

Facilitators and barriers to clinicians' use of COPD action plans in self-management support: A qualitative study

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ABSTRACT

Objective: Written action plans for patients with chronic obstructive pulmonary disease (COPD) aim at early recognition of exacerbations and self-initiation of interventions. Previous research suggest underuse of COPD action plans. We wanted to 1) examine which factors clinicians in specialist healthcare perceived as influencing clinicians' use of written action plans in COPD-self management support and 2) propose a framework for understanding the factors affecting clinicians' use of action plans in routine practice.

Methods: We performed a theory-driven retrospective qualitative study. Documentary data were collected to describe the COPD action plan in context. In-depth interviews with clinicians (n = 8) were carried out. Interview data were thematically analyzed, using a predetermined model for understanding behavior.

Results: Our study revealed that a number of factors influenced clinicians' use of action plans, including their capabilities (knowledge and skills to identify "the right patient" and to individualize the plan template) and motivations (beliefs, reinforcements, and emotions s.a. frustration, fear, and distrust), together with organizational and social opportunities (resources, patient, and GP preferences).

Conclusion: A multilevel understanding of factors that affect clinicians' use of action plans in self-management support is needed.

Practice implication: The proposed framework can be used to guide future initiatives to promote targeted self-management support.

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1. Introduction

Chronic obstructive pulmonary disease (COPD), a progressive respiratory disease that over time results in structural changes in the airways and limited airflow to the lungs, is associated with significant morbidity and mortality and contributes to reduced quality of life, increased healthcare costs, and increased burden on healthcare systems worldwide [1–3]. One important aim of disease management is to prevent exacerbations, which are episodes of acute symptom worsening. Exacerbations have considerable negative impact on patients' quality of life and are the leading cause of healthcare utilization and costs in COPD care [2]. Some patients across severities are particularly susceptible to exacerbations and at greater risk of faster disease progression [4].

Abbreviations: COPD, Chronic obstructive pulmonary disease; COM-B, The capability, opportunity and motivation behavioral model; TDF, The Theoretical Domains Framework.

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Prevention, early recognition, and appropriate intervention are important to reduce rates and severity of exacerbations [2]. However, patients do not always recognize symptom deterioration and are thus likely to be hospitalized for a potentially avoidable cause [5–7].

In an effort to increase patients' understanding of the disease process, self-management has gained increased relevance in clinical practice as well as in policy and research [2,8–10]. The development of a written action plan has been suggested as a central part of self-management; a COPD action plan aims at early recognition of symptoms and self-initiation of interventions, which are identified as two important self-management skills [11]. A Cochrane Review from 2016 concluded that COPD action plans reduce the likelihood of hospital admission and increase treatment of exacerbations with corticosteroids and antibiotics [12]. Another Cochrane Review from 2017 supported these findings and concluded that self-management interventions that include a COPD action plan are associated with increased health-related quality of life and lower probability of respiratory-related hospital admissions. A very small but significantly higher respiratory-related mortality rate was found [13].

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While these recent reviews recommend that COPD action plans should be utilized in self-management support, studies have shown that only a minority of patients actually have an action plan and further, that patients with a plan adhere to it in about 40 % of exacerbations [14]. These findings suggest that there is a gap between expert opinion about self-management interventions and what is available in routine care [15].

It is well known from implementation research that the implementation and use of guidelines, such as action plans, generally faces barriers that need to be identified to optimize use [16]. There is, however, little research on practitioners' perspectives on the factors affecting COPD self-management in general [15,17–21] and even less on clinicians' perspectives on the factors affecting the use of an COPD action plan in particular (but see [22]). The aim of the present study was to elicit clinicians' perceptions of factors believed to influence clinicians' use of written COPD action plans in self-management support in specialist care. Exploring these views systematically may help decision-makers and clinicians identify and understand both the facilitators and barriers to clinicians' use of action plans and focus on which of the factors are essential. This approach will inform future interventions to improve self-management support for patient suffering from COPD.

2. Methods

2.1. Study design

The study was designed as a theory-driven retrospective qualitative study. Data were collected purposively, and interview data were analyzed thematically [23]. We used a predetermined behavioral-analytic model to aid analysis.

2.2. Study context

This study was conducted in Norway (see Table 1 for an overview of the ideological grounding, funding and organisation of the Norwegian NHS and COPD in Norway). National clinical guideline development is the responsibility of the Norwegian Directorate of Health. The development of guidelines follows a standardized model that aims at independence, high reliability, transparency in process and inclusiveness by various stakeholders, rigor in methodology, and systematic use of evidence [24,25].

2.3. Data selection

We employed data from two different sources. First, we utilized documentary data, such as the National Clinical Guidelines for Treatment of COPD [26] and the guidelines' main references [27–29] to describe the written COPD action plan in context.

Secondly, interview data were purposively collected through individual in-depth interviews with eight healthcare practitioners from four specialist healthcare institutions located in different parts of Norway. The institutions were contacted because of initial knowledge that they used COPD action plans and included in- and outpatient care, acute care, and rehabilitation. Further, content and

volume of patient education varied across sites; short programs focused on teaching patients the actual use of the COPD action plan, while extensive programs incorporated education on the COPD action plan within a broad self-management education program. Participants were identified by the institutions themselves and included doctors (n = 2) and nurses (n = 6), all female, with extensive experience with treatment of COPD patients. They were all familiar with COPD action plans.

2.4. Data collection

Documentary data were collected to aid the description of the COPD action plan as part of a nationally and internationally developed framework for guidance on COPD management.

Individual qualitative interviews were conducted face - to - face at the participants' workplace and audiotaped and transcribed by one of the authors (TF). The interviews took place in 2017 and lasted about 30–40 minutes. Interviews were semi-structured with open-ended questions and followed an interview guide that covered different aspects, such as: Patient group characteristics; Self-management education; Application of the COPD action plan; Follow-ups and updating of the COPD action plan; Communication with other healthcare institutions; and Individual perceptions of the COPD action plan.

2.5. Data analysis

Documentary data were closely read to describe the written COPD action plan in context. Interview data were thematically analysed independently by both authors and discussed to enhance the credibility of the analysis. Using thematic analysis [23], transcripts were analysed in six steps: (i) close reading of data, (ii) initial coding based on a predetermined analytical framework, (iii) data organizing, (iv) theme reviewing, (v) defining relevant themes and sub-themes based on the framework, and (vi) writing up the findings. Any arising disagreement between the two authors regarding data coding and interpretation was resolved through discussion.

We developed the analytical framework independently of the analysis of the data to aid data coding and interpretation; see Fig. 1 for illustration. Implementation of clinical guidelines, such as guidelines for self-management support, depends on clinician behavior. To better understand clinician behavior, we utilized the COM-B model. This model theorises how Capability, Opportunity and Motivation interact to produce Behavior [30] and provides a framework for understanding factors that might facilitate or hamper behavior. *Capability* is the individual's psychological and physical capacity to engage in an activity, and includes reasoning, knowledge and skills. *Opportunity* consists of physical and cultural - social factors such as environmental, organizational, and social context and resources that lie outside the individual that make behavior possible or prompt it. *Motivation* is the reflective and automatic processes that direct behavior. These three conditions can potentially influence each other in different ways. Capability and opportunity can influence motivation, and enacting a behavior can alter capability, motivation and opportunity.

Table 1
Study setting: Norway.

Ideology	Healthcare system funding	Specialist care	Primary care	COPD
Egalitarian. Need-based, universal healthcare.	Tax-financed.	State responsibility. Four health regions. Free at the point of access.	Municipality responsibility. GP: private actors, contracts with municipality. Small out-of-pocket sum at each visit.	App. 5 % of the adult population. COPD is the third leading cause of death.

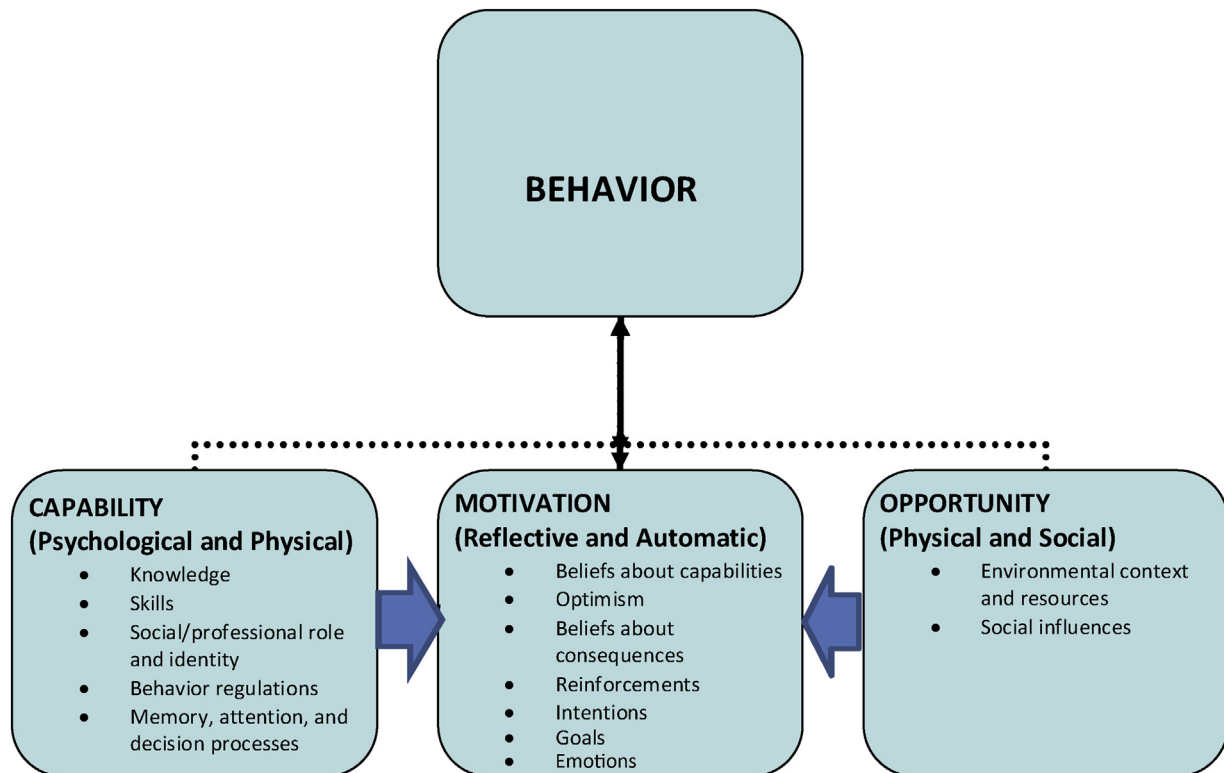


Fig. 1. Analytical framework: Relationship between main factors and sub-factors that may facilitate or hinder behavior (adapted from [30–32]).

To provide an even more granular understanding of these conditions, the Theoretical Domains Framework (TDF) was used [31]. TDF was originally developed as a theoretical framework to view the cognitive, affective, social, and environmental influences on behavior change. The version utilized in this study categorises 14 domains relevant to behavior, referred to in the following as TDF (v2) [32]. The combined framework recognizes that behavior depends not only on the knowledge, attitudes, and motivation of the individual but is also influenced by the specific intervention and the organizational and social context.

For the purposes of our study, the analytical framework used specified pre-defined factors and sub-factors to sort the text during the coding process. At the end of this process, compelling quotes were selected to illustrate the identified factors. Transcripts were returned to participants for comments and corrections (member checking). Transcripts relevant to illustrate factors perceived to influence COPD action plan use were translated to English.

2.6. Ethical approval and informed consent

In compliance with Norwegian legislation on ethics in research, the study was regarded as health service research and was approved by the Norwegian Data Ethical Approval: Data Protection Official for Research, Norwegian Social Science Data Service (Project no. 53,629). Each participant provided written informed consent to participate. All documents were publicly available and did not require permission to access.

3. Results

3.1. A brief description of the COPD action plan template

The National Clinical Guidelines for Treatment of COPD were developed and implemented in 2012 [26]. Recommendations were

based on international systematic reviews, in particular the 2011 Global Strategy for the Diagnosis, Management and Prevention of COPD, the 2010 NICE recommendations, and the 2004 American Thoracic Society/European Respiratory Society standards [27–29]. Thus, COPD management guidance was embedded in a wider international context. However, minimal evidence was available for some of the recommendations, for example, with regards to self-management strategies. Here, the development group's experience and opinions about what constituted good practice were used to develop recommendations.

An exacerbation action plan template was developed as one of several key elements of self-management support [33], which is presented for illustrative purposes in Fig. 2. The template is half completed and can be personalized and printed for the patient to take away. A color code similar to that of a traffic light is used to visualize different phases of disease based on symptoms and indicates recommended actions. Green color describes a stable state, while yellow and red color describes mild to severe exacerbation. For example, a patient in the *yellow zone* that has experienced worsening of symptoms such as dyspnoea, sputum volume and sputum color for two days, is recommended to initiate standing prescriptions for corticosteroids, such as prednisone and antibiotics. The patient is now in the *red zone* and is recommended to contact the doctor after two to three days if medication has had little or no effect or, if symptoms becomes critical, call the emergency number. Non-core elements of self-management are likewise described, including different physical and breathing exercises.

3.2. Clinicians' perceptions of factors affecting clinicians' use of action plans

The results, i.e., factors perceived to affect clinicians' use of the COPD action plan in self-management support, are summarized in Fig. 3.

COPD ACTION PLAN

Patient name: _____ Date of birth: _____

Usual medicines, COPD:

Write the patient's usual medicines regarding COPD.

	SYMPTOMS	MEDICINES	OTHER ACTIONS
Green zone Stable phase	Feeling your usual self or normal day-to-day variation.	Continue taking your usual medicines as listed above. Take.....(short acting relief medicine) before exercise.	Activity and exercise as recommended.
Yellow zone Symptoms starting to get worse	Harder to breathe than usual, fever, more coughing, feeling a bit sick.	Extra dose of(short acting relief medicine).	Get rest, relax, plan your day regarding work and activities. Continue exercising. Clear phlegm as required. Obs change of color and volume. If you do not feel better within maximum 2 days, move to Red zone or contact Doctor.
Red zone Symptoms worsening	Little or no effect of inhalation treatment. You are feeling sicker and have trouble breathing and are wheezing. ----- Yellow or green color of phlegm. You feel sick, fever. ----- No or little effect of treatment after 2-3 days	Follow plan for inhalation treatment as in Yellow zone. Initiate extra treatment, oral corticosteroids: ----- Initiate treatment, oral antibiotics:.....	Use pursed lip breathing. Clear phlegm as required. Slow down tempo regarding daily activities. Exercise: for example ----- Contact Doctor (Sick leave) ----- Contact Doctor or Emergency Ward
Red zone Critical phase	Effect of....(short action relief medicine) less than 30 minutes. Heavy breathing. Slurring of speech.	Take short acting relief medicine every 5 minutes until help arrives. Extra dose of oral corticosteroids:	Use pursed lip breathing. Resting position. Contact Doctor or Emergency Ward/Ambulance immediately.

GP Phone: _____ Emergency Ward Phone: _____

Date: _____ Doctor: _____ Nurse: _____

Fig. 2. COPD Action Plan Template, adapted from COPD Action Plan Template, Norwegian Institute of Public Health 2015 (in Norwegian only) [33]. Translation by first author, not authorized, for illustrative purposes only.

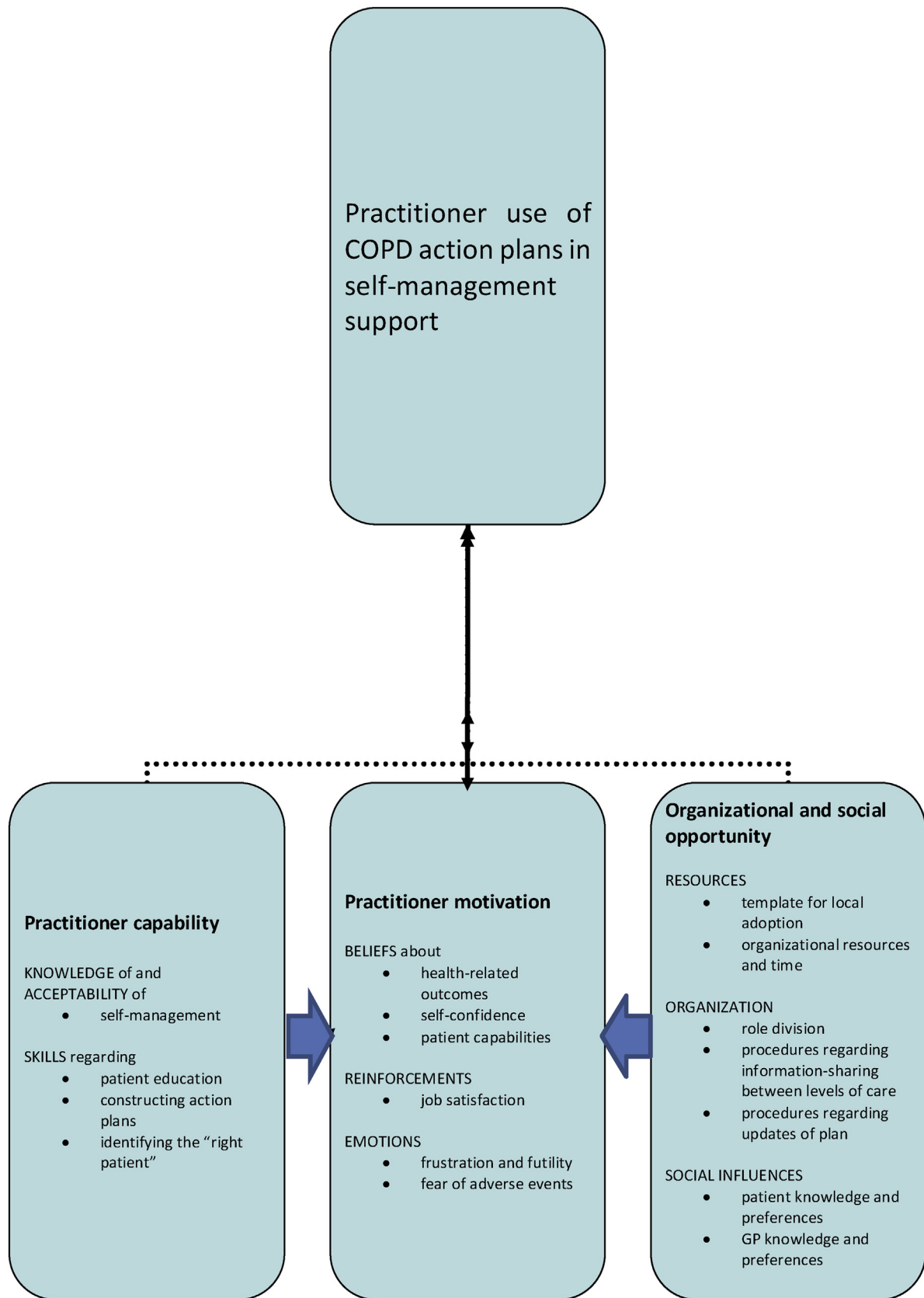


Fig. 3. Factors affecting practitioners' use of action plans in self-management support: Relationship between main factors and sub-factors (adapted from [30–32]).

3.2.1. Clinician capability regarding self-management support

The qualitative interview data suggested that the clinicians all endorsed the idea that self-management was an important aspect of care. They firmly believed in patient education. A recurrent theme in the interviews was the perception that clinicians' knowledge about COPD, and their skills and confidence in supporting self-management for this group of patients, was key to facilitate the use of COPD action plans. For example, it was pointed out that action plans should be personalized; the clinicians all told how vital it was to adapt the general recommendations to the specific patient. Thus, they underscored that having the relevant skills was essential to construct and individualize the written action plan.

The plan should be tailored to the patient. There are some standard phrases to use as keywords, but it (the plan) should be personalized. The patients should be able to recognize themselves. (Clinician 5)

Further, the clinicians stressed the importance of assessing patient capabilities and highlighted the need for "finding the right patient."

The patient (. . .) has to be alert and oriented. She needs to have some understanding of symptoms (and) to have experience with exacerbations so that she understands what it is (. . .) She needs to be able to perform the recommendations that are written. (Clinician 5)

The interviewees had a clear view of what type of patients the COPD action plan would be suitable for and who they would not offer it to.

There are some (plans) where I just fill in the green and yellow zones, and in the red zone I write, "Contact the doctor on day 1." (Clinician 2)

3.2.2. Clinician motivation for use of COPD action plans

The interviewees assumed that COPD action plans would benefit the patients, both physically and emotionally, if the patients were educated by experienced staff and used the plan correctly.

I have seen many (patients) that have been hospitalized again and again, and then they have been given an action plan and they have learnt about the disease, what signs to be aware of. They start treatment at an earlier stage, and they don't become so sick. (Clinician 2)

Perceived advantages of using action plans included improved patient understanding of symptoms and, subsequently, improved health outcomes. These beliefs were grounded in different sources, such as clinical studies, the wide use of COPD action plans internationally, and feedback from patients. However, while biomedical outcomes were important, use of action plans was also seen as a means to strengthen patients' overall self-management skills and self-confidence.

Those patients that have used it (the action plan) seem very pleased and a lot more self-confident. They start taking medications themselves. (Clinician 3)

Additionally, it was emphasized that COPD action plans increased patients' independence in various ways, physically and psychologically. Some of the interviewees referred to their experience from clinical practice; one example that was given was the opportunity facilitated by the action plan for patients to go on holiday without having to worry about the possibility of being hospitalized abroad. Another example was that patients felt safe during public holidays when the GP was difficult to reach. These experiences were perceived as highly motivating.

Nevertheless, some of the interviewees acknowledged that there was a lack of systematic evidence from their own practice about how and to what degree action plans were actually used by the patients. Yet, misuse of medications was a known problem in their experience, as was patients' misunderstandings about how to use the medication.

I have seen patients continue to use prednisolone because they feel they get better using it. It is important to watch out for such things. (Clinician 1)

One of the interviewees pointed out that there was little knowledge about how patients felt after discharge. She had observed that some patients felt less safe at home and that the plan was not used as recommended.

The patient says, No, I didn't use it (the action plan). I didn't feel safe, so I called my doctor instead to get a CRP. (Clinician 4)

Others said that they could get frustrated and disappointed when they experienced a lack of patient compliance, because they put a lot of time in to teaching the patients about the plan. These negative emotions were perceived to act as a barrier to continued use of the plans.

They (the patients) seem to forget everything about the plan. It's not used. (Clinician 2)

Further, a common theme in the interviews was fear of patients misinterpreting symptoms. The interviewees talked about how one major focus area was to make sure that patients knew to call their GP when they experienced more symptoms. For example, it was recognized that the use of action plans was not necessarily harmless and that assessing when to initiate medication could be difficult for the patient. One of the interviewees mentioned one study in particular that showed an increased mortality rate (referring to a study by Fan et al. [34]) and said that she had made changes to the way she used the plan.

Heart and lung (. . .) There are many similar symptoms. If they (the patients) have chest pain and swollen feet, then they must contact the doctor at once. If they become acutely worse, they must contact the doctor, so that they are not trying and trying (. . .) or call the emergency number. (Clinician 6)

3.2.3. Organizational preparedness

The interviewees highlighted that organizational support was a key factor contributing to the use of self-management initiatives in general and COPD action plans in particular. One example was the establishment of working groups that developed COPD action plans to fit the local setting at the different sites. The interviewees all described how local adaptation and a sense of ownership were important as facilitators to the use of the action plan. Local adaptation was also thought to contribute to organizational processes regarding allocation of time and responsibilities. Patient education was experienced as time consuming, and some of the interviewees accentuated how organizational ownership increased investment from the organization in dedicated time resources. Further, a clear division of roles was seen as enabling use. At all sites, nurses led most of the patient education initiatives while doctors were responsible for discussing the actual plans with the patients and approving the use.

A recurrent theme in the interviews was, however, the challenges resulting from giving the patient responsibility for information-sharing between levels of care.

We still have to hand out prints such as the COPD action plan, and we tell the patient, "Here you have two or three copies. You take one yourself, you give one to your GP and one to your pulmonary practitioner. Your GP is supposed to do your follow-ups." (Clinician 4)

The lack of a formal organizational strategy regarding coordination and information-sharing between specialist and primary care was seen as a major barrier to use of a COPD action plan.

The patient has only this piece of paper. Maybe he brings it (to the GP) and talks about it, maybe not. (Clinician 5)

Further, interviewees reported that a lack of communication between levels of care was a concern because they did not know whether GPs had adequate knowledge about the COPD action plan and felt they could not trust the GPs to use it.

I have never seen that it (the action plan) has been updated by a GP. (Clinician 8)

The lack of institutionalized update procedures and worries about the consequences thereof, was perceived as an important hindrance regarding clinicians' use of action plans in self-management support.

Patients are informed that it (the plan) is only valid as long as they feel safe using it and that it has to be updated by a doctor. If new medicines are prescribed, it (the plan) should be updated. That is the weakest point. (Clinician 2)

4. Discussion and conclusion

4.1. Discussion

By using a theory-based approach for understanding behavior, this study has identified a range of factors perceived by clinicians in specialist healthcare to influence clinicians' use of COPD action plans. Previous studies [15,22] have described factors perceived by clinicians to hinder their use of written action plans. These include patient-related factors such as poor compliance with the planned courses, inappropriate use of medication, inability to recognize symptoms, and risk of side-effects from the medication, as well as structural constraints such as a lack of time to select patients and provide education and lack of support staff. In addition, a lack of knowledge of how to construct a written action plans was found to hamper use [22]. Further, identifying the most appropriate patients for the self-management approach, i.e., patients with considerable understanding of their illness and capacity for self-management, has been suggested to facilitate the use of action plans [15]. Other studies have, however, underscored that adopting a person-centered approach to the management of chronic conditions may be difficult for many clinicians, particularly when education and motivation do not lead to the desired outcomes [20].

Our findings share commonalities with these studies. However, the present study adds to previous research by suggesting that three factors may counteract barriers to clinicians' use of action plans as identified in previous studies and in our study. First, to overcome barriers concerning lack of confidence in constructing a written action plan, it is important that clinicians have the relevant capabilities regarding self-management support, i.e., are knowledgeable and skilled. Second, organizational opportunities in the form of local adaptation may facilitate leadership, designated resources, and time to prioritize patient education. Previous studies have reported that ownership in the intervention is an important factor in the use of guidelines and research [35]; our findings align well with this. Adaptation to local circumstances was pointed out by our interviewees as a significant contributor to a sense of ownership. Ownership was again identified as an important enabler in implementing action plans as part of self-management support. Third, previous research has concluded that clinicians' lack of confidence in patients' self-management skills negatively affects engagement in self-management [21,22]. Individualized and tailored strategies for self-management are likely to improve intervention effectiveness [9,36]. It is known that certain sub-groups of COPD-patients may benefit from self-management more than others [37]. To distinguish one such group from another, a range of patient-related factors has been put forward to explain any variation: experience with disease, heterogeneity of exacerbations, acceptance of illness, trivializing symptoms, feelings of fear and anxiety, ambivalence toward treatment, beliefs regarding trust, self-management motivation, and a tendency to postpone making decisions [11,15,17,38]. These can lead to two important barriers to clinicians' use of action plans: first, their feelings of frustration and treatment futility associated with non-compliers and, second, their fear of patients' misuse or

erroneous use of medications. Our study suggests that clinicians can counteract these difficulties by being capable and motivated to find "the right patient" and generating personalized action plans.

However, a difficult barrier to overcome in the setting studied was the need for better cooperation, communication and information sharing across specialist and primary care levels. In Norway, primary and specialist care are institutionalized at different organizational levels and financed through different budgets. Coordination between the two levels has proven difficult [39]. Yet it is essential that organizational and system level factors that hinder use of COPD action plans are given attention. Coordination between levels of care should be addressed in future studies of COPD self-management support.

It is well known that different stakeholder groups identify different self-management outcomes as important [11,38,40,41]. A recent study concluded that health practitioners value improved biomedical markers, self-efficacy, and understanding of the disease and see adherence to best healthcare advice as essential [19]. To patients, factors such as independence and having choices are highly appreciated and good self-management means adapting advice in order to live well. Different understandings of outcome importance indicate that interventions at the clinician level to increase the use of COPD action plans may have unintended consequences regarding other stakeholders' behavior. Future research on self-management implementation should study the interaction and consequences of different stakeholder views.

A novel aspect of our study is the use of theory in a field that has largely taken empiric approaches to researching the use of self-management initiatives. The theoretical framework provides a systematic identification of potentially modifiable factors that may affect clinicians' use of COPD action plans and makes it possible to compare our results with those of other studies. Further, it may support the transferability of findings and anticipation of how the future use of self-management strategies may unfold. Our engagement with theory is a strength of the present study. At the same time, however, this study design may have led us to miss aspects of barriers and facilitators to the use of action plans as conceptual categories were pre-established.

In qualitative studies, sample size is often justified on the basis of data saturation, so that no new additional data are found that develop aspects of a conceptual category [42]. Because the present study was theory - driven, we aimed at perceptions within the categories and strategically recruited participants from different institutional and geographical settings and with different educational backgrounds. Although the number of interviewees was small, we are confident that a broad range of relevant aspects has been covered and that we achieved an adequate sample for content validity.

We recruited the interviewees from institutions that reported the use of COPD action plans because we wanted participants with knowledge about the subject matter. However, the study bears some risk of selection bias. We did not include institutions that have explicitly chosen not to use COPD action plans. Further, the interviewees may be biased by social desirability. We cannot know whether the factors identified as perceived barriers and facilitators to clinicians' use of action plans will be identified as such in actual practice. Thus, we may have underestimated the challenges of using action plans.

The study was conducted in Norway and further research needs to be done in other settings to assess the transferability of the findings.

4.2. Conclusion

This study offers a theoretically informed approach to examining factors perceived by clinicians in specialist healthcare

as influencing clinicians' use of written action plans in COPD-self management support. A range of factors is identified, relating to clinicians' capabilities and motivation, and organizational and social opportunities. The study may help identify and understand which facilitators and barriers to clinicians' use of action plans clinicians assess as important and inform future interventions to improve self-management support.

4.3. Practice implications

The present study underscores the need for a multilevel understanding of factors that affect clinicians' use of COPD action plans. Barriers at the patient, practitioner and organizational levels must be identified. The proposed framework can be used to guide future initiatives to promote targeted self-management support and tackle the gap between what is advocated in clinical guidelines and what is available in routine settings.

Conflict of interest

None.

CRediT authorship contribution statement

Eli Feiring: Conceptualization, Data curation, Formal analysis, Methodology, Supervision, Writing - original draft. **Tori Friis:** Conceptualization, Data curation, Writing - review & editing.

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