

# Putting the pieces together: A qualitative study exploring perspectives on self-management and exercise behavior among people living with multimorbidity, healthcare professionals, relatives, and patient advocates

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## Abstract

**Background** Behavior change and exercise are considered critical for successful self-management in people with multimorbidity, however, little is known about people's needs, experiences, and preferences. **Purpose** The aim of this study was to qualitatively explore the perspectives of people living with multimorbidity, healthcare professionals, relatives, and patient advocates in relation to self-management and exercise behavior. **Research design** Analysis was carried out by means of a hybrid inductive-deductive approach using Framework Analysis that enabled the subsequent use of the COM-B model in relation to the study of exercise behavior specifically. **Study sample** We conducted 17 interviews (9 focus groups; 8 key informants) with 48 informants from four groups (22 people living with multimorbidity, 17 healthcare professionals, 5 relatives, and 5 patient advocates). **Data analysis** Through an inductive Framework analysis, we constructed three themes: Patient education, supporting behavior change, and lack of a "burning platform." Subsequent deductive application of the COM-B profile (applied solely to data related to exercise behavior) unveiled a variety of barriers to exercise and self-management support (pain, fatigue, breathlessness, lack of motivation, financial issues, accessibility, decreased social support). **Results** Overall, the four groups shared common understandings while also expressing unique challenges. **Conclusions** Future interventions and/or policies targeting exercise behavior in people living with multimorbidity should address some of the barriers identified in this study.

## Keywords

multimorbidity, self-management, exercise, health behavior

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## Introduction

Multimorbidity is a significant burden on the affected persons, their families, the healthcare system, and society. Having multimorbidity is associated with decreased quality of life, physical and cognitive functioning and increased healthcare utilization.<sup>1–3</sup> Furthermore, the population is characterized by a high treatment burden including complex polypharmacy as well as interaction with a high number of healthcare providers in various contexts and with variable intervals.<sup>4,5</sup> Thus, the current single-disease framework is both inefficient and burdensome for people living with multimorbidity.<sup>6</sup> Instead, a holistic and patient-centered approach that acknowledges the complexity of multimorbidity and focuses on the overall wellbeing, function level and priorities of the individual is needed.<sup>7</sup>

The importance of supporting self-management in people with multimorbidity is increasingly recognized as a key component of improving patient-centered care and overall health.<sup>8,9</sup> *Self-management support* refers to using collaborative goal setting and self-efficacy strategies in partnership with healthcare providers to empower patients to better manage the effects of their conditions, to succeed in managing daily activities and fulfilling their habitual roles in life.<sup>10</sup> Lifestyle changes—that is, increasing physical activity via exercise or exercise therapy-limit disease progression, reduce medication need, and personal and societal costs.<sup>11–13</sup> A recent, promising study showed that patients with multimorbidity can increase life expectancy by 6–7 years if they adopt a healthy lifestyle, *that is*, regular exercise, balanced diet, and avoidance of tobacco smoking and excess alcohol consumption.<sup>14</sup> The empirical support for the effectiveness of exercise in producing a wide range of health benefits in multimorbidity is extensive,<sup>15–18</sup> yet common and critical barriers often prevent engagement (*i.e.*, pain, fatigue, immobility, isolation, financial constraints, concerns about adverse events, or safety).<sup>19</sup>

An approach integrating behavior change and exercise is considered critical for the success of exercise in people with comorbidities or multimorbidity<sup>16,20</sup>. Recently, increased attention has been paid to conceptualizing the factors which explain or determine health-related behaviors. Understanding these behaviors, and the settings in which they occur, is necessary for designing effective and efficient behavioral interventions<sup>21,22</sup>. At the center of this new approach is a psychological model for explaining human behavior that captures the mechanisms involved in behavior change.<sup>23</sup> The COM-B (Capability, Opportunity, Motivation) model hypothesizes that behavior comes about from an interaction of “capability” to perform the behavior and

“opportunity” and “motivation” to carry out the behavior. The utility and construct validity of COM-B in healthy individuals have been confirmed.<sup>24,25</sup> We aimed at integrating the perspectives of various stakeholders in relation to self-management support and exercise behavior within the context of multimorbidity by qualitatively exploring needs, experiences and preferences of people living with multimorbidity in combination with perspectives of healthcare professionals, relatives, and patient organization representatives. To date, the COM-B model has not been utilized to explore exercise behavior in people with multimorbidity. Hence, through its application, this study also aimed to investigate the barriers and facilitators to exercise as seen by the four groups mentioned above.

## Methods

The Standards for Reporting Qualitative Research (SRQR)<sup>24</sup> were utilized to report this study (See [Supplement Appendix 1](#)). We conducted a series of focus groups and one-to-one key informant interviews with people who live with multimorbidity and health professionals (doctors, psychologists, nurses, occupational therapists, and physiotherapists), relatives and representatives of/from various patient organizations (see protocol<sup>1</sup>). In this study, we employed investigator triangulation (the participation of two or more researchers in the same study to provide multiple observations) and data source triangulation (utilizing two methods of data collection). The focus groups were facilitated online (on Zoom) and the key informant interviews via phone for reasons of convenience and safety due to COVID-19. The focus groups and interviews were audio-recorded, transcribed verbatim and analyzed in an inductive-deductive process using Framework Analysis<sup>25</sup> and the COM-B model<sup>23</sup>.

## Participants and setting

The data collection for this study took place between May and December 2020. A purposive sample of 48 participants mostly recruited from Region Zealand (Denmark) were recruited for this study (see [Table 1](#)). People with multimorbidity were included if they lived with at least two of the following conditions: osteoarthritis (knee or hip), heart disease, hypertension, type 2 diabetes mellitus, chronic obstructive pulmonary disease (COPD), and depression, based on self-report. Willingness to share their self-management experiences and their perspectives on exercise were essential inclusion criteria. Healthcare professionals from different disciplines practicing within somatic

**Table 1.** Participant characteristics

	People with multimorbidity	Relatives	Healthcare professionals	Patient advocates
N	22	4	17	5
Age; median (range)	67.5 (54–76)	66 (20–75)	(25–64)	—
Sex; Female (%)	7 (31.8)	3 (75)	10 (58.8)	3 (60)
Marital status; N (%)	Married/Partnered Single/Separated/ Widowed Widowed	14 (63.6)		
Relation to relative; N (%)	—	Husband /Wife Daughter	3 (75)   1 (25)	
Occupation; N (%)	Full-time job Part-time job Retired Unemployed	3 (13.6) 1 (4.5) 17 (77.2) 1 (4.5)	2 (50) 1 (25) 1 (25)	
Educational level; N (%)	Vocational training Short higher Medium higher Long higher	9 (40.94) (18.1) 4 (18.1) 2 (9.09) 5 (22.7)	—	
Professional background/ Organizational role; N (%)	—	—	Physiotherapist	Project officer Volunteer Secretary
Experience (in years) treating patients with multimorbidity; N (%)	—	—	9 (52.9)	2 2 1
Patient group represented; N	—	—	Nurse Doctor Psychologist Dietitian 20+ 11–20 6–10 2–5 0–1	Arthritis Heart diseases Lung diseases Depression
Number of conditions; median (range)	4 (2–7)	—		

and psychiatric hospitals and municipalities in Region Zealand were invited to participate. The inclusion criteria for participating consisted of having treated people who live with multimorbidity for at least 6 months, being fluent in Danish and being willing to share their experiences. Relatives of people living with multimorbidity were also invited. In addition, five representatives from different Danish patient organizations<sup>2</sup> were included, if they offered representation and services for people living with one or more of the conditions mentioned above.

### Sampling strategy and data collection

We employed a convenience sampling strategy for recruitment. Patients and relatives were recruited by healthcare professionals from hospital departments linked with MOBILIZE<sup>3</sup> or via self-referral on the basis of a poster and flyers (See [Supplement Appendix 2](#)) placed in the hospitals' waiting rooms or through posts on the hospitals' and patient organizations' Facebook pages.

Potential participants who met the inclusion criteria and verbally consented to be contacted by a research team member (M.N.) were provided with information material containing the study aims and ethical considerations. Subsequently, participants who accepted to participate were booked for interviews in a way that fit their availability and preferences and received a link and a guide to join the Zoom meeting room. A day before each of the focus group interviews, the facilitator (M.C.L.) helped troubleshoot any technical difficulties the participants experienced (e.g., joining the Zoom room, sound not working). Participants who could not take part in the Zoom meeting due to technical difficulties were offered the possibility to take part in one-to-one phone interviews instead. The facilitator (M.C.L.) moderated the discussions, aided by topic guides ([Supplement Appendix 3](#)) tailored for each group. Patient representatives were interviewed by a different facilitator (M.D.), who was also the person inviting them to take part in the study. Focus group interviews lasted for 40–90 minutes, and phone

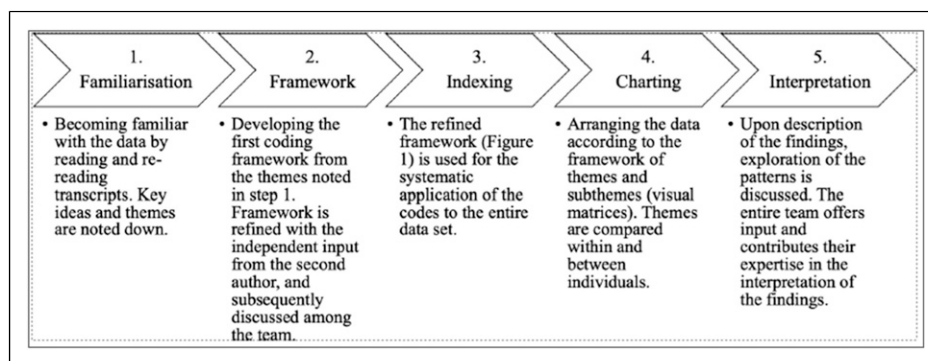
interviews lasted between 20 and 45 minutes. All the interviews were audio-recorded, transcribed verbatim and translated from Danish to English.

### Data analysis

The analytical method of this study was a hybrid qualitative approach that combined inductive and deductive analysis.<sup>26</sup> The first part was inductive (“bottom up”) using a Framework Analysis approach, exploring some “a priori” concepts (e.g., perspectives on exercise). The subsequent part was deductive (“top-down”) and consisted in developing a COM-B profile<sup>23</sup> that enabled an improved understanding of exercise behavior, seen from four different perspectives (people with multimorbidity, healthcare professionals, relatives, and patient advocates).

### Framework analysis

The translated text was uploaded to NVIVO 12 and analyzed by using framework analysis<sup>27</sup> (see [Figure 1](#)). The first step was to get familiar with the data through listening to the audio files, reading and re-reading the transcripts and the field notes. Having had a good overview of the data, we progressed to the second step where we developed a conceptual framework to understand, classify and examine the data. To ensure trustworthiness, four researchers (M.J, J.M, M.C.L and J.P) coded<sup>4</sup> a portion of the data and came together to review the codes, and to discuss inconsistencies. The final framework was developed after several iterations. The framework matrix<sup>5</sup> (categories vs. cases) was constructed by using Google Sheets. This allowed the categorization of the data and facilitated an in-depth exploration. The matrix displayed categories (themes and sub-themes) vertically and cases (individual participants) horizontally (See [Supplement Appendix 4](#)). This allowed both comparisons within themes (vertical) and comparisons within participants (horizontal). In addition, the team was able to make changes or suggestions on the same document and continuously modify the framework until it was



**Figure 1.** The five steps included in Framework Analysis

finalized. All the data indexed to the different categories were summarized for each of the groups (people with MCCs, healthcare professionals, relatives, and patient organization representatives). The next step consisted in moving beyond the data management towards interpretation. This stage included clarifying concepts, representing phenomena, and establishing relationships and explanations, as well as developing a narrative synthesis.

### COM-B profile

The COM-B model<sup>23</sup> provides a framework for understanding and changing behavior with the help of three components: Capability, Opportunity, and Motivation (see Figure 1). This model posits that to perform a particular behavior, a person must have the physical and psychological capability to do so, a person must have the social and physical opportunity and be motivated to carry out the behavior more than other competing behaviors. Capability refers to whether people have the knowledge, skills, and abilities required to engage in a particular behavior. Opportunity refers to the external factors which make performing a behavior possible (e.g., time, location, resources). Motivation refers to the internal processes which influence our decision-making and behaviors (e.g., desires, impulses, planning). As each of these components are interacting, interventions must target one or more of these to enable and maintain effective behavior change. We decided to utilize the COM-B model to generate a “profile” (also called “diagnosis”) that may be useful in understanding exercise behavior and designing tailored interventions aiming to improve lifestyle and support behavior change in people living with multimorbidity. Using data from the Framework Analysis, we mapped the participants’ perspectives on exercise onto the three determinants proposed by the model (Capability, Opportunity, and Motivation) (See Supplement Appendix 5). Understanding the key drivers of exercise behavior in people with multimorbidity might provide a good foundation for designing future interventions for this population.

### Ethical considerations

This study has received ethical clearance from Region Zealand. The study was approved by the Danish Data Protection Agency (SDU: 10.918, Region Zealand: REG-

015-2020). It complies with the General Data Protection Regulation (EU) and the Data Protection Act regarding the processing of personal data and with the ethical principles set in the Declaration of Helsinki.

### Results

A total of 48 informants were interviewed (22 people living with multimorbidity, 17 healthcare professionals, 5 relatives, and 5 patient advocates) (Table 1). We conducted a total of 9 focus groups, and 8 phone interviews (5 focus groups and 2 phone interviews with people living with multimorbidity, 2 focus groups and 5 phone interviews with healthcare professionals, one focus group and one phone interview with relatives and one focus group with patient advocates). The median age of the people living with multimorbidity was 67.5 (range 54–76) years and the proportion of females was 32 % (See Table 1). The most prevalent conditions reported were hypertension<sup>16</sup>, heart disease<sup>13</sup> and COPD<sup>9</sup> and the most common combination of conditions was heart disease and hypertension.<sup>11</sup>

Most healthcare professionals were physiotherapists (53 %) and were female (59%). The four relatives were predominantly female (3 out of 4) and were living with (multiple) chronic conditions themselves. The five patient advocates were employed by organizations representing people with arthritis, heart and lung diseases and depression, respectively.

In this first part, we focused on familiarizing ourselves with the data, identifying key themes, coding, charting, mapping and finally interpreting the data. We created three major themes by refining and clustering the initial codes and themes emerging in the early stages of the framework analysis: Patient education, supporting behavior change, and lack of a “burning platform”<sup>6</sup> (See Table 2). “Patient education” captures the necessity for patients to be equipped with a better understanding of chronic conditions and navigating the healthcare system, through educational programs, and with the support of healthcare professionals, peer supporters, and patient advocates. “Supporting behavior change” is a category that highlights some important physical and psychological barriers to engaging in exercise and staying active, as well as the role of social interaction and support in the process of changing one’s behavior. “Lack of a burning platform” illustrates the view that long-term chronic conditions currently do not represent a priority when it comes to

**Table 2.** Framework analysis categories and sub-themes

1. Patient education	2. Supporting behavior change	3. Lack of a “burning platform”
1a Facilitating educational programs	2a Accessibility is a barrier	3a Stigma of living with multimorbidity
1b Peer education	2b Long-term maintenance of exercise	3b Invisible illness
1c Lack of knowledge and understanding	2c Psychological barriers	3c Competition for resources
—	2d Social connection facilitates behavior change	—

**Table 3.** COM-B profile

Four perspectives on exercise behavior change (COM-B profile)

—	CAPABILITY	OPPORTUNITY	MOTIVATION
People living with multiple conditions	Pain, Breathlessness, Fatigue, Lack of energy	Financial hardship, Lack of access to free training, Transport and proximity, Weather, Time constrains	Worries about condition worsening, Fear of falling, Extrinsic motivation, Incorporating exercise in daily routine
Healthcare professionals	Patient barriers to exercise: Pain, Mental illness, Knowledge of the conditions, Beliefs about exercise, Breaking habits	Financial barriers, Community and social support, Accessibility, Maintenance of exercise	Support for patients who lack self-confidence, Motivating patients to be physically active
Relatives and partners	Lack of knowledge about their role, Taking over responsibility, attitudes towards partner's limitations	Weather, Proximity to training facilities, Exercising alongside partner, Group exercise	Motivator role
Patient advocates	Providing patient education and leadership training, Supporting patients to navigate the system	Facilitating social support and access, Need for establishing collaborations, Competing for resources	Lack of urgency

resource allocation and research, and that there is no sense of urgency when it comes to addressing this issue, leaving patient organizations to compete for resources.

The inductive<sup>7</sup> analysis provided us a broad framework that enabled us to go a step forward and focus specifically on exercise behavior change, from the four perspectives mentioned previously. We, therefore, utilized a part of the findings to develop a COM-B profile for each of the four groups (see Table 3).

### **Capability: Lacking the physical and psychological resources to exercise**

Several people living with multimorbidity that we interviewed shared that pain, fatigue, breathlessness, and lack of energy were barriers preventing them from engaging in exercise. This reflects issues with both physical (pain, strength, mobility, breathlessness) but also psychological capability (fatigue)—“*And, there's simply no energy to follow the recommendations.*” (Anker, person with MCCs). People with multimorbidity also experience mental barriers such as depression and anxiety. Mental illness was acknowledged as another capability element: “*It can be difficult in that situation (depression and anxiety) to get out the door at home*” (Louise, physiotherapist); “*They are suffering from many diseases, and as previously mentioned, also anxiety, which is an important barrier in this.*” (Anders, physiotherapist)

From the healthcare professionals' perspective, factors related to capability overlapped to a great extent with those identified by the patients. Pain was mentioned as a capability target influencing the patient's self-regulatory capacity and skills needed to sustain exercise. Furthermore, for healthcare professionals, patients' knowledge about their own conditions appeared to be essential: “*I actually find that the ones*

*who are most difficult to hold on to are diabetes patients and what I actually experience is a lack of knowledge. It's a lack of understanding of their own disease and what happens to their body and so many times I think they don't prioritize exercise enough.*” (Mikkel, physiotherapist) As such, providing disease-specific knowledge as part of the rehabilitation program may provide a window of opportunity to motivate the patients. Equally, knowledge seems to be important for relatives, who expressed that they lack the necessary knowledge about how to support their partner (or family member) in the best way possible. Similarly, to healthcare professionals and relatives, patient advocates emphasize the need for a better understanding of how to promote exercise to manage chronic conditions in a way that can be empowering. “*In relation to patients, we have, among other things, the project 'patient support' in the hospitals, where patients who have had a heart condition in the past or otherwise have had it in their lives, are trained to sit in hospitals and talk to those who have a similar condition.*” (David, patient representative) Patient organizations shared that they play an important role in helping patients with a lower level of education navigate the healthcare system and access different services: “*We have a considerable number of patients with lower levels of education, or no education at all, and ehm, it is simply a jungle out there for them to figure out their rights, what opportunities they have in the municipality, what they are entitled to...*” (Benedicte, patient representative)

### **Opportunity: Financial difficulties, low accessibility, lack of transportation, and social support**

Several barriers to engaging in exercise were identified by the people living with multimorbidity: lack of time, financial issues due to the high cost of medication for their conditions,

lack of access, and transportation to training facilities: “They say I have to do a lot of exercise, so it would be an advantage if there were some transportation options and there was free access to the gym.” (Carsten, person with MCCs). Most factors facilitating exercise fall into the opportunity category and include free access to training facilities: “At the day center where I am a volunteer, they also have a gym which we can use in the afternoon when they don’t use it and it is free. It’s a great advantage”) easy transport to facilities, and most of all social support, in the form of exercise with a group “What helps me is to exercise with other people. At least that gives better motivation”) (Per, person with MCCs). Being supported and encouraged to exercise by a family member, partner, or friend was also important “Well, but my daughter calls me every day to say “Mom, what are you doing today? Then I tell her I’m sitting here reading, “well that’s not what you were supposed to do” (both laugh) so my kids are nice too, when they’re here they say, “now we’re going for a little walk.” (Leah, person with MCCs).

Similar factors were shared by the healthcare professionals, who mentioned finances, community, and access to facilities. These can be seen as interrelated. For example, accessibility to facilities will only support behavior change if the financial burden associated with access to these facilities is not too high. “Time, place, and cost. And that is a lot of things at once. The fact that time must be convenient, the place should not be too far away. It must be accessible and for some, it is also about the cost”. (Anton, physician) Most relatives shared that they would exercise with their partner to support them in being active. They also highlight the importance of their family member participating in group-based exercise with people with similar conditions. The patient advocates emphasized the importance of facilitating access to services, particularly for those patients whose voices are not being heard and facilitating social support in the community. In addition, they were self-critical by acknowledging that all the efforts seem to be directed towards individual diseases and that there is a lack of collaboration between associations, which could lead to improved representation and resources: “Yes and there you might also be able to look at yourself a little critically, now that we are a lot of patient associations together. It’s not called the heart-lung association or the depression ehhh COPD association or anything. It’s called the Lung Association, the Heart Association and so on, so the question is how good are we really at getting a hold of those eh people who suffer from so many different things?” (Frederik, patient representative)

### **Motivation: We need to challenge bad habits and create supportive environments**

For some participants, incorporating exercise in their daily routines seems to be an important factor in keeping their motivation- “Well, obviously there has to be a routine

because otherwise I won’t be going.” (Christine, person with MCCs) Some participants needed a partner or family member to motivate them to be physically active: “I need someone to give me a kick in the butt, to put it frankly, right?”; “But she is so good at motivating me to some things, that’s the advantage, if you sit alone, it’s worse.” (Henning, person with MCCs) The motivation to be physically active seems to be linked with engaging in a valued activity that is perceived as meaningful: “What makes me physically active, that’s, my yoga. I’m going to yoga, I still can and it’s really good.” and also with establishing routines—I” also find reminders useful. So I, create routines. (Freja, person with MCCs) For others, the barriers to exercise were associated with emotions like fear—“I’m scared of falling because I’ve fallen while trying to enter a bus.” (Alma, person with MCCs) or worries that their conditions will worsen.

Furthermore, people’s lack of self-confidence was identified as a common barrier: “So it is the belief in oneself that is sometimes lacking because you have had so many bad experiences and things that have not succeeded and habits you have tried to change.” (Julie, person with MCCs) Defense mechanisms were identified by participants as being an important barrier to break down old habits: “You just get a barrier built up inside your head that you’re used to lying when someone asks about physical activity, like you either can’t afford it or don’t have time for it, or you don’t have the energy to do it, and that’s the defense mechanism because it’s hard to change habits.” (Julie, person with MCCs)

Increasing people’s motivation was identified by healthcare professionals as one of the main facilitators to exercise: “And then use the motivational interviewing as a conversational technique.” (Julie, physiotherapist)

A compromise (i.e., adjusting the goal of the exercise to the capability of the individual ... to ensure mastery experiences that will likely increase self-efficacy) is sometimes a good solution to enhance motivation: “Instead of achieving high levels of strength (i.e. muscular), that would of course be the best thing, but, if we are able to, we sometimes have to compromise in order to motivate the person.” (Mikkel, physiotherapist)

Relatives seemed to acknowledge their family member’s low motivation to exercise: “So it’s so easy to skip once, even though I try a lot of things. But it’s also because he’s got a bad back that sets limitations, right? So I understand his argument for not doing so.” (Clara, daughter of a person with MCCs)

In addition, the relatives also seemed to take over the role of motivating their loved ones and reminding them to be physically active: “we’ve mainly just been supportive and given the support to remember to go, even though he might not have the energy right now. But then it’s beneficial in the end.” (Clara, daughter of a person with MCCs)

## Integration of perspectives-putting the pieces together

When taken together, the four groups interviewed seem to have some overlapping perspectives (see phrases highlighted in red in Figure 2). Most groups acknowledged the importance of disease knowledge and social support while being aware of the multiple barriers to behavior change. At the same time, each of the groups shared some more specific issues. Some dilemmas ensued- people living with multimorbidity seemed to experience multiple barriers to exercise that they were trying to overcome; healthcare professionals aimed to find ways of motivating their patients and supporting them in changing unhealthy habits with the available resources that were rather limited; relatives were uncertain about their role in helping their loved ones self-manage and often took over responsibilities; patient organizations found themselves competing for funding and struggling to provide services and advocacy with the resources that are available to them.

## Discussion

### Summary

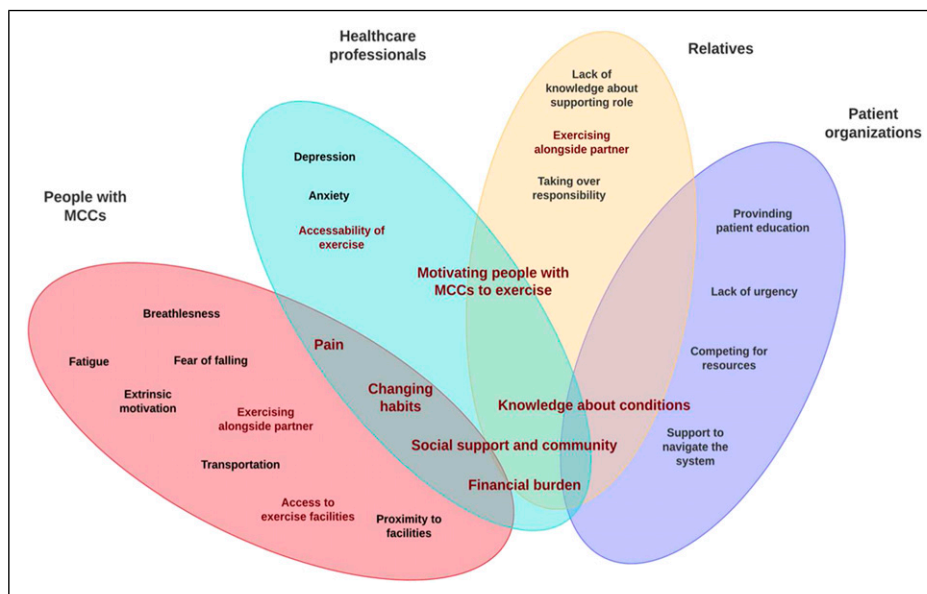
To the best of our knowledge, this is the first study to explore four different perspectives on self-management and specifically change/adoption of exercise behavior in the context of multimorbidity. The four groups interviewed expressed similar views in regard to managing multimorbidity and providing self-management support. Concerning exercise specifically, people living with

multimorbidity identified significant barriers related to pain, fatigue, breathlessness, lack of motivation, financial issues, accessibility, transportation, and decreased social support. Healthcare professionals acknowledged these limitations while sharing their challenges related to empowering people with multimorbidity to change their behavior given the limited resources. Relatives' perspectives illustrated an uncertainty regarding their role in supporting self-management, while simultaneously showing that they often take over responsibilities, which may represent a burden on their own wellbeing. Finally, patient advocates highlighted a need for more resources and a "burning platform" for multimorbidity, as well as establishment of new collaborations and initiatives for people with multimorbidity.

### Integration with previous research

Our findings add to the literature exploring self-management experiences of people living with multimorbidity and are consistent with previous findings. One commonly encountered theme includes difficulties in adhering to health recommendations related to pain, fatigue, physical discomfort but also having to cope with the emotional aspects of managing chronic conditions.<sup>28-30</sup> In addition, issues related to accessing care, proximity to facilities, and social support were also found to be prominent, which is in line with previous studies including people with single chronic conditions.<sup>31-33</sup>

Very few studies to date explored experiences with exercise of people living with chronic conditions. A study conducted by Hunt and Papatomas focusing on the meaning people with arthritis assign to physical activity



**Figure 2.** Venn diagram illustrating the four perspectives on exercise behavior change



found that exercise is experienced as part of a larger understanding of living well with arthritis and emphasized the value participants placed on exercise enjoyment and social benefits.<sup>34</sup> Our findings are somewhat similar in that all four groups interviewed acknowledged the importance of the social dimension of exercise and of achieving a sense of belonging and relatedness through exercising with others.

Stuij et al. explored how people with type 2 diabetes translate the notion of exercise as medicine into their daily lives and found that they employed a range of strategies to negotiate this translation ranging from (almost) total acceptance to resistance.<sup>35</sup> The study also revealed mostly negative experiences with care and professional support were related to sport or physical activity participation. This differs from our findings that pointed to a generally positive rapport between people living with multimorbidity and healthcare professionals.

Healthcare professionals' perspectives were characterized by an awareness of their role in empowering people to take more responsibility for self-management, but also a recognition of the barriers to supporting behavior change such as limited time and resources, paired with a lack of service coordination. In addition, for conditions such as osteoarthritis, healthcare professionals' attitudes and beliefs about exercise reflect an outdated narrative, which is not aligned with current knowledge and evidence-based practice.<sup>36</sup>

We support the conclusion that healthcare professionals play an important role in supporting self-management in people living with multimorbidity through patient-centered consultations and individualized support. With respect to caregivers, an overlapping theme with previous studies relates to partners taking over responsibility for self-management from the person living with multimorbidity, consequently limiting their autonomy.<sup>32,37</sup> This is, to our knowledge the first qualitative study of multimorbidity that included the perspectives of patient organization representatives. We believe that this group should be increasingly included in decision-making related to multimorbidity as they are an essential stakeholder who provides guidance about treatment and care options, as well as facilitating social support for people living with multimorbidity and their families, while also helping policymakers understand patient priorities and experiences.<sup>38</sup> This is consistent with the European Patients Forum (2017) position, which argues that patient organizations advocate for specific populations that would otherwise not be represented and that they should no longer be seen as a "third sector" but rather as the glue that binds public and private activity to strengthen the common good.<sup>39</sup>

### *Implications and future directions*

We would like to offer several suggestions for future research. First, more efforts need to be focused on

understanding self-management experiences in people living with multimorbidity. Given the complexity and burden of managing multimorbidity on people's lives,<sup>39</sup> we need to achieve a better understanding of the facilitators and the barriers to self-management. This will lead to developing better ways to empower this population to take more responsibility for their health and wellbeing and to a more patient-centered and holistic approach to care for multimorbidity. Moreover, despite the vast evidence emphasizing the benefits of exercise on physical and psychosocial health<sup>40,41</sup> there is a gap in our understanding of factors that predict adherence and maintenance of exercise as well as facilitators of long-term adherence in people living with multimorbidity. In addition, echoing suggestions from Dekker and van der Leeden, an approach integrating exercise and behavior change represents a challenging area of future research but one with great potential nonetheless.<sup>20</sup>

We support the view that health psychologists should use their expertise in behavior change to help healthcare and exercise professionals promote exercise adherence. Future interventions for people living with multimorbidity should consider including caregivers, who may need knowledge and support themselves. Furthermore, more attention needs to be paid to the influence of the social and structural determinants of health, including material circumstances. The influence of the socioeconomic and political context on older adults with multimorbidity is an underexplored topic in the literature.<sup>42</sup> As for patient organizations, we strongly encourage novel collaborations and initiatives advocating for those who live with multiple chronic conditions and raising awareness of 'multimorbidity' and its impact on people and society.<sup>38</sup> By joining forces, the organizations can help the growing group of multimorbid patients manage their different conditions and navigate the system that will otherwise potentially drain their already limited resources. Finally, we recommend policymakers to explore ways of supporting these collaborations and initiatives.

### *Limitations and trustworthiness*

One limitation of this study was the somewhat narrow definition of multimorbidity, which might have limited the pool of participants. On the other hand, the included conditions are some of the most common and associated with a significant global burden, thereby likely to reflect a large part of the population. Recruiting relatives of people living with multimorbidity and representatives from patient organizations was challenging, which led to a limited number of relatives and representatives being interviewed. Additionally, relatives themselves were managing one or more chronic conditions. To meet the trustworthiness criteria, several techniques such as prolonged engagement with the data and researcher triangulation were employed. In addition, emphasis was placed on establishing a clear and

logical link between researchers' interpretations and the original data. Each theme was described in detail and quotes were provided to highlight salient themes and illustrate the link between the data collected from the participants and the interpretations of the data proposed by the researchers.

## Conclusion

This study integrates four different perspectives in relation to self-management in the context of multimorbidity and provides new insight into support/promotion of exercise behavior. Overall, people experiencing multimorbidity, healthcare professionals, caregivers and patient organization representatives share common understandings while also expressing unique challenges. Future care planning, interventions supporting self-management and policy should be better aligned with the individual patient's perspectives on living with and managing multimorbidity.

## Author contributions

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## Supplemental Material

Supplemental material for this article is available online.

## Notes

1. <https://osf.io/2dgru/>
2. Gigtföreningen, Hjerteföreningen, Lungeföreningen, Depressionsföreningen
3. MOBILIZE is a project funded by the European Union's Horizon 2020 research and innovation program (grant agreement No 801790). The project centers on developing and evaluating an exercise and self-management support intervention tailored for people living with multimorbidity. For more details on the MOBILIZE-study see [www.mobilize-project.dk](http://www.mobilize-project.dk) and the Open Science Framework website (<https://osf.io/qk6yg/>).
4. A code is a descriptive or conceptual label that is assigned to excerpts of raw data
5. Framework Matrix: A spreadsheet that contains numerous cells into which summarized data are entered by categories (columns) and cases (rows).
6. Lack of urgency or imperativeness
7. Inductive analysis is a "bottom-up" analytic strategy where the researcher reads through the data and allows codes and concepts to emerge. On the other hand, deductive analysis means applying theory to the data

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