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Health professionals' experiences of group-based cardiac telerehabilitation: A descriptive qualitative study

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Abstract

It is estimated that 200 million people worldwide live with coronary artery disease (CAD). Secondary prevention for CAD patients is supported by strong evidence. Group-based cardiac telerehabilitation supervised by health professionals is a type of rehabilitation program that utilizes technologies to deliver rehabilitation services to many patients with CAD. This descriptive qualitative study aims to describe healthcare professionals' experiences of group-based cardiac telerehabilitation. A purposive sample of healthcare professionals providing group-based cardiac telerehabilitation was interviewed (N=10) from October 2023 to January 2024. The interviews were audio-recorded, translated verbatim and analysed with inductive content analysis. The results were reported according to the Standards for Reporting Qualitative Research- guideline (SRQR). The analysis resulted in six main categories: professional practices and factors contributing to the practices, digital practices in telerehabilitation, manifestations of support in a group telerehabilitation, counselling on self-care engagement in telerehabilitation, manifestations of interaction in a group telerehabilitation and telerehabilitation as an enabler of follow-up care for patients with CAD. According to the health professionals' experiences, telerehabilitation improves the availability of rehabilitation, creates opportunities for support and peer interactions among rehabilitees, and enhances the accessibility of coronary disease treatment and follow-up care. Given positive experiences, group-based cardiac rehabilitation should be further developed and its availability should be improved.

Keywords: coronary disease, telerehabilitation, health care professionals, qualitative research

Introduction

It is estimated that 200 million people worldwide and 200 000 in Finland live with coronary artery disease (CAD) [1–3]. CAD, along with cancer, is the most important national disease in Finland, causing 14% of deaths among the population [3]. CAD risk factor management, lifestyle changes and adherence to treatment and medication are the most important factors in the management of CAD and the prevention of recurrent CAD events [4]. Reducing risk factors is a major goal of cardiac rehabilitation (CR) as a secondary prevention strategy [1,5]. Digital health technologies supported by CR have the potential to address the challenges

associated with traditional facility-based CR programs and telerehabilitation has been advancing rapidly in recent years [6,7]. Telerehabilitation is a two-way interactive, technology-based telecommunication model that provides therapeutic, consultative, preventative, and diagnostic clinical telecare services for patients [7,8]. Telerehabilitation must be legal and in line with good care and service practices and consider client and patient safety [9,10]. The provider of telerehabilitation must meet the requirements of the Act on the electronic processing of customer data [10]. In this study, we use the term group-based cardiac telerehabilitation. Group-based cardiac telerehabilitation is a type of cardiac rehabilitation program that delivers rehabilitation services to many individuals with coronary disease conditions [5,11]. The telerehabilitation model is a new mode of delivering care to patients. While healthcare professionals remain uncertain about its implementation, growing familiarity and competence with digital tools in clinical settings promote its adoption [12]. In telerehabilitation, multidisciplinary teams of healthcare professionals – nurses, dieticians, physiotherapists, psychologists and physicians engage in active collaboration with patients and counsel them to enhance their adherence to lifestyle changes and use of cardiac medication [4,5].

Earlier studies have shown that health professionals provide therapeutic counselling, positive psychological support, and clear, systematic guidance to assist cardiac rehabilitees through challenging times and promote their recovery [13,14]. Professional communication skills could enhance the therapeutic relationship [15]. The therapeutic approach has been found to motivate the patient by utilizing peer support [16]. Professionals provide educational information on medication, transfer anatomical knowledge, focus on increasing physical fitness through exercise and support recovery through medication adherence [17]. As the COVID-19 pandemic progressed, the utilization of public virtual platforms increased, and participants became more comfortable with using them [18]. Adapting a program to scale requires a multidisciplinary team, collaboration between team members and easy-to-use technology or platforms [19,20]. Digital literacy, perception of security and knowledge of privacy issues in rehabilitation are the factors associated with the attitude of health professionals towards telerehabilitation [21]. According to previous studies, there are still challenges associated with the use of technology, from the perspective of both professionals and patients, including issues related to technological literacy, the reliability of technology, and ethical considerations [12,22]. It is unclear whether counselling professionals understand how technologies will play a role in patient interactions, and how the ethical principles might apply to new models [23,24]. There is limited knowledge of the technological support and education for health professionals in the context of telerehabilitation [22,25].

Therefore, counselling plays an important role in the patient rehabilitation process and follow-up treatment and technologies present possible solutions to the disparity of rehabilitation services available to patients [17,18,22,26]. Most previous research has focused on patients' experiences. Additionally, professionals' experiences of group-based cardiac telerehabilitation have been scarcely described in previous studies [6,27]. For this purpose, this study aimed to describe health professionals' experiences of group-based cardiac telerehabilitation. The research question was: How do health professionals describe their experiences of group-based cardiac telerehabilitation?

Material and Methods

Study design

An interpretive descriptive qualitative study design using inductive content analysis was used to describe health professionals' experiences of group-based cardiac telerehabilitation. The interpretive description method was used to generate new insights and inform the application of qualitative evidence to clinical practice [28]. The data were analyzed using the inductive content analysis method, which was summarized with descriptive statistics and examples of general comments [29,30]. Numerical data are presented as means (SD) and categorical data as proportions. The Standards for Reporting Qualitative Research (SRQR) guideline for qualitative studies was used in reporting on the study [31].

Setting and participants

The purposive sampling of health professionals was used. All healthcare professionals whose work involved group-based telerehabilitation were invited to respond to a survey and participate in an interview [32]. The healthcare professionals were Finnish-speaking nurses, nutritionists, and physiotherapists working in public primary care units and public special care hospitals in three wellbeing services counties. The participants were recruited with an email invitation by the researcher, contact persons in the wellbeing services counties, and a contact person in the Finnish Heart Association. Participants gave informed consent via an email link at the start of the study. Before giving informed consent, they had an opportunity to ask questions concerning the study [33]. Of the 21 healthcare professionals recruited, 10 consented to participate in the study.

A telerehabilitation group was started every month in the wellbeing services counties where the professionals were employed. The group-based cardiac telerehabilitation care lasted approximately three months. Nurses, physiotherapists and dietitians worked with coronary patient groups on the platform and organised regular remote meetings on topics related to the management of CAD. In all groups, an expert by experience was involved in the group meetings. The rehabilitees were connected to a digital rehabilitation platform which consisted of materials related to CAD treatment and a messaging feature.

Data collection

Data were collected from one-to-one interviews carried out using the Teams conference software (n = 10) between 26 September 2023 and 30 January 2024 by the first author (RJJ). A semi-structured interview was used as a flexible method allowing the participants to freely express their thoughts without having to adhere to an exact form or order (Table 1). An interview guide that included predetermined questions based on existing literature was used [34].

The interviews lasted between 26 and 51 minutes (Mean=35.5) and they were continued until saturation was reached [35]. The interviews carried out via the Teams conference application were audio-recorded after which they were transcribed and checked for accuracy. The transcription process generated 87 pages of text (Times New Roman, font size 12, line spacing 1).

Table 1. Semi-structured interview questions.

Theme	Question
Telerehabilitation description **Professional competencies**	Kindly elaborate on the nature of overseeing cardiac patient telerehabilitation Please expound on the characteristics involved in supervising telerehabilitation. Could you elaborate on the attributes required for overseeing telerehabilitation?
Digital competencies	Could you elaborate on the digital technology used in telerehabilitation? Could you elaborate on your technology competencies in telerehabilitation? What kinds of challenges do you face in telerehabilitation?
Multiprofessional collaboration	Could you elaborate on the multiprofessional cooperation among professionals in telerehabilitation?
Supporting in telerehabilitation	How do you support cardiac patients in telerehabilitation? How do you support cardiac patients to the adherence to the treatment in telerehabilitation?
Communication in telerehabilitation	Which topics do the cardiac patients usually want to discuss in the telerehabilitation meetings? How do you create a safe interaction environment during the telerehabilitation meetings? What kind of feedback do cardiac patients give about telerehabilitation?
Counselling in telerehabilitation	What else do you consider important in counselling?

Data analysis

The inductive content analysis was conducted using the Kyngäs et al. content analysis process and phases [34]. The data were analyzed following the guidelines set for inductive content analysis. The researcher read, organized, integrated and formed categories and concepts by carefully comparing the similarities and differences in the coded data. Meaning units were subsequently condensed and labelled with a total of 567 codes. The codes were sorted according to their meanings into potential 78 sub-categories following 27 categories and 6 main categories [34]. The Atlas.ti 24-software was used in the data analysis process. As the analysis progressed, the themes and main categories of the interview were considered in parallel. An example of content analysis development is presented (supplementary material).

Ethics

This study was carried out according to high ethical standards following the principles of the Declaration of Helsinki [36]. Ethical approval was obtained from the Research Ethics Committee of the University of Eastern Finland in April 2023 (20/2023). Permission to conduct the study was obtained from the chief administrators of the Wellbeing Services Counties. Eligible healthcare professionals were informed both in writing and verbally in Finnish. Anonymity, confidentiality, and the voluntary nature of participation were highlighted. The researcher obtained electronically provided written informed consent from each participant. The data files were stored on the university's secure server with a high level of protection. All direct and indirect personal data were removed from the transcripts. The data were managed confidentially and will be stored for

10 years in password-protected archive folders as per GDPR requirements [37,38]

Results

Participants and roles

All the participants were female and were aged 33–64 years (medium 48.1). The participants were healthcare professionals: nurses (n=6), nutritionists (n=1), and physiotherapists (n=3). Of the 10 participants, 7 (n=7) had 0–5 years of experience in cardiac patient counselling. One participant (n=1) had 6–10 years of experience, and two participants (n=2) had 16–20 years of experience (Table 2). All participants had less than 4 years of counselling experience in group-based cardiac telerehabilitation because the service was launched in 2020.

Health professionals' experiences of group-based cardiac telerehabilitation

Health professionals involved in providing group-based cardiac telerehabilitation described their experiences with the telerehabilitation model. The identified experiences were divided into six main categories: professional practices and factors contributing to the practices, digital practices in telerehabilitation, manifestations of support in a group telerehabilitation, counselling on self-care engagement in telerehabilitation, manifestations of interaction in a group telerehabilitation and telerehabilitation as an enabler of follow-up care for patients with coronary artery disease (Table 3).

Table 2. Demographic data of the health professionals working in group-based cardiac telerehabilitation (N=10, n, %).

Demographic data	N	%
Gender		
Female	10	100
Age (years)		
31–40	2	20
41–50	4	40
51–60	3	30
61–70	1	10
Profession		
Nurse	6	60
Nutritionist	1	10
Physiotherapist	3	30
Years of experience in counselling cardiac patients (years)		
0–5	7	70
6–10	1	10
11–15	0	0
16–20	2	20

Usage of elements in diagnosis structure and the primary diagnoses between 2014-2021.

Table 3. Health professionals' experiences of group-based cardiac telerehabilitation.

Main Category	Category
Professional practices and factors contributing to the practices	Professional attitude
	Opportunity for professional development
	Professional competencies
	Professional satisfaction
	Rehabilitees' involvement in rehabilitation
	Professional guidance
	Multiprofessional cooperation
Digital practices in telerehabilitation	Manifestations of digitalisation
	Guidance for rehabilitees on how to participate remotely
	Professionals skills in the technology use
	Challenges related to the use of technology and their solutions
Manifestations of support in a group telerehabilitation	Support to adapt to the changes brought about by illness
	Secondary prevention support for people in rehabilitation
	Enabling individual participation
Counselling on self-care engagement in group telerehabilitation	Counselling on follow-up care
	Counselling on nutrition
	Counselling on physical activity
	Counselling on coronary heart disease treatment
	First meeting guidance
Manifestations of interaction in a group telerehabilitation	Discussion on coronary heart disease
	Experiences shared by rehabilitees
	Interactions with other participants in rehabilitation
	Peer support in a group
	Creating a safe and positive environment
	Promoting peer support in the group
Telerehabilitation as an enabler of follow-up care for patients with coronary artery disease	Enabling the professional-rehabilitee connection
	Telerehabilitation as an enabler of follow-up care
	Follow-up of coronary heart disease patients
	Strengthening self-care in coronary heart disease

Professional practices and factors contributing to practices

The professionals expressed satisfaction with various aspects of telerehabilitation, including patient engagement, the materials available on the platform, remote counselling, and the delivery of remote care. Professionally required competencies encompass clinical expertise, familiarity with cardiac medicalization, knowledge of coronary disease treatment, and the ability to provide treatment recommendations. There was a requirement for extensive and profound expertise in the treatment of CAD. The professionals had gathered varied experiences across different stages of the coronary treatment continuum, which they leveraged in the context of telerehabilitation. Activity and collaboration facilitated the development of professionals' competencies. Support from fellow professionals and other healthcare providers was regarded as crucial.

Collaboration with healthcare professionals was characterized by the availability of consultations, networking opportunities, and smooth communication. Communication was described as effortless, natural, and adaptable. Working alongside peers and other professionals was seen as a catalyst for skill and competency development.

> *"With this team, we have been developing the telerehabilitation, and it's been truly positive and delightful work. Everyone shares a common vision and goal: to provide high-quality heart coaching to patients in this area. It's been somehow really innovative"* (Nurse 9)

Digital practices in telerehabilitation

The health professionals felt confident in their technical skills and deemed themselves competent to perform tasks effectively. However, their counselling skills were challenged in relation to technology-based issues, such as those involving platforms such as Teams. In cases where rehabilitees were facing difficulties, there was a notable absence of adequate technological support. The professionals provided extensive counselling to many rehabilitees regarding technology use. The professionals hoped that rehabilitees would become familiar with the theme through the materials on the platform and that they would come to the meetings prepared by familiarising themselves with the self-education materials relevant to each session's theme.

> *"When the patient hasn't been there at all, then perhaps there isn't so much benefit for them. When you've thought about those things in advance, overall, considering it, the material is really excellent. There can't be anything but benefit from it."* (Nurse 3)

Working-age rehabilitees were generally familiar with Teams. Older individuals tended to encounter the most challenges, although some of them demonstrated proficiency in technology utilization. Challenges primarily arose in connection with internet connectivity, and another common issue was concerned with malfunctioning Teams meeting links, requiring professionals to resend them. Difficulties with technology could act as barriers to participating in telerehabilitation, prompting professionals to share links and occasionally reschedule meetings.

Manifestations of support in a group telerehabilitation

The professionals were regarded as supportive persons for the rehabilitees, assuming roles as coaches, encouragers, and supportive guides. Coaching was equated with providing support for medication adherence. The management of coronary disease and self-care practices were believed to be reinforced through regular check-ins, participation in telerehabilitation programs, and enhancements in motivation. The professionals found that their role manifested as supporting and motivating rehabilitees to manage their coronary disease by helping them pursue their objectives and cope with the disease. The professionals offered compassion to rehabilitees, recognizing compassionate support as a valuable coping strategy. It was noted that remote contact with professionals, especially regarding sensitive topics (e.g. sexuality), was more accessible to rehabilitees, and telerehabilitation facilitated this efficiently. The telerehabilitation model provided the opportunity for individuals to engage in rehabilitation according to their preferences. Some rehabilitees chose not to participate in group meetings but accessed information on the platform, while others attended group meetings with peer support needs but did not utilize the platform.

"From a nurse's perspective, I aim to provide patients with support, guidance, and assistance in managing their coronary artery disease, ensuring that they regain at least the level of functionality they had before the illness. And ideally, even surpassing it." (Nurse 4)

Counselling on self-care engagement in group telerehabilitation

The professionals advised rehabilitees to contact the appropriate care facility based on their symptoms, either using platform messaging tools or during group meetings. They evaluated cardiac symptoms, identified acute cardiac or psychological situations, and guided rehabilitees towards appropriate care. Telerehabilitation was considered timely for post-discharge rehabilitation, allowing patients to be in their familiar home environment where they could absorb coronary disease management information in their own time.

Counselling topics included coronary disease self-care, nutrition, and physical training. Medication counselling served as supportive coaching for medication use, addressing medication-related issues, sharing medication-related information, and emphasizing its importance. The professionals corrected misunderstandings and provided information about medication side effects. The professionals recognized that telerehabilitation could facilitate medication adjustments by providing quick access to cardiologist consultations. Rehabilitees had expressed satisfaction in discussing nutritional matters and were eager to share their successes with others undergoing rehabilitation. The goal of physical training counselling was to promote increased daily physical activity and share information on safe exercises. The professionals guided them in distinguishing between heart symptoms and shortness of breath, supporting them in overcoming barriers to training at home.

"However, exercise and physical activity are these things for many patients with which they need encouragement… and the expertise of a physiotherapist in what you can do and how you can observe your own physical activity." (Physiotherapist 8)

Manifestations of interaction in a group telerehabilitation

Communication in groups was described as involving discussions, sharing experiences among rehabilitees, improving peer support, and creating a positive and safe environment. Professional communication competencies were developed through proficiency in broad conversation skills, motivational dialogue, and smooth interactions. The professionals mentioned discussions in group meetings, which were led by the professionals but strongly encouraged by the experts by experience.

The professionals regarded rehabilitees as experts in their coronary disease experiences. It was important for rehabilitees to feel that they were being heard. The professionals created safe environments and provided a space for patients, fostering positive support, building confidence, and encouraging participation in discussions. Peer support was emphasized in the telerehabilitation groups and considered crucial for rehabilitees. The professionals believed that peer support was essential and enhanced self-care. The presence of experienced specialists was valued, as their participation was deemed meaningful.

"I really see peer support as incredibly important, and considering the relatively short time I spend with them, I probably don't have a very big role in it. As for motivating them, it's something that comes from within, it's intrinsic, and it has already come from somewhere else. Maybe I can encourage something there,

like 'great job, how well things are going." (Nutritionist 1)

Telerehabilitation as an enabler of follow-up care for patients with coronary artery disease

Telerehabilitation was considered a high-quality form of follow-up care for every coronary patient and was seen as a solution to the shortage of access to rehabilitation services. Rehabilitees could participate in telerehabilitation from remote locations far from hospitals. The professionals believed that telerehabilitation could alleviate pressure on primary care resources, particularly in situations where resources were limited. They assumed that joining telerehabilitation would be easier for patients as they would not need to travel long distances.

The goal of this care was to prevent new heart attacks. The professionals monitored the rehabilitees' progress in the digital path and telerehabilitation platform. The rehabilitees were highly motivated, and this motivation was considered to enable their engagement and facilitate their treatment adherence. The fear of experiencing another heart attack served as one of the motivators. Telerehabilitation facilitates contact between professionals and rehabilitees. The professionals emphasized the importance of using messages to connect with rehabilitees, providing positive and supportive messages and counselling when needed. The possibility to send messages to professionals was considered important after discharge.

"But it would also ease the pressure in primary healthcare. Nurses are under a lot of strain, there are no available appointment times, and there is a need for guidance. So, we find ourselves in a situation where people may miss out on that guidance. Therefore, providing guidance to individuals and utilizing this model is crucial because it is beneficial." (Nurse 6)

Discussion

This study aimed to build an understanding of professionals' experiences of group-based cardiac telerehabilitation. The findings of this study indicate that health professionals working in group-based cardiac telerehabilitation meaningfully described the opportunities for rehabilitation availability as well as for support and peer support for rehabilitees, and the accessibility of treatment and enhancement of follow-up care. Regular contact in rehabilitation has enabled the continuity of care and timely management of health indicators [39]. Telerehabilitation was a natural part of their work and coronary patient care. In our study, the professionals had positive attitudes towards the telerehabilitation model. They considered providing telerehabilitation for every coronary patient as important follow-up care and hoped to increase patient participation. Although there is strong evidence regarding the need and efficacy of secondary prevention in CAD [4,5,40], the practices and experiences in the group-based telerehabilitation context described by the health professionals are likely to remain poorly understood.

Most of the professionals in our study had years of working experience with cardiac patients. The results are similar to an earlier study, which suggested that there are positive correlations between years of working experience and higher scores of feasibility and advantages [26]. Collaboration and support between professionals were considered important. A key finding in this study was the interdisciplinary collaboration taking place between professionals, consultation methods, and flexible task allocation. Previously, it has been noted that interprofessional collaboration is pivotal in rehabilitation activities [19,20,41] and this study further enriches the previous observations. While the digital rehabilitation model was useful, there were

some digital challenges. Only a few patient data protection issues were described in this study, and those mentioned were related to the rules of group meetings, ensuring that all discussions remained confidential. Data protection has also been poorly described in previous studies [24,42] and ethical codes may not be up-to-date, especially around the issues of telecounselling [23]. When designing remote rehabilitation models, it is also important to promote interactive relationships between the parties involved.

Traditionally, cardiac rehabilitation has involved a multidisciplinary approach including physical activities, risk factor modification, psychosocial support, and nutritional guidance [17,40,43]. The counselling provided by the professionals in this study was comprehensive, adaptable, and centred on the needs of the rehabilitees, delivered through a digital environment. Content related to tobacco in the telerehabilitation context was limited in this study. In coronary patients, tobacco and alcohol use are classified as risk factors. Cardiac rehabilitation programs have been previously found to be strongly associated with smoking cessation [44]. Throughout Europe, smoking cessation counselling remains heavily underused in clinical practice [4,45]. In the future, more information is needed on how discussions about tobacco cessation could be enhanced in remote group settings.

The health professionals described providing support and empowering rehabilitees throughout the telerehabilitation process. The findings of this study align closely with previous understandings of the interconnected behaviours and attitudes associated with rehabilitation. Helping rehabilitees self-regulate their lifestyles through motivational coaching strategies has been an important part of the implementation of cardiac rehabilitation [46,47]. The current study demonstrates the important role of peers as supporters, as has also been shown in previous studies [48–51]. This study indicated that professionals conducting remote rehabilitation for coronary patients perceive rehabilitation as a crucial part of patients' follow-up care.

Strengths and limitations

Credibility, transferability, dependability and confirmability were described to assure the trustworthiness in this study [30]. To ensure credibility, prolonged and varied engagement with each interviewee was used. All authors discussed the analysis and achieved the hierarchy [30]. Dependability was increased by including a clear and rich description of the study methods. Confirmability was ensured by providing evidence of data sources and categories. Transferability was ensured by using purposive sampling to form a nominated sample detailing the Finnish health professionals working in cardiac telerehabilitation [52]. A limited number of participants consented to be involved in the study. Caution is needed in interpreting the findings as it is possible that the study failed to capture the views of professionals with more negative attitudes towards the remote rehabilitation model, and people with more positive attitudes towards technology may take part in the study.

Conclusions

This study demonstrates that according to health professionals' experiences, telerehabilitation improves the availability of rehabilitation, creates opportunities for support and peer interaction among rehabilitees, and enhances the accessibility of coronary disease treatment and follow-up care. The results indicate that telerehabilitation can be integrated into professionals' clinical practice in caring for patients with coronary conditions. Given the positive experiences obtained, group-based cardiac

rehabilitation should be further developed and its availability improved.

Author contributions

RJJ, PK and AO contributed to the conception and design of the study. RJJ collected the data, performed the data analysis and drafted the manuscript. PK made substantial contributions to the analysis and interpretation of data, critically reviewed the manuscript and supervised the whole study process. AO made substantial contributions to the analysis and interpretation of data, critically reviewed the manuscript and supervised the entire study process. All authors have read and approved the final manuscript.

Conflict of interest statement

The authors have no conflict of interest.

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Supplementary material

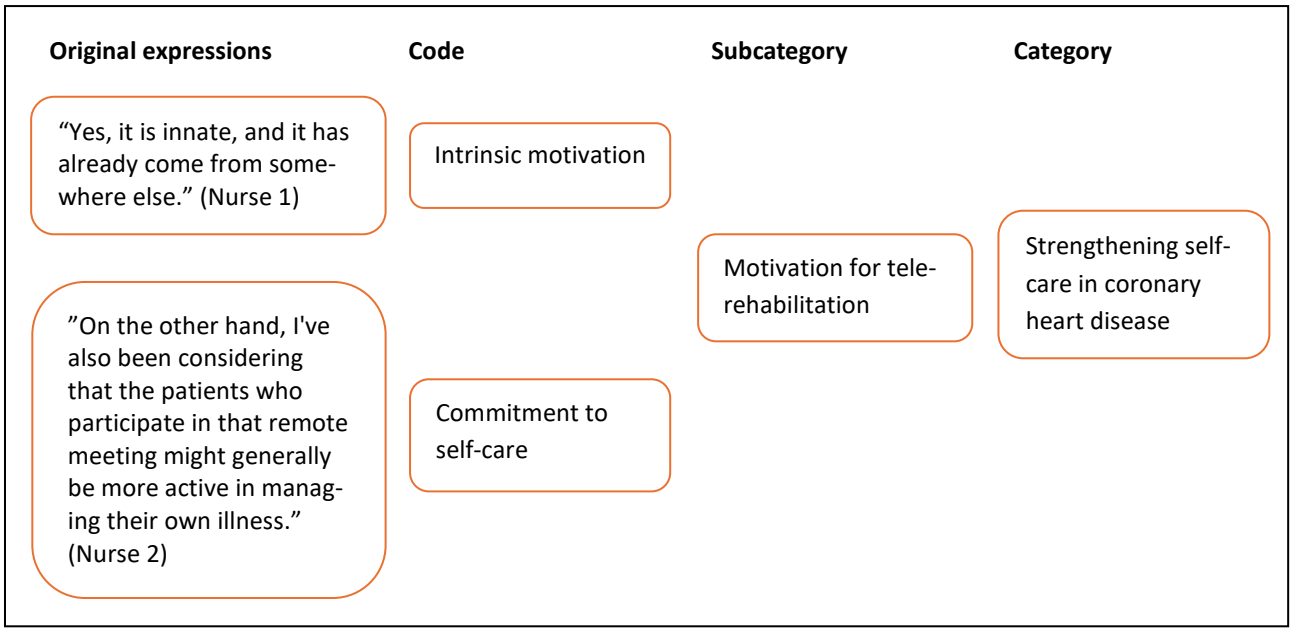

Figure 1. An example of how the content analysis was developed.