitations, HCPs should provide clear and accessible information for both patients and their significant others. For example, the Patient Educational Materials Assessment Tool (PEMAT) can assess the understandability of both printed and audiovisual patient education materials [25]. Furthermore, HCPs should regularly evaluate comprehension, using methods such as the teach-back method [17, 26]. This method involves HCPs asking patients or their significant others to summarise what they have understood, ensuring that it is accurate [26].

Furthermore, interprofessional collaboration in PR is important for delivering coordinated and personalised patient education, helping to mitigate the risk of information overload and conflicting messages. To strengthen this collaboration, it is recommended that regular meetings are held with a dedicated team of HCPs. These meetings should focus on discussing the specific educational needs of patients, enabling the development of tailored educational strategies that consider the patients' information needs, learning preferences and health literacy levels. This collaboration is also essential for facilitating the involvement of significant others in the education process [27, 28]. Effective communication between HCPs was perceived as a key facilitator in preparing how to communicate with and educate significant others in the context of home healthcare [28].

Additionally, collaboration between HCPs in PR and general practitioners may be essential to ensuring the continuity of patient education after the PR period of patients, as HCPs in PR often view general practitioners as responsible for sustaining patient education and addressing patient questions. This collaboration could be facilitated through, for instance, the shared use of educational materials, allowing for consistent information delivery across various stages of care.

The goal of education within PR was not explicitly discussed in the focus groups, which presents an opportunity for further research. It would be valuable to explore whether participants view the primary purpose of education in PR as solely knowledge acquisition. However, it is equally important to emphasise that education in PR should also focus on optimising the skills necessary for self-management, as the primary goal of PR is not only to acquire knowledge but also to foster behaviour change [1].

Strengths and limitations

A strength of this study was the representation of various healthcare disciplines within the focus groups. Additionally, the focus groups were highly valuable with participants building on each other's ideas and elaborating on the views expressed by others.

However, the results should be interpreted with caution due to some limitations. First, the generalisability to other settings may be limited as HCPs were recruited from one specialised PR centre and HCPs who refer patients to PR from their affiliated hospitals. Second, there is a possibility of selection bias, as HCPs with a greater interest in the topic may have been more inclined to participate. Unfortunately, no data were collected on participants' age or their years of experience in PR, so we are unable to report any findings related to these characteristics. Third, the predominance of female participants in the focus groups introduces the potential for gender bias, which may have influenced the perspectives represented in the study. For instance, specialties with a higher proportion of female HCPs have been found to demonstrate greater engagement with patient-centred care compared with those dominated by males [29]. Fourth, for practical reasons, the focus groups were conducted separately for HCPs from Ciro and hospital-based HCPs, which may have limited opportunities for participants to build on each other's ideas across settings. However, the group of hospital-based HCPs included HCPs from different hospitals leading to an exchange of information and experiences. Furthermore, the group of hospital-based HCPs was relatively small compared with the group of HCPs from Ciro. However, findings were generally comparable between both groups. Hospital-based HCPs also use the same educational materials such as videos to deliver patient education to patients undergoing outpatient rehabilitation in their hospitals affiliated with Ciro. Finally, this study only incorporated the perspectives of HCPs, whereas the viewpoints of patients and their significant others are also crucial for designing education programs. We previously revealed valuable insights into what motivates patients with COPD or asthma and their significant others to learn and their preferences regarding educational content and delivery [7]. The findings of our previous study including the perspectives from the patients and their significant others and the current study exploring the perspectives from HCPs complement the current understanding of how to optimise educational interventions in PR.

Conclusion

This study reports the perspectives of HCPs regarding optimising patient education for people entering PR and their significant others. The identified themes—facilitators of education, barriers to education, involving significant others and HCPs' preferences—emphasise the multifaceted nature of optimal patient education in PR. To enhance patient education, HCPs should provide personalised approaches, integrate e-health applications for continuous and accessible learning and ensure that these tools complement rather than replace face-to-face education. Additionally, efforts should focus on clear communication, utilising tools such as PEMAT to enhance material understandability and applying techniques such as the teach-back method to assess patient comprehension. Furthermore, strengthening interprofessional collaboration may be crucial for delivering patient-centred education and the involvement of significant others.

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