Creating value in work-focused healthcare

Marije Hagendijk

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Value@WORK
Value-based health care for occupational health

The research presented in this thesis was conducted as part of the Value@WORK project. The Value@WORK project fully focuses on value creation in work-focused healthcare. This research program is embedded within the special chair 'social insurance medicine', held by prof. dr. Sylvia van der Burg-Vermeulen, at the Department Public and Occupational Health, Amsterdam University Medical Centers, location AMC, Amsterdam, the Netherlands. This research was supported by Instituut Gak (grant number 2018–977).

About the artwork
The cover design represents our journey towards value creation in work-focused healthcare. With the contents of this thesis, we have taken the first steps on this path — standing now on a hill, while the truly high peaks still lie ahead. The challenging mountain trails, dead ends, and detours symbolise that this journey is, and will continue to be, far from straightforward. The cover is hand-painted using handmade paints from natural and non-toxic pigments. These include paint made from earth pigments such as yellow ochre and green earth: quite literally the chemical building blocks of mountains. The mountains reflect my favourite landscape and a few in-jokes are woven into the artwork adding a personal touch.

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Part I. Value creation in social insurance medicine

Part II. Patients' experiences and needs in their work-focused healthcare trajectory

Part III. A work-related standard set of outcome measures for patients with CVD

PREFACE

During my Bachelor's and Master's studies in Human Movement Sciences, I was introduced to the importance of occupational healthcare care through multiple courses. This sparked my interest, leading me to pursue an internship with an organisation that implements preventive health interventions in workplaces, targeting sustainable employability. Additionally, throughout my studies, I always felt a lingering curiosity about the economic aspects of healthcare. This curiosity led me to start the Master's in Business Administration with a focus on health. There, I was introduced to the concept of Value-Based Healthcare, which was a revelation. It prioritises the most important health outcomes for patients rather than just focusing on healthcare costs. This concept perfectly merged my interests in providing the best healthcare services for patients, rooted in my background in Human Movement Sciences, and for understanding the economic impact of these healthcare services. As I neared the completion of my studies, I added value-based healthcare and occupational health to my job search terms. The PhD position on ‘creating value in social insurance medicine’ immediately caught my attention.

This PhD position was part of the Social Insurance Medicine professorship at the Faculty of Medicine, University of Amsterdam, which was assigned to Sylvia van der Burg-Vermeulen on 1 September 2019. Inspired by the positive results of earlier adoption of the ideology of value-based healthcare (VBHC) in curative care and the possibilities that the human-centred design approach offers to deliver healthcare services while prioritising the experiences and needs of its users, Sylvia was curious about their potentials to create value-driven social insurance medicine. Consequently, she dedicated her first term of her professorship to the provision of value-driven social insurance medicine, and, therefore, assembled an interdisciplinary team of researchers.

I met the team during the summer of 2020. And even though I knew nothing about social insurance medicine yet, they were enthusiastic about taking on the challenge with me. Together, we decided to focus on four pillars in this first term of the Value@WORK project: (1) Exploring how value can be created, (2) investigating the patient’s needs, (3) identifying and measuring key work-related outcomes, and (4) striving towards more integrated work-focused healthcare through networked care. The first three pillars were assigned to my PhD project, while the fourth pillar was assigned to the postdoctoral researcher, Nina Zipfel.

It is important to acknowledge that the goal of the professorship was to create value within social insurance medicine, which was therefore our initial point of exploration. By adopting VBHC as foundational concept – emphasising the delivery of maximum value to patients throughout the entire care trajectory – we subsequently shifted to a more integrated approach.

During this period, Sylvia also met a cardiologist passionate about enhancing work-focused cardiovascular care. Recognising the significant burden of cardiovascular diseases on overall health and work participation, and inspired by the VBHC concept — which aims to deliver maximum value by focusing on the most important outcomes for patients per medical condition — they decided to collaborate on their mission.

Five years later, this thesis is the result of the investigation that followed. Seventy-three individual interviews, sixteen observations, six group interviews, four voting rounds and an extensive literature review resulted in seven manuscripts. During this investigation, I had the opportunity to learn many new research methods and to unleash my creativity by creating infographics, booklets and videos. We gained deep insight into what patients find valuable and the challenges faced in practice that limit value creation. In this thesis, we make recommendations to overcome some of these challenges and provide a tool to take the first steps towards value creation. For me, the highlight of this PhD project was the real-life testing of this tool, a newly developed standard set, where we aimed to support both patients and professionals to create value.

With this thesis, we hope to inspire all involved stakeholders to join us on this journey and collectively steer towards value creation in work-focused healthcare. I hope you feel inspired after reading it!

Marije Hagendijk
Amsterdam, September 2025

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General introduction

“We all say that the patient is central [in healthcare], but in practice this is often not the case. (..) The current support and care do not always meet the individual's needs. Individuals who need care sometimes wander endlessly through 'the system'. Professionals working past each other, having to make separate appointments when they could also be planned on one day, having to tell the same story over and over again, being sent from pillar to post. It costs individuals an awful lot of time and often does not result in the desired improvement in their daily lives. (..) Care should take place less in boxes, more with and around people, with room for the differences between people. If care is provided more coherently, the current thinking in terms of costs will also shift to thinking in terms of results for the patient. In five to ten years, we should be able to say to each other: in the past we talked about the first, second and third line; now about value for people. What are the outcomes of care at reasonable costs?”
- Taskforce Report: ‘The right care in the right place’ [1]

Healthcare systems worldwide are under increasing pressure due to a rapid rise in chronic care needs. The success of treatment-based advancements in healthcare services, which have been available to many for decades, underscores both the benefits and challenges of progress. While these innovations have significantly reduced mortality from diseases, they have also contributed to a growing number of people living with chronic health conditions [2,3]. If we continue to organise care as we do now, the rising demand for healthcare in the Netherlands will mean that by 2040, one in four people will need to work in healthcare. Additionally, the financial impact of rising demands and advancements in healthcare is significant: healthcare expenditure is projected to grow twice as fast as the economy over the coming years. These consequences affect both manpower and finances, of which the consequences also affect other crucial sectors such as education and safety. This situation is not feasible and calls for a different organisation of care to keep healthcare effective, safe and person-centred [1,4].

Both internationally and nationally, a transformative movement is underway, redefining our perspective on illness and health. The focus is shifting away from illness-centred approaches and the interests of healthcare systems and providers, toward empowering individuals to maintain their health, functionality, and independence for as long as possible. This shift prioritizes what people genuinely need to thrive and lead fulfilling lives. To achieve this, care must be better tailored to the needs of the patient [1,5]. In the Netherlands, the Integrated Care Agreement by the Dutch government advocates that in all aspects and areas of healthcare, efforts must be directed towards value-driven care. This means that care provision should primarily target the patient’s needs, while using people, resources and materials efficiently. Value-driven care should be developed together with and around the patient, take place in the right setting, and focus on health rather than illness [2].

NEED FOR VALUE CREATION IN WORK-FOCUSED HEALTHCARE

In the coming years, the demand for work-focused healthcare – including all advice, treatment, guidance, and support specifically aimed at enhancing patients’ ability to participate in work [6] – is expected to increase as well, due to the growing share of the population with a chronic condition and the rising retirement age. For example, according to the Dutch Social and Economic Council, over the next 20 years the number of people with cardiovascular diseases (CVD) in the Netherlands – one of the top three health conditions contributing to the current disease burden – is expected to rise from 1.9 million to 3.0 million [7]. With most CVD patients being between 65 and 74 years old [8], and the retirement age in the Netherlands expected to increase from 67 to 69 years by 2040 [9], an even larger proportion of this growing group will fall within the working population. That is why within work-focused healthcare provision in the Netherlands, a movement towards providing more valuable care has been initiated, aiming to offer more accessible, understandable, and person-centred services [10].

The importance of work-focused healthcare for the individual and society

For individuals in the working force, chronic diseases such as CVD often lead to reduced work productivity, commonly referred to as presenteeism. These conditions can result in temporary or prolonged sick leave due to fatigue, pain and functional limitations, and, in some cases, permanent work disability [11-13].

At an individual level, being on sick leave and unable to perform paid work can undermine a sense of meaning and purpose, diminish self-esteem, reduce social contacts and compromise financial independence, ultimately lowering an individual’s overall health and well-being [14]. At a societal level, sick leave results in a reduced workforce and higher socioeconomic costs, which is particularly concerning given that the burdens of the social security system and healthcare in the Dutch aging society are already supported by a shrinking proportion of the population [9].

To ensure the sustainability of social security and healthcare systems, as well as to promote the health and well-being of individuals, it is crucial to support a swift return to work and sustained employment for those facing work-participation challenges due to chronic diseases. Receiving work-focused healthcare is considered crucial, helping to overcome disease-related presenteeism and sickness absence [15,16].

Lack of focus on value creation in work-focused healthcare

The Royal Dutch Medical Association advocates that work-focused healthcare is a multidisciplinary responsibility, since patients typically first consult their general physician and medical specialist for treatment, with the occupational physician or insurance physician becoming involved afterwards [17]. However, in the Netherlands, there is a strict division of roles between medical and occupational professionals. Medical healthcare professionals treat the medical condition, while occupational healthcare professionals guide and assess the work-related health aspects. This strict division is to prevent conflicts of interest; however, the medical disciplines fall under different ministries and funding systems, creating barriers to communication and innovation at their intersection [17]. As a result, work-focused healthcare is often fragmented and inconsistent, leading to dissatisfaction among both patients and healthcare professionals [15,18].

Lack of focus on value creation in social insurance medicine

Social insurance medicine plays a specific role in work-focused healthcare, and falls under the discipline of occupational health. Social insurance medicine services, provided by insurance physicians, include supporting patients experiencing long-term work disabilities and conducting medical evaluations of their functional capacity. During these evaluations, insurance physicians review the preceding activities to return to work, assess current functional abilities and determine a long-term prognosis. The results of these medical evaluations determine whether the employer has met the reintegration obligations, the patient's potential for current and future work participation, and which disability benefits or specific interventions best align with this potential. For employees, individuals without an employer and young disabled persons, social insurance medicine services are primarily provided by insurance physicians working for the Dutch Social Security Agency: the Institute for Employee Benefit Schemes (Dutch SSA) [19]. Self-employed individuals can opt for work disability insurance, which offers access to social insurance medicine services through insurance physicians working for private insurance companies. The daily practice of social insurance medicine often focuses on the regulatory contexts, emphasising justice and legality during the medical evaluations. This regulatory context does not only prioritise the patient's needs but also balances the interests of society and employers. The Dutch SSA acknowledges that, due to limited collaboration, the impact of complex laws and regulations, and information technology landscape barriers, the needs of the patient are not always met [20]. This presents an opportunity for social insurance medicine to enhance its care delivery by prioritising the patient as the central stakeholder, ensuring their needs are consistently met with value-driven solutions.

REALISING VALUE-DRIVEN WORK-FOCUSED HEALTHCARE

As advocated by the Integrated Care Agreement, all aspects and areas of the Dutch healthcare system should strive to keep healthcare accessible, high-quality, and affordable by ensuring value-driven care [2]. Additionally, all physicians – also those providing work-focused healthcare services – have taken an oath to prioritise the patient's needs [21]. Therefore, providing value-driven care for patients should also be integral to the practice of work-focused healthcare. To provide value-driven work-focused healthcare, it must be developed together with and around the patient, take place in the right setting, and focus on health rather than illness.

In this thesis, value-based healthcare (VBHC) and human-centred design (HCD) serve as fundamental concepts to explore how value can be created in work-focused healthcare, as both concepts align closely with the core principles as outlined above.

Value-based healthcare (VBHC)

The concept of VBHC targets both efficiency and person-centredness by aiming to achieve optimal value for patients. In this context, value is defined as the health outcomes that matter most to patients relative to the costs needed to achieve those outcomes [22,23]. The concept was developed to redefine the shared goal in healthcare targeting a person-centred system organised around what patients need [24]. To reach this goal, the concept emphasises reducing fragmented, volume-oriented care and focusing on integrated care that targets key outcomes for patients with similar health needs throughout the care trajectory [24]. Therefore, health outcomes, the numerator in the value equation, refers to both short- and long term health outcomes which are condition-specific and multidimensional. Costs, the denominator of the value equation, refer to the resources required throughout the full trajectory of care of a patient's medical condition [25].

The VBHC concept describes that, to achieve optimal value, value should be defined as the ultimate goal of healthcare delivery, healthcare should be organised around the way value is actually created, value needs to be measured and the reimbursement should align with value creation [26]. To start the value transformation in curative care settings, seven elements have been outlined, including: 1) structure healthcare into integrated multidisciplinary teams, 2) measure and discuss outcomes throughout the full care trajectory, 3) measure costs and resources throughout the patient's full care trajectory and shift towards bundled payments to stimulate comprehensive care trajectory, 4) integrate care delivered across separate facilities, 5) learn from, and share, information on outcomes and costs, 6) establish a supportive information technology system, and 7) encourage innovation and motivational culture to stimulate value creation [27]. The adoption of elements from the VBHC concept has demonstrated its effectiveness in enhancing patient care [28,29]. For example, utilising outcome data has been shown to improve the quality of care at both aggregate and individual levels [30]. At aggregate level, outcome data facilitate benchmarking, which promotes learning and improvement across healthcare institutions [31]. On an individual patient's level, person-centred outcome data can be used during healthcare consultations to support shared decision-making and to address the patient's needs [32-34]. These findings align with targeting the provision of appropriate healthcare.

To date, the Dutch healthcare system has mainly embraced the second element of the VBHC concept: collecting and using patient-relevant outcome data. For example, since 2010, Santeon – a partnership of seven top clinical hospitals in the Netherlands — has been continuously measuring and comparing outcome data for different health conditions to achieve optimal quality of care and patient satisfaction [35]. In addition, within the "Meetbaar Beter" programme, clinical, health and quality of life outcomes for cardiovascular disease patients are transparently reported by 14 heart centres. This transparency allows to elevate and maintain the treatment of heart diseases in the Netherlands at the highest level [36]. To standardise outcome information, several disease-specific and generic outcome sets have been developed in recent years [37], driven by a financial impulse by the Dutch Ministry of Health, Welfare and Sport [38]. Looking ahead, the focus on collecting and using outcome data remains crucial. In the "Integral Care Agreement" of 2022, VBHC was embraced as a key principle for organising future care, with a major ambition to make outcome information publicly available for 50% of the disease burden [2].

Human-centred design (HCD)

HCD also supports the creation of value in healthcare systems by considering all people involved as primary stakeholders [39]. HCD offers a holistic, systems approach that ensures problem-solving and innovation align with the dynamics of complex sociotechnical system people are part of. HCD focuses on understanding human needs, preferences and experiences to create more effective products, services, policies and organisations [40,41]. HCD originally emerged to boost industrial production efficiency, but it is increasingly recognised as a valuable tool for tackling today's complex healthcare challenges. This approach aligns well with the need to develop care collaboratively with and around the patient, ensuring the creation of value.

HCD contains three key characteristics. First, HCD emphasises the needs of people and how design can respond to these needs. For example, in healthcare, it is essential to understand patients' perspectives – including how and why they think and behave the way they do – before developing any intervention. Secondly, to gain this thorough understanding, it is crucial to engage end users and other stakeholders throughout the full design process. This continuous engagement ensures that the design remains relevant and effective. Thirdly, as also highlighted in the concept of VBHC, HCD states that healthcare services should not be addressed in a fragmented manner, acknowledging that innovation in one part in the healthcare system can impact patients' needs in another. Therefore, HCD considers it crucial to understand the interactions between various system levels in order to create effective solutions [41].

Depending on the specific purpose or phase of the design context, a variety of methods support the integration of HCD. For instance, interviews can be enhanced with generative techniques to explore experiences more deeply. To gain a thorough understanding of how people perceive certain activities, researchers can provided booklets with small assignments for participants to reflect on a few days before their interview. This approach helps gaining deeper insights into the participant's perspective [42]. Additionally, patient-journey mapping is a well-established HCD method in healthcare. It visually records the dynamics of a sociotechnical system over time, by identifying and graphically representing all stakeholders, touchpoints and experiences from a patient's perspective [43]. Furthermore, observing stakeholders in real-life settings may be used to investigate a product's perceived value and its impact on (work) processes [44].

The application of VBHC and HCD in work-focused healthcare

Since the introduction of the VBHC concept in 2006, it has demonstrated its ability to improve the effectiveness, safety and person-centredness of care in both curative and non-curative settings [44]. This success suggests that the principles of VBHC could also provide a good framework for creating value in work-focused healthcare. However, as the application of VBHC within work-focused healthcare is still a new area, it is important to explore how the specific elements or components of this concept can be adapted to fit this practice, as they cannot be directly applied to every setting. For example, when implementing VBHC in healthcare for patients with long-term medical conditions, challenges arose, as some VBHC elements were found to not seamlessly fit current practices, such as defining a cycle of care [45]. Similar issues arose in primary care, where the absence of clear endpoints and a clear definition of single health conditions posed challenges [46]. These examples highlight the importance of first determining what value creation should entail within work-focused healthcare and defining how the elements of the VBHC concept can contribute to this.

Additionally, given the positive impact of value-driven outcome data on quality of care, measuring key outcomes that hold the highest value for patients in terms of work participation is considered crucial for driving value in work-focused healthcare. However, despite the broad range of person-centred sets for various medical conditions and health statuses [47], work is often either not included or only addressed through a single outcome domain related to work functioning [48,49]. Therefore, it is suggested identifying the most important work-related outcomes can help create value within work-focused healthcare.

Additionally, in response to the shift in healthcare toward focusing on patient needs, methods that support the integration of HCD are increasingly being applied within healthcare research. Despite their growing use in healthcare research, these methods have not yet been applied within work-focused healthcare research. Using HCD methodologies in this context offers the opportunity to explore value creation in work-focused healthcare in a structured and systematic way.

AIM OF THIS THESIS

This thesis aims to enhance value in work-focused healthcare for patients, by applying the foundational principles of VBHC and HCD. To achieve this, the thesis addresses three research questions (RQ) that explore core principles of these concepts, guiding the creation of value in work-focused healthcare:

RQ1. How can value be created for patients in social insurance medicine from the professional's perspective?

RQ2. What are the patient's experiences and needs throughout their work-focused healthcare trajectory?

RQ3. Which work-related outcomes are most important for individuals experiencing work participation problems due to CVD (a), and how can these outcomes enhance the perceived value for both patients and professionals during consultations (b)?

OUTLINE OF THIS THESIS

This thesis is structured into three parts, each addressing one of the research questions. We adopted the VBHC concept as one of the foundational concepts – emphasising delivering maximum value to patients over the full care trajectory – and, therefore, we strived to use an integrated approach. As a result, from Chapter 4 onwards, the full care trajectory of work-focused healthcare is encompassed.

In addition, recognising the significant burden of CVD on overall health and work participation, and drawing inspiration from the VBHC concept – which aims to deliver maximum value by focusing on the most important outcomes for patients per medical condition – from Chapter 5 onwards, the focus is on patients with CVD-related work participation problems as the target population.

Figure 1 illustrates the outline of the thesis structure, visualising the aim, context, perspectives and methodology for each chapter.

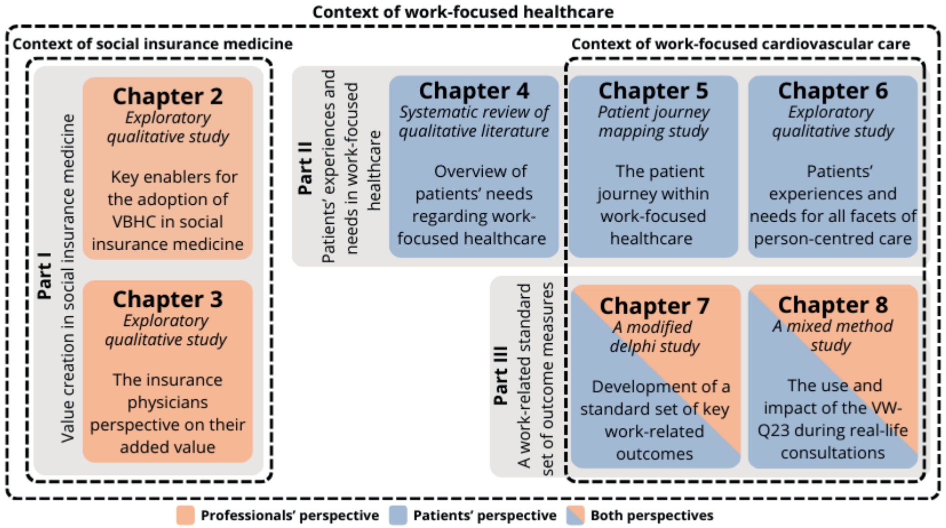

Figure 1. Thesis outline

The first part of this thesis explores how value can be created in social insurance medicine from the perspective of professionals (RQ1). Therefore, **Chapter 2** presents an exploratory qualitative study involving professionals from social insurance medicine and VBHC adopters in the curative care sector to identify key enablers for the adoption of VBHC in this field. Additionally, **Chapter 3** examines what insurance physicians perceive as facilitators and barriers to adding value for their patients, as well as opportunities to create value during the work disability assessment.

The second part of the thesis focuses on understanding patients' experiences and needs throughout their work-focused healthcare trajectory (RQ2). First, **Chapter 4** provides a systematic review of qualitative literature to offer an overview of patients' needs regarding work-focused healthcare for those experiencing work-participation problems due to chronic disease. **Chapter 5** visualises the journey of employees experiencing work participation problems due to CVD within work-focused healthcare. It presents the moments of interaction, timespan, involved stakeholders, their activities, experiences and needs and opportunities for improvement. Additionally, **Chapter 6** describes the experiences and needs of patients when experiencing work participation problems due to CVD, focusing on all facets of person-centred care.

Finally, in the third part of the thesis, **Chapter 7** describes the development of a value-based work-related set of outcome measures for patients with CVD (RQ3a). **Chapter 8** outlines a mixed-method study exploring the use and impact of the value-based work-related outcome set in real-life consultations, identifying potential barriers and facilitators to its use (RQ3b).

This thesis concludes with the general discussion in **Chapter 9**, which reflects on the results and presents concluding remarks.

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Part I

Value creation in social insurance medicine

Value-based healthcare for social insurance medicine: Key enablers for adoption in practice

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ABSTRACT

Background: Driven by rising retirement age and increasing prevalence of chronic diseases impacting work participation, there is an increasing need for quality and efficiency improvement in social insurance medicine (SIM). SIM provides guidance to individuals facing long-term work disability, assess their functional abilities and eligibility for long-term disability benefits. Value-based healthcare (VBHC) targets quality and efficiency improvements in healthcare by placing a priority on improving patient value. So far, VBHC has been introduced with fundamental principles and essential components for its adoption in curative care. Hence, there is room for debate on what are key enablers for the adoption of value-based SIM.

Objective: The study aims to explore key enablers for the adoption of VBHC in the practice of SIM.

Methods: In this exploratory qualitative study, participants consisted of 15 professionals with expertise either in SIM (n=10) or with expertise in the adoption of VBHC in the curative care sector (n=5). Each participant took part in both a semi-structured individual interview and a focus group interview. Thematic coding was employed to analyse the data.

Results: Seven key enablers were identified: (1) investigate the meaning and implementation constraints of value in SIM, (2) integrate SIM into work-focused care networks, (3) explore the need and feasibility for specialisation based on functional problems, (4) identify the most important work outcomes for the patient, (5) identify proxy indicators for cost drivers, (6) identify value-driven financial incentives and (7) develop an information technology system to exchange data.

Conclusion: This paper provides understanding of what is needed to adopt value-based SIM. Future research should delve deeper into these seven key enablers to facilitate the adoption of VBHC, and thereby promote value creation in the practice of SIM.

BACKGROUND

The demand for care provided by social insurance medicine (SIM) is rising, as it offers guidance to individuals experiencing long-term work disability, conducts medical assessments of functional abilities and provides advice on supportive disability benefits. This rising demand is mainly driven by the increment in retirement age [1] and the increasing prevalence of chronic health conditions among the working population [2]. In turn, chronic health conditions contribute to an increasing strain on the experienced health, functioning and diminished ability to engage in work and society in the working population [3,4]. Consequently, the increasing prevalence of chronic health conditions cause an increasing financial burden on SIM attributed to prolonged periods of sick leave [5].

Therefore, there is a dual need for quality improvement initiatives within SIM improving work participation and efficiency. The concept of value-based healthcare (VBHC) specifically addresses this need for quality improvement in healthcare by prioritising and enhancing value for patients [6,7]. In the concept of VBHC, patient value is defined as improving patients' healthcare outcomes relative to the costs [6,7]. Thereby, VBHC aligns with the current shift towards humanisingand personalising healthcare, improving valued experiences and outcomes. VBHC aims to counteract the rising costs and inefficiencies that are prevalent in healthcare systems [8,9]. To counteract this phenomenon, healthcare providers are encouraged to work towards delivering maximum value to patients by diminishing fragmented, volume-based care and emphasising integrated, valuebased care [10–13]. The VBHC approach addresses the challenges posed by the increasing healthcare demands and shortages in personnel, extending beyond mere process optimisation [14]. To facilitate healthcare providers in curative and paramedical care settings adopt VBHC, seven principles have been outlined, including (Table 1) (1) structure healthcare into integrated practice units centred around a specific health condition for more integrated and focused care (2) measure outcomes for every patient (or group) throughout the entire care cycle, (3) measure costs for every patient (or group) throughout the entire care cycle and shift towards bundled payments for comprehensive care cycles, (4) integrate care delivery across separate facilities, (5) learn and share information on outcomes and costs, (6) establish a supportive information technology system and (7) encourage innovation and motivational culture to stimulate value creation [15,16].

In curative care settings, research has shown that the adoption of VBHC improves patient-centred outcomes relative to the costs [17–19]. However, it is not yet clear to what extent the principles as outlined for the adoption of VBHC in curative and paramedical care can be adopted in other healthcare settings. For example, in primary care, it was found that the principles did not fit the practice. The adoption of VBHC in primary care was hindered by the absence of clear endpoints and a clear definition of single health conditions [20,21].

Consequently, key enablers for an effective adoption of VBHC in primary care were suggested, including organising specialisation around subgroups of patients with similar needs and the integration of primary care patient subgroup teams within relevant specialty providers [21]. Similarly, it can be debated how VBHC can be applied to the practice of SIM. Therefore, this study aims to explore key enablers for the adoption of VBHC in the practice of SIM.

Table 1. The principles for the adoption of value-based healthcare (VBHC) in curative and paramedical care settings [15,16]

Key enabler	**Explanation/definition**
Structure healthcare into integrated practice units centred around a specific health condition for more integrated and focused care	Value is created over the full cycle of care. Therefore, all professionals involved in the care of a health condition should work together in so-called integrated practice units, delivering a comprehensive range of services as an interdisciplinary team.
Measure outcome and costs for every patient (or group) throughout the entire care cycle	To determine value, outcomes and costs need to be measured. Since value is created for a specific health condition over the full cycle of care, outcomes and costs should be measured at the health condition level.
Shift towards bundled payments for comprehensive care cycles	To stimulate efficiency over the full cycle of care, the reimbursement should align with the full care cycle. For curative care the principles state that the best payment approach aligned with value is a bundled payment system, covering the full cycle of care for a health condition. Providers need to adopt bundles as a tool to grow volume and improve value.
Integrate care delivery across separate facilities	Value is created over the full cycle of care, so the VBHC principles state not only all professionals involved in the care of a health condition within one institution should work together. But also, across separate facilities care should be delivered in an integrated manner.
Learn and share information on outcomes and costs	To improve value, teams and institutions should share information on outcomes and costs to increase knowledge and learn inside and outside the own team/ institution.
Establish a supportive information technology system	A supporting information technology platform needs to enable the value-based delivery system.
Encourage innovation and motivational culture to stimulate value creation	Value should be defined as the goal within healthcare provision. Therefore, teams/institutions should target a culture of enthusiasm and trust to create value by creating a sense of shared responsibility to learn and improve.

METHODS

Design and setting

This study employed a qualitative explorative study design including individual and focus group interviews. Since this study was conducted in the Dutch context, an explanation of SIM in the Dutch work-focused healthcare context is provided in Box 1. Further explanation of the seven principles to adopt VBHC in curative and paramedical care is given in Table 1. The consolidated criteria for reporting qualitative research checklist was used for reporting the results [22].

Box 1: The practice of social insurance medicine (SIM) as part of work-focused healthcare in The Netherlands

Work-focused healthcare helps patients to stay at work or return to work by assessing their abilities and limitations related to work participation and providing advice on functional recovery [59–61]. It involves a variety of healthcare professionals, including curative care, rehabilitation and occupational healthcare professionals [43]. In the Netherlands, work-focused healthcare is characterised by a strict division of roles: curative healthcare professionals treat the medical condition, while occupational healthcare professionals focus on work-related health aspects. SIM, an important component of work-focused healthcare, offers guidance to individuals experiencing long-term work disability and conducts medical assessments of their functional abilities [62]. Based on the assessment results, interventions that promote health and participation can be offered to the patient. This service is provided by social insurance physicians, mainly working for the Dutch Social Security Agency (SSA): the Institute for Employee Benefit Schemes. Additionally, labour experts utilise the medical assessment findings to evaluate the patient's remaining earning capacity, which determines whether the patient is eligible for facilities including disability benefits.

Respectively, social insurance physicians working for the SSA conduct the work disability assessments for three groups of individuals falling under different work disability regulations. First, social insurance physicians assess the disability for employed sick listed after 2 years of sick leave (Dutch Social Security Schemes: Work and Income (Capacity for Work) Act). Second, sick-listed individuals without an employer receive guidance and assessment by a social insurance physician already earlier during the first 2 years of their sick leave (Sickness Benefits Act). Third, they assist and assess young disabled persons in exploring their work opportunities (Young Disabled Persons Act). Self-employed workers can opt for private work disability insurance, which provides return to work support and supportive income in case of work disability. In this case, SIM is provided by an insurance physician working for a private insurance company.

Recruitment

Participants were selected through purposive sampling, targeting a various group of participants with (a) experts in SIM and (b) experts in the adoption of VBHC in the curative care sector. This ensured examination of the research question from two crucial perspectives. The participants were recruited through the network of the researchers. All participants were personally invited through e-mail. Four individuals declined the invitation to participate, because of no available time (n=2), no longer being employed in their position (n=1) or no response (n=1). When individuals were willing to participate, an individual interview was scheduled. Subsequently, participants were allocated to one of the two focus group interviews.

Data collection

All participants participated in both an individual and focus group interview, stimulating a productive iterative data collection to enhance data richness. First, all individual interviews were conducted and analysed, followed by the focus group interviews.

The semi-structured individual interviews

The first author (MEH) conducted 1-hour semi-structured interviews with each of the participants via a video call platform (Microsoft Teams) from November 2021 to January 2022. During the individual interviews, the participants explored opportunities and challenges to adopt VBHC in SIM. For this, separate interview guides listing topics and open-ended questions, of which the themes were derived from the principles to adopt VBHC in curative and paramedical care [13,15,16], were developed for both the interviews with the experts in SIM and experts in VBHC separately (see online Supplemental Material 1). These interview guides were used as a memory aid for the interviewer.

All participants were given preparatory information in the form of an infographic and an accompanying video explaining the infographic. The participants with expertise within SIM received an infographic explaining the VBHC concept, and the participants with expertise in the adoption of VBHC received an infographic explaining SIM (see online Supplemental Materials 2 and 3). The aim of this preparatory information was to enable participants to understand the context of each other's work setting and facilitate answering the research question. All participants received the infographic in hard copy at their home address, enabling them to review it while watching the accompanying video and prepare for the individual interview.

The focus group interviews

The two focus group interviews, each lasting one and a half hours, were conducted in February 2022 and March 2022, using a video call platform (Microsoft Teams). We aimed to incorporate a mix of participants in the focus group interviews combining expertise from both perspectives. During the focus group interviews, the participants reflected on the identified opportunities and challenges and identified key enablers. During each focus group interview, three authors were present: MEH served as the moderator, NZ provided technical support to the participants and SJvdB-V acted as the comoderator and timekeeper.

Before the focus group interviews, all participants received a preparatory infographic in the form of a desk poster displaying an overview of the identified opportunities and challenges as gathered from the individual interviews (see online Supplemental Material 4). All participants received the infographic in hard copy at their home address to serve as conversation piece during the focus group interview.

Both the individual interviews and focus group interviews were audio-recorded with the permission of the participants. No follow-up interviews were conducted.

Data analysis

Thematic coding analysis for both the individual interviews and focus group interviews was conducted following the guidelines of Braun and Clarke [23]. First, all audio recordings were transcribed verbatim and anonymised for data analysis. The transcripts of the individual interviews were sent back to each interviewee for review. Due to the online nature of the focus group interviews, participants had the opportunity to add to the discussion via the chat. These comments were also included in the transcripts. Second, for each transcript, initial codes were assigned to all relevant text fragments and potential key enablers were identified, independently by the first (MEH) and second (NZ) author. Third, the initial codes and potential key enablers were reviewed in consultation between the first (MEH) and second (NZ) author. Disagreements were resolved by discussion. After coding all transcripts, emerging key enablers were discussed with the research group (MEH, NZ, PJvdW, MM, JLH, SJvdB-V). The transcripts were coded using the MAXQDA V.2020 software programme [24].

Role of the researchers

The first author (MEH) was experienced with conducting individual interviews from prior research. However, she was unexperienced with moderating focus group interviews. Therefore, a senior researcher (SJvdB-V), with experience in moderating focus group interviews, had the role to support the first author as comoderator. Due to her background as an insurance physician, SJvdB-V did not perform the role as main moderator. All authors are experienced researchers within the field of occupational health, SIM and/or VBHC and helped to shape the aim and relevance of the study.

RESULTS

Participants

The group of participants with expertise in the field of SIM (n=10; mean age 49.5 years (SD 10.8); 70% women) contained insurance physicians from a private insurance company and the Social Security Agency (SSA) (covering working experience in medical disability assessment within the Dutch Social Security Schemes: Work and Income (Capacity for Work) Act; Sickness Benefits Act; and Young Disabled Persons Act), staff insurance physicians, medical policy advisors in SIM and resident trainers in SIM. Furthermore, the group of participants with expertise in the adoption of VBHC in the curative care sector (n=5; mean age 48.4y (SD 12.1);

60% women) contained researchers, medical specialists and managers involved in the adoption of VBHC in hospital care. Both focus group interviews consisted of a mix of participants and combine expertise from both perspectives (focus group interview 1: n=5 experts in SIM, n=3 experts in VBHC; focus group interview 2: n=5 experts in SIM, n=2 experts in VBHC).

Key enablers for the adoption of VBHC

Seven key enablers were identified and explored from the data: (1) investigate the meaning and implementation constraints of value in SIM, (2) integrate SIM into work-focused care networks, (3) explore the need and feasibility for specialisation based on functional problems, (4) identify the most important work outcomes for the patient within SIM, (5) identify proxy indicators for cost drivers within SIM, (6) identify value-driven financial incentives and (7) develop an information technology system to exchange data between all care providers involved. These key enablers will be discussed in more detail in the sections below. Representative quotes for each key enabler are presented in Table 2.

(1) Investigate the meaning and implementation constraints of value in SIM

Both the VBHC and SIM experts underscored that the current laws and bureaucratic structures within the SSA often prevent SIM from adapting benefit assessments to meet unique needs of each patient. The Dutch law on social security, which includes strict legislations determining disability benefit eligibility, aims for a fair distribution of collective resources of society. The experts highlighted it is crucial to acknowledge that what is valuable to society may not coincide with what is valuable to the individual patient, as these legislations are not rooted in a value-based approach (Table 2, Quote 1).

Despite the strict legislation, experts in social insurance physicians have discretionary powers that ensure some flexibility in assessments. Insurance physicians can offer personalised guidance to patients, by, for example, investing in interventions aimed at enhancing health and work outcomes for the individual patient, which stimulates value-based SIM. To let insurance physicians realise their added value to stimulate the delivery of value-based SIM, experts in VBHC advised that it is of great importance to identify what the insurance physicians themselves think adds value (Table 2, Quote 2).

The VBHC experts suggested that recognising the unique added value for each patient could serve as a stimulus for bottom-up adoption of VBHC. They proposed that insurance physicians emphasising value-based innovations could be a key driver for the long-term adoption of value-based SIM. The VBHC experts underlined that it is not necessary to wait for the completion of all principles when adopting VBHC in practice. The first step is to simply get started.

(2) Integrate SIM into work-focused care networks

The experts believed that for VBHC to be adopted in SIM, a key change regarding collaboration is needed. SIM should move away from fragmented care, being integrated into work-focused care networks. The experts in SIM claimed that involving the insurance physician in an earlier stage of the patient's workintegrating care trajectory increases the possibilities to add value (Table 2, Quote 3). However, the experts in SIM identified some challenges for the integration of SIM in cross-domain work-focused care networks. Trust issues and conflicts over care-related interests exist, as curative care professionals target the patient's health while SIM aims at societal participation. These issues are suggested to pose significant hurdles to reach effective collaboration over the full cycle of workfocused healthcare (Table 2, Quote 4).

Furthermore, the experts in SIM indicated that the strict separation between curative care and work-oriented care in the Netherlands hampers the establishment of easy and transparent communication among care professionals involved in work-focused healthcare, including the social insurance physician. Social insurance physicians are not covered by the patient medical treatment agreement. Within curative care teams, the patient's consent is not required for data sharing, because all healthcare providers directly involved are covered by the same treatment agreement. However, insurance physicians need to obtain written consent from patients for all information exchange with other healthcare professionals. Therefore, to succeed in integrating SIM into work-focused care networks, the experts noted that it is pivotal that a common care goal is defined and information exchange and communication is facilitated (Table 2, Quote 5).

(3) Explore the need and feasibility for specialisation based on functional problems

VBHC experts expressed that to adopt VBHC, and, therefore, facilitate interdisciplinary collaboration in work-focused care networks, overall understanding of the included patient population is needed. However, the experts within SIM argued that the approach of specialising per health condition, as done in integrated practice units for curative care, is not feasible for SIM. They attributed this to the diverse range of diseases and the high number of patients with multiple health conditions that are seen by insurance physicians (Table 2, Quote 6).

Nevertheless, an expert within SIM suggested that specialisation based on the type of functional problems may be an appropriate approach for SIM, as insurance physicians focus on assessing functional capabilities. However, the VBHC experts stated that it is important that the type of specialisation aligns with that of other healthcare professionals involved. VBHC experts highlighted that specialisation is only necessary if multiple patient groups have different needs. Therefore, to adopt value-based collaborations, the experts suggested further investigation into the need and feasibility of a specific level of specialisation within SIM (Table 2, Quote 7).

Table 3. Representative quotes for each of the key enablers

Quote nr.	Representative quote
	Investigate the meaning and implementation constraints of value in SIM
1	"As insurance physician, I need to work within the law that society has devised, therefore, I cannot take all aspects [of the patients personal situation] into account, otherwise I get in trouble."- PT 8, expert in SIM, focus group
2	"It is important to let insurance physicians answer the question 'When are you a good insurance physician and what can you do to improve?' (..) This cultural aspect is super important. By asking this question own responsibility and realisation of the own added value is triggered."- PT 12, expert in VBHC, individual interview
	Integrate SIM into work-focused care networks
3	"I think it is true that the sweet-spot, [the moments with] the best chance [of adding value], is often much earlier than [the moment the insurance physician gets involved]. So, therefore, I argue that [the insurance physician] should be involved earlier in the process."- PT 1, expert in SIM, focus group
4	"Different care professionals have different interests, and therefore, define value differently. Which contributes to fragmented care delivery [in work related healthcare]."- PT 7, expert in SIM, focus group
5	"In order to really work together, the common goal needs to be clear. And the common goal needs to target value."- PT 15, expert in VBHC, focus group
	Explore the need and feasibility for specialization based on functional problems
6	"When patients come to the insurance physician, it is rare that they only have one health condition. Most patients have multiple health problems."- PT 6, expert in SIM, individual interview
7	"The question is if it is valuable [for the insurance physician] to have specific knowledge of [the type of disease of the patient] in order to be able to deliver value-based SIM. So if it helps to know everything about a specific patient group, you can investigate specific specialization."- PT 12, expert in VBHC, focus group
	Identify the most important work outcomes for the patient within SIM
8	"What adds the value? [To answer this questions] we need to know more about what the patient wants, and that is not clear now."- PT 3, expert in SIM, individual interview
9	"Existing outcome sets are developed for curative care with no or less focus on employment."- PT 15, expert in VBHC, individual interview
	Identify proxy indicators for cost drivers within SIM
10	"As an insurance physician you have to assess whether you expect functional improvements over time. (..) As a medical practitioner you want more insight into the expected chances of occurrence of functional improvements for a specific type of disease. When [a patient] appears to have a very small change of future functional improvements [based on these statistics], you invest higher costs in disability benefit, however you do not have to invite the patient again for a reassessment." – PT 8, expert in SIM, individual interview.
11	"If you start immediately focusing on cost savings, than there is a larger change of your outcomes decreasing instead of increasing. That is why it is important to focus on improving outcomes, based on the philosophy that this actually reduces your costs." – PT 9, expert in VBHC, focus group
	Identify value-driven financial incentives
12	"If you can make the outcomes measurable, it is still difficult to interpret the influence of the insurance physicians services on the outcomes. (..) So you have to be careful whether you give the right [financial] incentive."- PT 4, expert in VBHC, individual interview
13	"It is clear that [the current] incentives [in SIM] are not being value-based. You would want to identify an incentive encouraging improvements [in SIM]. (..) That it is not just about running production." – PT 4, expert in VBHC, focus group
	Develop an information technology system to exchange data between all care providers involved
14	"I think it would be so much faster if an information technology system shows [the insurance physician] immediately which care providers are involved for the patient. And that [the insurance physician] can immediately contact [other care providers], after receiving digital consent from the patient."- PT 1, expert in SIM, individual interview
15	"If we are talking about an [information technology] system collecting information from both curative care and the disability assessment, I think that is difficult to realise, because not all professionals are allowed to access all patient information."- PT 11, expert in SIM, individual interview

SIM = social insurance medicine, VBHC = value-based healthcare

(4) Identify the most important work outcomes for the patient within SIM

Experts in SIM stated that within SIM performance is assessed based on outcomes targeting quantity rather than value. As a result, the insurance physicians highlighted that they primarily receive feedback related to quantitative measures, as the number of assessments conducted, which lacks feedback on patient-reported outcomes (Table 2, Quote 8).

Therefore, the experts considered it crucial to start measuring the most important work outcomes relevant to the patient within SIM, stimulating insurance physicians to make their practice more value based. However, experts from both groups indicated that measuring patientcentred outcomes within SIM is hampered by a lack of knowledge on the most important outcomes. VBHC experts acknowledged that existing outcome sets focus predominantly on disease-related outcome measures with limited consideration for aspects related to work ability and employment (Table 2, Quote 9).

Therefore, the experts emphasised the importance to identify the most important work-focused outcomes for the patient within SIM.

(5) Identify proxy indicators for cost drivers within SIM

Besides the lack of data-driven knowledge on outcomes, SIM experts also indicated the absence of data-driven understanding of costs-effectiveness within SIM. This results in insurance physicians not having information about the expected work ability levels for patients who have undergone interventions or reassessments. This leads to uncertainty about whether investments in interventions or reassessment yield added value (Table 2, Quote 10).

To gain data-driven knowledge on costs-effectiveness in SIM, the VBHC experts suggested a strategy common in curative settings. This involves identifying cost drivers and measuring them with proxy indicators. An expert involved in the private sector of SIM noted that private insurers already have data-driven insights on expenses related to specific interventions and work ability levels. Other SIM experts recognised this as a valuable starting point for making SIM more data driven. However, VBHC experts emphasised that the initial focus in adopting VBHC in SIM should be on measuring and steering on outcomes. This approach will naturally lead to cost reduction. Directly targeting cost reduction could compromise the outcomes (Table 2, Quote 11).

(6) Identify value-driven financial incentives

SIM experts noted that in the Netherlands, the SSA and curative care fall under different ministries, leading to separate payment flows. The experts highlighted that these separate payment flows pose challenges to integrate bundled reimbursements, which could foster more value-driven collaboration between these care domains. VBHC experts anticipated that as long as these separate payment flows persist, it may be unfeasible to aim for an integrated reimbursement system throughout the full cycle of work-focused healthcare. Therefore, the VBHC experts suggested to strive for a reimbursement system that encourages value-based SIM. However, experts in SIM acknowledged that the current social security system lacks knowledge about existing financial incentives that could stimulate value creation in practice. This is stated to be primarily due to a lack of understanding of how SIM influences patient-centred outcomes (Table 2, Quote 12).

The existing financial incentives used in SIM are primarily focused on quantity, driving the growth in assessment volumes, compromising value creation. Therefore, the experts from both groups suggested that to adopt a value-based reimbursement system, it is crucial to identify financial incentives in SIM that encourages value-driven innovations and collaborations (Table 2, Quote 13).

However, the VBHC experts emphasised that actual implementation of a value-driven reimbursement system is only relevant when measuring patient-centred outcomes over the entire width of the care cycle is fully mastered.

(7) Develop an information technology system to exchange data between all care providers involved

Both, the experts in SIM and VBHC recognised that within SIM, an information technology system can contribute to value creation. This is achieved by enabling the tracking of outcomes and costs, fostering collaboration, and, ultimately, reducing lead time (Table 2, Quote 14).

The experts in SIM pointed out that the Dutch SSA is currently improving its information technology system to enhance collaboration, information sharing and workflow efficiency. However, the experts proposed to develop an information technology system that allows information exchange among all care providers involved in workfocused healthcare. To achieve this, they emphasised the need to explore how information can be exchanged within such a system without unnecessary obstacles, such as differing access rights among various professionals (Table 2, Quote 15).

DISCUSSION

Summary of the main findings

The study findings explored seven key enablers for VBHC adoption in SIM. These include investigating the meaning and implementation constraints of value in SIM, integrating SIM into work-focused care networks, investigating opportunities and needs for specialisation based on functional problems, determining what outcomes are most important to patients and understanding the costs associated with those outcomes, identifying financial incentives that promote value-driven SIM, and developing an information technology system to exchange data between all professionals involved in work-focused healthcare.

Reflection on the findings

It is important to acknowledge that the primary objective of our study was to explore the adoption of VBHC in SIM, rather than to establish a comprehensive VBHC adoption framework. In previous research, we identified what insurance physicians perceive as valuable for patients [25]. In this study, we extend our exploration of value-driven SIM by addressing it more broadly at a conceptual level. By identifying these opportunities and challenges to adopt the VBHC principles within this context, we aim to lay the groundwork for developing a future framework for VBHC adoption in SIM. In this manuscript, we specifically targeted the adoption of VBHC within the context of SIM. While other relevant concepts, such as Lean and Six Sigma [26], aim to enhance healthcare services by optimising processes, VBHC aligns with the shift towards humanising and personalising healthcare to improve valued experiences and outcomes. It emphasises critical healthcare outcomes relevant for patients and provides a framework to assess person-centred innovations in learning healthcare systems [14,26]. Importantly, the VBHC approach addresses the challenges posed by the increasing healthcare demands and personnel shortages, extending beyond mere process optimisation [1,2,27].

The key enabler to integrate SIM into work-focused care networks is presented to solve existing inefficiencies in the current work-focused healthcare. Earlier literature showed insufficient communication causing a lack of knowledge on patients' medical information [28–32] and conflicting interests and trust issues [31]. Interventions stimulating collaboration and information exchange between curative and occupational healthcare professionals claim better patient satisfaction [33,34]. Therefore, the value-driven approach to integrate SIM into workfocused care networks is suggested to offer the opportunity to stimulate value-based SIM. However, as also found for primary care [20,21], in the current study, the experts in SIM expressed doubts regarding the suitability and feasibility of specialising solely in medical conditions. Instead, they suggested that specialising based on functional problems, rather than exclusively on medical conditions as proposed in the original VBHC concept by Porter and Teisberg [6,7], would be a more appropriate approach. It acknowledges the complexity arising from comorbidity within the patient population, especially in the context of SIM. Moreover, challenges and solutions with regard to work participation show great overlap between medical conditions [35]. Additionally, specialisation based on functional problems aligns with the current fundamental shift in healthcare from focusing solely on curing diseases to a broader emphasis on caring for health, well-being and overall functioning [36,37]. The study underscores the importance of an IT system for enhancing value-based collaboration and information exchange. It aligns with previous findings that eHealth solutions can boost efficiency and effectiveness in medical communication [38]. Online health communities can also facilitate cross-institutional collaboration [39]. However, consistent with the results from the present study, privacy regulations must be considered in the development of such systems to ensure efficient eHealth implementation [38].

Aligning with the findings in the present study, innovative reimbursement systems are found to be necessary to promote integrated care pathways for individual patients [40]. It is found that both outcome and cost measurements can serve as a financial incentive [41]. Therefore, identifying and measuring the most important outcomes and costs is an important starting point for monitoring value creation in healthcare practices [42]. The importance of focusing on patient-centred outcomes within SIM is also highlighted by the patient's desire for a focus on their individual work-related needs [43,44]. However, international disease-specific outcome sets developed for use in practice [45–49] and those which are already implemented in the Netherlands [50,51] do not include outcomes related to work. This absence limits the opportunity to measure and add value in healthcare specifically targeting work-related aspects. A generic core outcome set for work participation was developed to facilitate the uniform use of work outcomes in (experimental) intervention studies but did not focus on value creation for patients in practice [52]. To promote the identification of patient-centred outcomes, systematically mapping the patient pathways can provide insights in both the added value and inefficiencies associated with each care activity [53]. Reflecting on these care pathways, presenting the most important outcomes from the patients' perspective, may result in improvements on outcomes and processes in practice [54].

Methodological considerations

A strength in the present study was the inclusion of both experts in SIM and VBHC, ensuring examination from two crucial perspectives. Participants' inclusion in both an individual and focus group interview stimulated productive iterative data collection, enhancing data richness and trustworthiness [55]. While we acknowledge the limitation of a small sample size, which may have led to limited saturation, the substantial number of identified key enablers suggest that we have successfully pinpointed the most crucial ones for our exploratory study. The recruitment of participants through the researchers' networks introduced a potential for sampling bias. However, the inclusion of a wide array of experts with diverse views mitigated this risk [56]. To increase credibility, preparatory information was used to increase understanding and generate a common level of knowledge, transcripts were reviewed by the interviewees and findings were discussion by the full research team [57].

Implications for future research

For an effective adoption of VBHC within SIM, additional research is necessary to explore the practical application of the key enablers and, when implemented, to compare the outcomes with standard care practices. It is noticed that certain key enablers, such as the development of an information technology system, align well with ongoing trends in the field, facilitating further research. As VBHC focuses on organising the full cycle of healthcare, knowledge on enablers to adopt VBHC within all aspects of work-focused healthcare could be the first step to enhance the practical adoption of VBHC [40,42,58].

Implications for practice

The given insights in key enablers are expected to empower insurance physicians to promote value creation in their own practice. For example, insurance physicians might feel empowered to start measuring patient-relevant outcomes or improve collaborations with other professionals. Positive results by bottom-up adoption of VBHC can be the driving force to convince higher management and guideline/policymakers to implement VBHC in the field of SIM.

CONCLUSION

This paper provides understanding of what is needed to adopt VBHC in the practice of SIM. The identified key enablers emphasised the need for the integration of SIM into work-focused care networks, the identification of work-focused patient-centred outcomes, cost drivers in SIM and financial incentives. Future research should further explore the value and adoption of VBHC in the practice of SIM.

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SUPPLEMENTARY MATERIALS

Additional file 1: Contains online Supplemental Material 1-4

3

Adding value for clients during work disability assessments: A qualitative exploration from the perspective of medical examiners

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ABSTRACT

Background: Value-based healthcare delivery focuses on optimising care provided by measuring the healthcare outcomes which are most important to the clients relative to the total care costs. However, the understanding of what adds value for clients during work disability assessment is lacking.

Objective: To explore what medical examiners (MEs) perceive as valuable during the work disability assessment process, by exploring possible: 1) facilitators, 2) barriers and 3) opportunities to add value for the client during the work disability assessment.

Methods: For this explorative qualitative study, 7 semi-structured interviews were conducted with MEs in the Netherlands. Thematic coding was performed for all interviews.

Results: A large variety of facilitators (n = 22), barriers (n = 17) and opportunities (n = 11) were identified and inductively subdivided into four main themes: 1) coherent process, including all time related aspects, 2) interdisciplinary collaboration, including all aspects related to the collaboration between the ME and other professionals, 3) client-centred interaction, including all aspects related to the supportive interplay from the ME towards the client, and 4) information provision on all aspects during the work disability assessment process towards the client to ensure a valuable work disability assessment process.

Conclusion: The overview of identified possible facilitators, barriers and opportunities to add value for clients from the perspective of the ME may stimulate improvement in the current work disability assessment practice and to better match the client needs.

BACKGROUND

Value-based healthcare (VBHC) focuses on optimising healthcare outcomes that matter most to clients relative to the total care costs [1,2]. The delivery of VBHC has been found to improve client outcomes and reduce inefficiencies in the healthcare system [3–5]. Therefore, with increasing strengthening of the VBHC rationale, in many, mostly high-income, countries value-based approaches are implemented in the healthcare systems [6,7].

To date, the implementation of VBHC mainly focuses on curative healthcare, but is almost non-existent in occupational healthcare. As a result, the creation of value-based occupational healthcare lags behind. Nonetheless, because of the increasing number of workers with chronic diseases, declines in mortality rates and increase in retirement age in most countries, there is an increasing demand for guidance and support from occupational health [8–11]. A more prominent focus on the delivery of value-based occupational healthcare may enhance its quality despite the rising demands [12].

An important task within occupational healthcare for workers on long-term sick leave (from now on called clients) is the assessment of the client's functional limitations and work disability. During this work disability assessment, a medical examiner (ME) assesses the client's (dis)ability for work according to social insurance criteria and reports on the client's working capacity and prognosis for functional recovery [13]. However, in order to add value for the client during the work disability assessment process, currently it is unknown how and what the MEs themselves perceive as valuable and how they believe value for their clients can be improved during the work disability assessment.

The objective of this qualitative study was to explore what the ME perceives as valuable during the work disability assessment process, by exploring possible: 1) facilitators, 2) barriers and 3) opportunities to add value for the client during the work disability assessment.

METHODS

Design and setting

This qualitative explorative study was conducted as part of a larger research project investigating the possibilities of using the concept of VBHC in occupational healthcare. The study was conducted by researchers of Amsterdam University Medical Centres, who were responsible for the design of the research question, data analysis and development of this manuscript, in collaboration with Delft University of Technology, which provided students of Master Design for Interaction who conducted the interviews and co-analysed the data. The study was conducted and reported in accordance with the Consolidated Criteria for Reporting Qualitative Research (COREQ) checklist [14].

Work disability assessment in the Dutch context

In the Netherlands, the ME conducting work disability assessments is the insurance physician, mainly working for the Dutch Social Security Agency (SSA). To establish the eligibility for a disability claim, an assessment by the insurance physician targets to determine disease-related functional limitations and assess (partial) work ability of the client according to pre-defined social insurance criteria [15,16]. Respectively, insurance physicians working for the SSA conduct the work disability assessments for three groups of individuals falling under different work disability regulations. First, insurance physicians assess the disability for employed sick-listed employees, which constitutes a single consultation after two years of sick-leave from work (Dutch Social Security Schemes: Work and Income (Capacity for Work) Act). Second, sick-listed individuals without an employer receive guidance and assessment by an insurance physician already earlier during the first two years of their sick leave (Sickness Benefits Act). And, third, young disabled persons, who became disabled or chronically ill before the age of 18, receive a single assessment on their work opportunities by an insurance physician to determine (partial) work ability and eligibility for a disability claim (Young Disabled Persons Act).

Participants

Using convenience sampling, participants were initially recruited through the network of the research team by personal invitation through email (n = 6). Additionally, the involved students recruited participants through their personal network (n = 1). Individuals were eligible to participate in the study if they were working as a ME within the SSA, performing work disability assessments in any scheme for at least one year.

The included participants (n = 7) consisted of six female and one male, of which six were registered MEs and one ME was a resident in training. The number of years working in the position of ME for the SSA ranged from longer than ten years (n = 4), between five and ten years (n = 2), and less than five years (n = 1).

Data collection

Semi-structured individual interviews (n = 7) lasting approximately one hour were conducted in May and June 2022, through a video call platform (either Zoom or Google Meet). All interviews were conducted by students under supervision of the research team (MM, NZ). The students conducted the interviews in pairs, alternating the role of the primary interviewer and note taker. The interviews were performed in either English (n = 6), or Dutch (n = 1), depending on the native language of the primary interviewer and preference of the interviewee. All interviews were audio-recorded with the permission of the participants and were transcribed verbatim. An interview guide was used listing open-ended questions for general guidance during the interviews. The full interview guide can be found in Supplementary Materials- Appendix A.

Data analysis

Thematic coding was performed for all individual interviews in three steps [17]. First, for each transcript open codes were assigned to all relevant text fragments by the first and second author (MH, NZ). Second, relations between the codes and larger concepts were identified by the second author (ZT), subdivided into barriers, facilitators and opportunities, and checked by the first and last author (MH, NZ). Facilitators were defined as factors that were mentioned currently adding value for the client during the work disability assessment, barriers were defined as factors that were mentioned as currently obstructing value for the client during the work disability assessment and opportunities were defined as factors that were mentioned as potentially adding value for the client during the work disability assessment in the future. Third, the identified themes were inductively subdivided into main themes in a phase of interpretation and explanatory construct by discussion (MH, NZ). The last two steps were conducted by using the online platform Miro (www.miro.com), an online whiteboard for visual collaboration. For all steps disagreements were resolved by discussion.

Role of the researchers and ethical considerations

Most of the involved students had conducted interviews prior to this study. However, they were not familiar with the process of a work disability assessment. Therefore, the students (incl. ZT) were supported by senior researchers (MM, NZ) to shape the aim and relevance of the study, and received guidance in the development of the interview guide. Authors MH, MM, JH, SB and NZ are experienced researchers within the field of occupational health and human-centred design and helped to further shape the aim and relevance of the study. Written informed consent was obtained from all participants by email. Ethical approval was obtained from the Medical Ethics Committee of the Amsterdam University Medical Centre (number: W22_312 # 22.373).

RESULTS

A large variety of facilitators (n = 22), barriers (n = 17) and opportunities (n = 11) to add value for the client during the work disability assessment from the perspective of the ME were identified, inductively subdivided into four main themes classified to add value during the work disability assessment: 1) coherent process, 2) interdisciplinary collaboration, 3) client-centred interaction and 4) information provision on the work disability assessment process. Below, we present the identified facilitators, barriers and opportunities for each of the four main themes. An overview of the identified facilitators, barriers and opportunities for each of the main themes, including representative quotes, is presented in Table 1.

Table 1. Representative quote for each of the identified facilitators, barriers and opportunities to add value clients during the work disability assessment from the perspective of the medical examiner (ME)

Theme	Subtheme	Quote
1) Coherent process: Includes all time related aspects to ensure a valuable work disability assessment process.		
Facilitators	Flexibility in consultation form	"[The ME] gets the opportunity to choose what is the best way to do this consultation, whether it's face-to-face or on the phone." — pt 3
	Use of communication skills	"If you have a lot of time [during the consultation], but you're not asking the right things and not using like motivational or [other] techniques or something like that, then it is very difficult to help [clients]." — pt 3
	Involvement of team support	"[The social medical nurse] prepares the consultation. So, [they] look at the medical information. (..) So that when the ME starts the consultation, the necessary information is already available." — pt 7
	Involvement of Case managers	"[The case manager] says what to do with [a file]. And he expects me to react. So that the process [of the client] continues faster." — pt 2
Barriers	Laws and regulations	"It's still difficult because we have a lot of rules and laws, so it's not that I can help clients always how they want to be helped." — pt 3
	Bureaucratic character of the SSA	"We work for the [SSA], which is related to the government. So, it's a governmental institution and that makes it very administrative." — pt 2
	Lack of medical information	"What I want as an insurance physician: you want all information about the reason of being sick listed, the medical history, but also related to work. But often this information is lacking." — pt 4
	Information exchange by written letters	"Well, sometimes I speak to [the medical specialists] by phone, but mostly on paper. And this causes a delay [in the information exchange]." — pt 4
	Insufficient IT support	"Also a big problem in insurance medicine is that the [IT systems] are not working properly." — pt 4
	Shortage of MEs	"I think like 25% of the assessment we can't do because of a deficit of MEs." — pt 2
Opportunities	Shared-decision making	"And then, we can do our jobs, just like the occupational physicians, [meet with] clients regularly and then make a plan together with the clients on how to return to work." — pt 6
	Refining the administrative requirements	"A report needs to be very extensive. But that is because of rules that have been imposed, and there are rules that are imposed by law. You can't do anything about these unless the law is changed. But, there are also rules that we have imposed by ourselves. There might be some time savings by reporting or recording in a different way, so that it takes just a little less time and the process can go a little more efficiently." — pt 7
	Acquiring all medical information prior to the consultation	"So sometimes if I have information beforehand, it's not necessary to even do a consultation or like, pick up the phone and make some small phone calls to explain or to ask something. So (..) you can work more efficiently." — pt 3
	Task delegation to other experts	"So, in another way you could also look at whether a labour expert or another employee could already conclude something from the contents of a client's file before [the ME] looks into it from a medical point of view, if another route can be taken." — pt 7
2) Interdisciplinary collaboration: Includes all aspects related to collaboration between the ME and other healthcare professionals to ensure a valuable work disability assessment process.		
Facilitators	Opportunities for collaboration with other disciplines	"Then I have to ask the clients and, my consultation will be, a bit longer and it will be more work for me with some. (..) Well, [the case manager] sends a letter to the occupational health physician or another physician to, get this information." — pt 4
	Current collaboration with the labour expert form the SSA	"It is a bit different with the Sickness act, of course you have reintegration options there, and as a doctor, you can have an opinion about those reintegration options whether it is used properly and whether it is appropriate in the situation. And you do that together with the labour expert, because he also plays an important role in that reintegration." — pt 7
	Discuss cases with colleagues	"If I have doubts or I do not know exactly how I will address this problem, I can consult with my colleague and then I learn from my colleague and the colleague learns from me." — pt 1
Barriers	Strict division between medical roles	"The MEs are not curative, at the end of the 19th century they were excluded [IM] from the curative care. So that means that you are not involved in medical treatments anymore." — pt 1
	Privacy regulations	"But the problem is that [information exchange] is difficult because of [the clients] privacy. If you want medical information, it is very hard to get it from other physicians." — pt 3
	SSA teams are too large	"What I see is now that the [SSA] teams are very big and everybody's like swimming around and nobody knows from each other what they're doing." — pt 3
	Lack of understanding of each other's roles and interests	"We sometimes don't understand each other's language, because I'm working with [functional ability] and [the clinicians] work with complaints and diseases. And sometimes, they don't understand what we're asking, because they don't know the legislations and the consequences of that." — pt 2
	Lack of knowledge were to find and how to contact others	"From a lot of [other professionals] I do not get one point of contact. So that's very difficult. Especially when you're not working at the same working place. (..) Who do you have to call." — pt 3
Opportunities	Lower the threshold to find other stakeholders	"So if we would work in another way where we would have [..] frequent meetings with all of the disciplines involved, like for example once a week, every week on Monday, I think it would be better. And it would enhance the collaboration." —pt 6
	Improving communication with employers	"Maybe if [the employer] understood [the client's situation] better, then, she would've kept her job." — pt 1

3) Client-centred interaction: Includes all aspects related to the supportive interplay from the ME towards the client to ensure a valuable work disability assessment process.		
Facilitators	Sufficient time during the consultation	"[The ME] has a lot of time for people, because you can talk for an hour and you can deepen all the problems very well." — pt 3
	Guide the clients in its acceptance process	"It's more guidance in accepting [the situation]. [To help the client to] be honest about the situation." — pt 1
	Trustful relationship	"What is important to me in this is that [the client] feels heard, and that you [as the professional] also take [the clients situation] seriously." — pt 7
	Focuses on finding meaning in the clients' life	"So I think, for everybody it's good to work and it's not good to have a sickness benefits, actually. (..) [Clients] have to get purpose [in life]." — pt 3
	Motivational approach	"Because [the client] was like: No, I don't want anything. I was like: But you have to try it. And I know, I was motivating him. So he said: Okay, I'll do it for you." — pt 2
	Holistic view on the personal situation	"You're looking at the person as a whole. So not just the disease, but also what are the effects on [the client] mentally? What are the effects for the household and the partner, of course. So it's the bigger picture." — pt 6
	Offer interventions	"And then, I must take steps to ensure that she will go into another circuit. To try to get her into training or reeducation to get another type of job." — pt 1
	Impartial assessment	"For me personally, the most important thing is that I feel, that I have captured the client's functional capabilities as objectively as possible. And do as much justice as possible to their situation." — pt 7
	Minimizing the inter-doctor variation	"We try as much as possible to keep that inter-doctor variation as small as possible for everyone, anywhere in the Netherlands." — pt 7
	Offer opportunity to contact the ME after consultation	"And sometimes I will tell them that usually people that are very insecure during the consultation, or like with memory problems, they can, after the consultation, contact me to give additional information." — pt 5
	Second opinion on the outcome of the assessment	"[Clients] have the right to object to the outcome of the assessments." — pt 6
Barriers	Clients act hesitant and suspicious	"They don't like [the ME] a lot at the beginning." — pt 2
	Limited moments of contact	"They see me just once in a lifetime." — pt 2
	Value of society	"I would like to share. The moral and ethical complication is that you do not work for the client. Your task is for the society. We have a societal task to better apply the laws, doing justice." — pt 1
	Late starting point of contact	"It is well known that in the first three months after being sick listed, you can do the most regarding return to work. And now, I'm often seeing people after six months or even after two years." — pt 4
	Clients lack the motivation and willingness to RTW	"And of course, there's also clients' responsibility, because they could have been more proactive. But, there's not that much control of their behavior and if they are looking for work." — pt 5
Opportunities	Earlier moments of contact	"Well, then, as insurance physicians, we can also have contact with clients in the first year of sick leave and not just, at the time of the assessments." — pt 6
	More frequent moments of contact	"Ideally, in my opinion, we would be more like general practitioners where we can tell someone: Okay, we'll see you next month again." — pt 5
	More available manpower	"I think, (..) the client is not guided very well. So I think it's better if there is somebody or more people who can do that job to really guide him." — pt 3
	Financial security during RTW	"I think, it's better if they get like a sickness benefit and with the opportunity to work. But only if it doesn't work to get back on the sickness benefit." — pt 3
4) Information provision on the work disability assessment process: Includes all aspects regarding information provision during the work disability assessment process towards the clients to ensure a valuable work disability assessment process.		
Facilitators	Clarify future functional capacities	"I translate my idea of how I think [the client] can [participate in] work into functional capacities." — pt 2
	Clarify the assessment process	"So the most important thing is to take the clients by their hand and explain everything that you do during the assessment and what possible outcomes can be." — pt 6
Barriers	Complicated structures in the laws and regulations	"For people with high education the whole process with all the legislations, is already very, very, difficult and complex." — pt 2
Opportunities	Inform clients about the full process at the start of the entire service	"So, [clients] are a little bit afraid or they have a lot of stress about it [the insecurity of the process]. They don't know how it works and nobody's going to contact them. So I think, they will be better if they will get informed in the beginning." — pt 3

MEs = medical examiners; RTW = return to work; SSA = social security agency.

1) Coherent process: Includes all time related aspects to ensure a valuable work disability assessment process.

Facilitators: The MEs indicated to be *'flexible in how they carry out the consultation'*, face-to-face or by phone, enabling them to better meet the client's personal preferences. Besides, the MEs highlighted the importance to *'use communication skills'* during the consultation to offer clients the opportunity to express themselves. In addition, *'involving team support and case managers'* enhanced the efficiency of the process, benefiting the lead time for the clients. It was mentioned that team support and case managers were additional professionals that could support the ME during the work disability assessment.

Barriers: *'Strict laws and regulations'* were mentioned as a barrier for efficiency and coherency in the work disability assessment process at an individual level, since the MEs reported that the laws and regulations did not always meet the client's individual needs. As MEs need to work according to these laws and regulations, they mentioned that generic laws do not always suit the personal situation of each client. Besides, the *'bureaucratic character of the SSA'* was mentioned to lead to a lack of flexibility and ability to take individual needs into account when assessing work disability. Additionally, bureaucracy was reported to add to the administrative burden of the MEs. The MEs also indicated that the efficiency during the consultation was hindered due to a *'lack of medical information'* about the client. Medical information was not always available at the time of the consultation which may limit the coherency in the work disability assessment process. Currently, the request for information exchange from the ME, and information provision by the curative care professionals is done through *'written letters'* by postal mail, which was reported to reduce the efficiency of the process significantly. In addition, optimal information exchange between the professionals within the SSA was reported to be limited due to *'insufficient IT support'* offering limited digital solutions being a barrier for an efficient information flow. Furthermore, increased waiting times were mentioned due to a *'shortage of MEs'*.

Opportunities: One ME suggested that they can better meet the client's needs if they could provide more continuous and coherent support with *'shared-decision making'* together with the client in terms of the return to work (RTW) plan of a client. Thereby, multiple MEs suggested that they could save time by reducing and *'refining the administrative requirements'* within the SSA in the way the MEs are obligated to report their work disability assessment under the prevailing social insurance legislation, but also reviewing current working methods as imposed by the professional organisation of Dutch insurance doctors. *'Acquiring all medical information of the client prior to the consultation'* would support better efficiency of the process as having the full picture of the medical situation could benefit the quality of the consultation. Furthermore, MEs suggested to make the process more coherent by the introduction of *'task delegation to other experts'* within the work disability assessment process. The MEs stated that allocating tasks such as gathering medical information to occupational health nurses could lead to efficiency gains for MEs during consultation with clients.

2) Interdisciplinary collaboration: Includes all aspects related to collaboration between the ME and other healthcare professionals to ensure a valuable work disability assessment process.

Facilitators: The MEs mentioned that existing *'opportunities for collaboration with other disciplines'* could enhance the reliability of their work disability assessment. Through collaboration the information flow may be enhanced, and the quality of the assessment could be better tailored to the personal situation and needs of clients. *'Current collaboration with the labour expert from the SSA'* was mentioned to smooth the process for the assessment. Besides, MEs highlighted the importance of *'discussing cases with colleagues'* to deliberate on difficult cases and in turn influence the quality of their assessment.

Barriers: Due to the assessing nature in the task of the ME, in the Netherlands there is a *'strict division between the medical roles'* of curative and occupational healthcare professionals. Therefore, MEs indicated that *'privacy regulations'* obstruct their ability and possibility to collaborate with the curative care sector. MEs reported that information exchange is not possible without written approval by the client due to the privacy regulations restricting information flow between social security and curative healthcare. Another barrier mentioned by the MEs was that the *'SSA teams working together were experienced as too large'* in terms of the size of the team, causing inefficient collaborations within the teams. Creating smaller teams may have a positive influence on the efficiency and accessibility for collaboration. Collaboration with professionals outside the SSA, as professionals from curative healthcare, was reported to be limited because the MEs mentioned a *'lack of knowledge about the role and interests'* in the work disability assessment process by these professionals. Since the social security is separated from the curative care, it was mentioned that it was not always clear to the MEs what the interests of other stakeholders may be. Additionally, a *'lack of knowledge on where to find and how to contact other stakeholders'* was reported as limiting collaboration in a practical manner.

Opportunities: In order to be able to improve value for clients through more efficient collaboration between different professionals, MEs indicated that it was important to *'lower the threshold to find other stakeholders'*, for example by providing contact details in advance or scheduling fixed moments for reciprocal contact. Moreover, besides improving the communication with curative care professionals, MEs also mentioned the added-value of *'improving communication with employers'* at an earlier stage of sick leave of the clients in order to facilitate better understanding at the side of the employer, which can facilitate flexibility and willingness at the employers' side to facilitate earlier RTW for the client or accommodation of alternative working positions.

3) Client-centred interaction: Includes all aspects related to the supportive interplay from the ME towards the client to ensure a valuable work disability assessment process.

Facilitators: Even though most clients only visit the ME once, this consultation for assessing their functional limitations and work capacity was reported to last one hour on average. MEs indicated that the duration of an hour offers them *'sufficient time during the consultation'* to listen to the client and to develop a *'trustful relationship'* with the client. In addition, during this consultation the MEs mentioned the importance to *'guide the clients in its acceptance process'* and *'focus on finding meaning in the client's life'*, for example by applying a *'motivational approach'* to activate the client's awareness in their own RTW process. Hereby, MEs indicated their *'holistic view on the personal situation'* as valuable for the client. Besides, MEs indicated that one of the most powerful factors to create value for the clients was the opportunity to *'offer interventions'* as, for example, additional physiotherapy or reintegration programmes to facilitate RTW. MEs reported conducting an *'impartial assessment'* of the client's functional abilities, as it is pre-defined in professional guidelines associated with the law, being able to do justice to the individual situation of the client. However, one participant referred to this impartial assessment as a barrier for client-centred interaction since following guidelines does not always allow for accounting for individual needs in the outcome of the assessment. Besides, it was mentioned that in the work disability assessment process there was a focus on *'minimizing the inter-doctor variation'* to maintain the quality, and add value, as the MEs need to comply to strict rules for the assessment. If clients felt insecure about their capacities to RTW, one ME indicated that a facilitator for more client-centred interaction would be to *'offer the opportunity to contact the ME after consultation'* if they had any more questions in order to let them feel more assured. Furthermore, MEs mentioned that a higher level of self-directed care was offered for clients by the possibility for a *'second opinion on the outcome of the assessment'*. This could give clients the possibility to speak-up and receive a more suitable assessment if they think the outcome did not fit their personal situation.

Barriers: Because of the importance of the assessment for clients due to possible financial impact, MEs reported that *'clients start to act hesitant and suspicious'* towards the ME, limiting the abilities to build-up a trustful relationship with the clients. This, in turn, could hinder the ability to provide a client-centred assessment as MEs might not receive all needed information from the client. Feeling mutual trust is a prerequisite for being open during the consultation. This was mentioned to be even more enhanced by the fact that a large part of the clients have *'limited moments of contact'* with the ME, often only once. However, since the ME is not only responsible for the value for the individual clients, but also protects the *'value for society'* with fair distributions of public funds for disability benefits, the MEs mentioned that they cannot always meet the needs of the individual client with the societal impact in mind. Especially for clients working for an employer at the start of their sick leave, meeting the ME only after a two-year period of sick leave, the MEs highlighted a *'late starting point of contact'* as a barrier to add value through reintegration guidance since the *'clients lack motivation and willingness to RTW'* after these two years and mutual trust could not be developed. In this case it was mentioned that it was hard for MEs to let the client realise the added value to RTW. After a two-year period a single consultation hour may not lead to the desired impact to motivate clients to RTW.

Opportunities: MEs suggested that value could be created by shifting the strict focus on assessing the functional abilities towards more additional guidance to RTW, which could be supported by *'earlier moments of contact'* with the clients, *'more frequent moments of contact'* and *'more available manpower'* of professionals. Besides, ME indicated the expectation that extra *'financial security during RTW'* would decrease uncertainty for clients, and thereby may enhance their willingness and motivation to RTW as well as influence the trust in the professional.

4) Information provision on the work disability assessment process: Includes all aspects regarding information provision during the work disability assessment process towards the clients to ensure a valuable work disability assessment process.

Facilitators: Multiple participants highlighted that MEs offered good information provision to the clients by thoroughly *'clarifying the assessment process'* to the client during the consultation. It was mentioned that by explaining what the client can expect regarding follow-up appointments and *'clarify expectations regarding the client's future functional capabilities'* MEs could add value for the client.

Barriers: It was mentioned by MEs that additional clear information provision was needed since *'complicated structures in the existing work disability laws and regulations'* make it hard for clients to understand the legislations and to know what to expect within the process, which may cause stress.

Opportunities: One ME suggested that an opportunity to reduce stress levels for the client would be to make sure that clients were *'informed about the full process already at the start of the entire service'* before they had their first consultation with an ME. It was mentioned that transparent information may be beneficial to reducing stress for the clients and therefore contribute to adding value for clients.

The four main themes presented above are deemed to be closely related, as illustrated in Figure 1. It is suggested that, for example, interdisciplinary collaboration can result in a more coherent process, better client-centred interaction and a more complete information provision on the work disability assessment process. While the other way around, for example, a more complete information provision on the work disability assessment process results in a more coherent process, better interdisciplinary collaboration and supports better client-centred interaction. Thus, it is important to not see the presented main themes as separate entities when interpreting the results and trying to add value in practice.

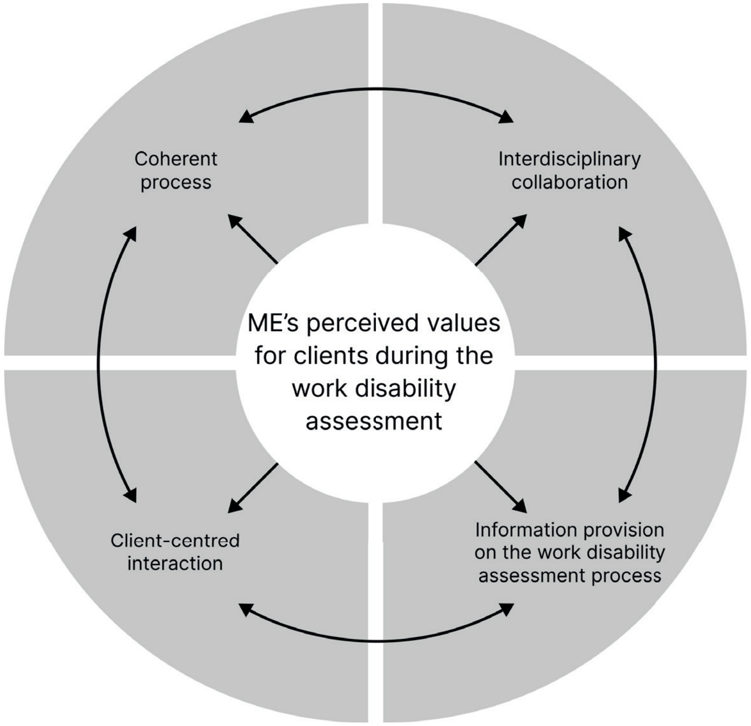

Figure 1. Representation that the four main themes indicated as valuable for the client within insurance medicine by the professionals are all interrelated with each other. MEs = medical examiners.

DISCUSSION

This study identified four main themes on how MEs add value for clients during the work disability assessment; 1) coherent process, 2) interdisciplinary collaboration, 3) client-centred interaction, and 4) information provision on the work disability assessment process. For each of these main themes factors adding value for the client as well as barriers for adding value as perceived from the perspective of the MEs were explored, including opportunities to overcome the barriers.

Agreements and disagreements with other studies

The four main themes identified in this study are in line with a previous qualitative systematic review identifying clients' values within occupational healthcare from the clients' perspective [18], suggesting that the MEs interviewed in this study had a good understanding of what clients consider important during the work disability assessment process. An earlier systematic review also showed that, besides the expected benefits of adding value for clients [3–5], curative care professionals also benefited from more professional engagement, joy in practice and job satisfaction [19]. On the other hand, aspects important to professionals such as concerns regarding available time and challenges in team work may occur, being a barrier to add value [19].

While in this study MEs stated the need for collaboration with other professionals outside the SSA, literature confirms this need for more in-depth discussion with the ME from the occupational physicians' perspective to contribute to a more efficient process for clients [20]. However, earlier attempts to improve the clients' RTW process were not successful due to poor existing collaboration and differences in interest between the SSA, vocational rehabilitation agencies and healthcare providers [21]. Additionally, better information exchange between MEs and occupational physicians was not found to significantly influence RTW for clients [22]. Based on this study, it is suggested that better information exchange between those two professional groups may be of added-value for the efficiency in the process, but does not add value for clients in terms of faster RTW [22]. In addition, previous literature confirmed a lack of inclusivity in society for individuals needing an adapted working position, stating that subsidized jobs are rare [23], which supports the suggested opportunity in this study to create more value for clients by encouraging the societal system to be more inclusive.

To add value for clients by client-centred interaction during the work disability assessment, in previous studies MEs indicated that consultations should last longer and should be planned more frequently to establish a good relationship [23]. However, in agreement with the findings in this study, the MEs indicated to not have the means to offer this extra support because of a limitation imposed under the current Dutch laws and regulations [23] and due to a shortage in MEs as found in this study. In addition, in this study it was indicated that clients may have initial negative feelings towards MEs as a barrier for client-centred interaction. In previous studies, this was suggested to be caused by wrongful expectations of the social security system by the clients [23]. However, the MEs indicated that showing understanding and respect and creating a trustful relationship with the client is valuable during the work disability assessment. In previous studies, MEs highlighted that entering the social security system in general has a certain tone to assess a client creating a more distant and impersonal approach [23]. Also when studying the clients' experiences, clients highlight the negative feeling that the ME does not act in their interest, but in the interest of society [24]. Moreover, while the MEs in this study plead that their broad knowledge and holistic view adds value for their clients, the value-based healthcare concept which describes how to add value within curative care advocates for specialization in a certain client group [25], suggesting that the way of adding value within occupational health and curative care can deviate from each other.

Recent literature confirms the finding that complicated structures in the laws and regulations make it hard for clients to understand the process [24]. Also, in coherence with the findings from this study, it was found that clients experience the information provision regarding the work disability assessment process as negative [24]. Consequently, in both literature and our study, it was suggested that clients' experiences with receiving information on the work disability assessment process can be improved by better information provision on the process at the start of the service [24]. Therefore, it was suggested that future improvement on better information provision can lead to higher value for clients.

In agreement with the barriers to add value for clients during the work disability assessment identified in this study, professionals in curative care also identified barriers for the delivery of valuable curative care including unjustified client expectations, lack of professional knowledge and skills, a lack of collaboration between professionals and infrastructure issues [26]. Earlier literature studying the application of evidence-based medicine during the work disability assessment, which focuses on improving client-centred care by explicit and judicious use of current best evidence in making decisions about the care of individual clients, found that a lack of time, lack of skills of the professional and the existing legislation are existing barriers [27].

Methodological considerations

A principal limitation in this study was the small sample size, increasing the possibility that full saturation was not reached in the identified themes. However, according to the high number of subthemes, we believe that despite this low sample size the most important themes to add value for clients during the work disability assessment were identified. Possible inter-interviewer variance might have influenced the reliability, caused by each student being the primary interviewer only once. However, the impact of this was kept limited through a general interview guide used throughout all interviews. Conducting the interviews via an online video call platform may have contributed positively to the variety in participant characteristics, allowing inclusion of participants with a larger geographical distribution and might have thus limited selection bias. No negative selection bias by online interviewing was expected, since it was assumed that all MEs are experienced in conducting video calls due to experience with video-calling during the Covid19 pandemic. Moreover, the extensive thematic analysis executed by the experienced researchers was considered a methodological strength.

Implications for future research

In this study we only included MEs working for the SSA, responsible for allocating disability benefits on behalf of the government assessing employees, unemployed and young disabled. The generalisability of our findings towards the private sector allocating disability benefits for self-employed workers may be limited due to differences in the occupational healthcare system and access to work disability insurance for these clients. In addition, while the values of employees within occupational health has been extensively researched [24], the perspective of clients on their own values is underrepresented for self-employed clients. Therefore, further research should investigate these factors to add value as well as barriers for work disability assessments in the private sector from both a professional and client perspective.

Although, this study identified the factors adding value as well as barriers to add value for clients during the work disability assessment from the perspective of the ME, it may be interesting to study the generalisability of these identified factors and barriers to add value for other professionals involved in the clients' occupational healthcare process to facilitate the provision of valuable care over the full cycle of occupational healthcare including other professional groups as well. Besides, to facilitate provision of real client-centred occupational healthcare, further research should focus on the clients' perspectives on the identified factors adding value during a work disability assessment, and to what extent these values are met in current occupational healthcare. Insights may provide information on the most important factors and barriers to add value and thereby improve the clients' value in current occupational healthcare.

Implications for practice

Although this research took place in the specific context of work disability assessments in The Netherlands, a context which contains a unique division in medical roles between occupational and curative care professionals, it is assumed that most findings are transferable to the context of occupational healthcare in general. In addition, the focus on adding value for clients is in line with the current shift towards a more value driven healthcare provision [7], making the findings of this study important for policy makers on how to apply better value driven care during the work disability assessment and occupational healthcare. The suggested opportunities already highlight potential solutions for some of the factors identified as barriers to add value. Furthermore, the overview of the factors stimulating and obstructing a value-driven work disability assessment might help MEs to improve value for their clients in their practice, stimulating overall better value-driven occupational healthcare provision.

CONCLUSION

The identified possible facilitators, barriers and opportunities to add value during the work disability assessment for the client from a ME's perspective provides insight in what MEs consider as valuable in their work, what they consider as barriers to add value for their clients, and what they think are possible opportunities to increase the value for the clients. This overview may stimulate to remove inefficiencies in the practice of the work disability assessments, as well as it may stimulate improvements in the current work disability assessment practice, in order to better match the clients' needs and, thereby, add value for the client.

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SUPPLEMENTARY MATERIALS

Appendix A- interview guide [at the last page]

Part II

Patients' experiences and needs in their work-focused healthcare trajectory

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4

Patients’ needs regarding work-focused healthcare: A qualitative evidence synthesis

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ABSTRACT

Objective: To identify, appraise, and synthesise qualitative research evidence exploring patients' needs regarding work-focused healthcare.

Methods: A systematic review was conducted in accordance with the PRISMA statement guidelines to identify studies reporting patients' needs regarding work-focused healthcare. Four databases (MEDLINE, Embase, PsychInfo and Web of Science) were systematically searched from January 2000 until May 2023 and screened in duplicate by pairs of two reviewers. Inclusion criteria were qualitative data collection method, and patients' perspectives regarding healthcare focusing on work when experiencing work-related problems due to chronic medical conditions. Data extraction and synthesis were executed by means of an inductive thematic analysis approach. The quality of the included studies was assessed using the CASP Qualitative Study checklist. Confidence in the review findings was assessed through the Confidence in the Evidence from Reviews of Qualitative research (CERQual) approach.

Results: Out of 23,677 records, 97 qualitative studies were included. Needs regarding four main themes were identified: (1) Substantive guidance, which comprises the specific content of work-focused healthcare; (2) Clear and continuous process, which comprises clarification and optimisation of the work-focused healthcare process; (3) Supportive attitude and behaviour, which comprises a positive and supportive attitude and behaviour from professionals towards the patients; and (4) Tailored approach, which comprises the delivery of tailored care to the individuals' needs. In total 17 subthemes were identified.

Conclusion: The broader insight in patients' needs in work-focused healthcare can help (occupational) healthcare professionals adopt a more patient-centred approach in practice.

BACKGROUND

Recent years have seen an increase in the number of people with chronic medical conditions and the average age of the working population worldwide [1], which can be explained by rising retirement ages [1,2,3] and declining mortality rates in the working population [4]. Chronic medical conditions can negatively affect the individual's work ability in both the short- and long-term [5,6]. Work disability, resulting in sick-leave, unemployment or disability benefit, often leads to a decline in all facets of overall health-related quality of life, with social and emotional functioning being particularly affected [7]. For individuals facing work disability the ability to stay at work (SAW) or successfully return to work (RTW) is of paramount importance.

However, individuals living with medical conditions often encounter numerous barriers to SAW or RTW that they cannot overcome alone [8,9]. In such cases, interventions like vocational rehabilitation, as well as guidance and support from (occupational) healthcare professionals and authorities have been identified as facilitators to overcome work participation problems [10]. The support and guidance provided by (occupational) healthcare professionals, and relevant authorities, focusing on work-related concerns and obstacles, is referred to as work-focused healthcare [11]. Nonetheless, individuals receiving work-focused healthcare, hereafter called patients, frequently express dissatisfaction with the delivery of such services, citing unwanted support or inadequate provision of crucial information [6,12].

In accordance with the value-based healthcare concept, embracing a patient-centred approach within the healthcare system, enhances the value for the patient by better addressing their preferences and needs [13,14]. Thereby, adopting better patient-centred work-focused healthcare delivery is suggested to also enhance patient satisfaction in work-focused healthcare [15,16]. However, a deep understanding of patients' needs within work-focused healthcare is needed to effectively implement a patient-centred approach within work-focused healthcare [16]. In addition, not only practitioners could benefit from recognizing these patients' needs for work focused healthcare, also researchers could identify research gaps in areas where these needs are not met.

Although there is an increasing amount of qualitative literature exploring patients' perspectives on work-focused healthcare, a comprehensive overview is currently absent. Therefore, the objective of this systematic review was to identify, appraise, and synthesise qualitative research evidence on patients' needs regarding integrated work-focused healthcare when experiencing problems with work participation due to a medical condition.

METHODS

The protocol for this qualitative evidence synthesis has been published on the PROSPERO platform (ID: CRD42021232699). The thematic analysis approach of Thomas and Harden (2008) was used for the data extraction and synthesis [17]. To report this review the Enhancing transparency in reporting the synthesis of qualitative research (ENTREQ) checklist was used [18].

Data sources and searches

The search strategy was developed by an experienced clinical librarian from the Amsterdam UMC/AMC Medical Library. The strategy was formulated through the utilisation of a test sample of relevant studies and initial search terms provided by the reviewers. The initial search strategy was further enriched and tested through subsequent sessions between the librarian and three reviewers (MH, SB, JH). The librarian developed and validated the final search strategy in accordance with the nine criteria of the Canadian Agency for Drugs and Technologies in Healthcare Peer Review Checklist for Search Strategies. The search strategy developed included terms related to challenges concerning work participation and work functioning, qualitative research, and separate terms for patient and perspective linked with an adjacent operator. This search strategy was tailored to multiple databases: MEDLINE, Embase, PsychInfo, and two conference proceedings Citations of the Web of Science (Citation Index Science & Citation Index Social Sciences and Humanities), searched from January 2000 until the 27th of May 2023. This time frame was selected because we hypothesised that there would be a scarcity of qualitative records on the subject before 2000 and we wanted to reflect more the current state of practice and healthcare. The full search strategy is presented in the online Supplementary Appendix Table 1. Relevant conference abstracts extracted from the conference proceedings were searched for their full text.

Study selection

The study inclusion criteria comprised the following: (i) qualitative study design using individual interviews and/or focus groups for data collection; (ii) participants of working age living with a chronic medical condition; (iii) exploration of work-related challenges arising from a (chronic) medical condition, such as work disability, sickness absence, unemployment, issues during SAW or RTW; (iv) inclusion of at least one outcome regarding patients' experiences and/or needs concerning work-focused guidance from (occupational) healthcare professionals; and (v) articles written in English. There were no geographic restrictions. Mixed-method studies were included if qualitative data could be extracted separately. Similarly, primary studies considering multiple stakeholder perspectives were also considered.

Prior to the screening process, duplicate articles and those published before 2000 were excluded. The screening process involved three main steps [19]. First, a single author (MH) screened the articles for relevance based on the title. Second, pairs of authors (MH or NZ and SB, JH, MM, PW, EZ or CH) independently assessed the title and abstract of the remaining articles using the inclusion criteria. Prior to this assessment, a pilot screening was performed independently by authors for a random selection of fifty articles. Third, for the studies identified after title and abstract screening, a duplicate full-text screening was performed by the same author pairs. Conflicts during the second and third steps were resolved through pair discussion until consensus was reached. Any remaining disagreements were resolved by discussion with a third author (MH or NZ). The Rayyan online systematic review screening tool was used as the technical platform throughout the screening process [20].

Data extraction and quality assessment

For data extraction the thematic synthesis method of Thomas and Harden's was adopted, starting with line by line coding [17]. During the line by line coding, the first author (MH) assigned individual codes to indicated needs and experiences reflecting on specific needs. A single author (MH or EZ) extracted the study characteristics, such as author, publication year, country, study aim, and participant details, using Microsoft Access.

The quality of each included article was assessed by two authors independently (MH or NZ and SB, JH, MM, PW, EZ or CH) using the Critical Appraisal Skills Programme (CASP) qualitative checklist [21]. The CASP checklist includes 10 items to appraise the quality of qualitative research [21]. Articles meeting eight or more criteria were rated as high quality, those meeting five to seven criteria as medium quality, and those meeting four or less as low [22]. Studies were not excluded based on their assessed quality. Differences in assessment were discussed within the pairs until consensus was reached. Authors of the current study who were associated with any included article were not involved in assessing its quality to prevent conflict of interest.

Data synthesis and analysis

As described by Thomas and Harden [17], after the data extraction through line by line coding, the data synthesis consisted of two main stages: identifying descriptive themes and generating analytical themes. The first author (MH) derived the descriptive themes directly from the primary studies, while analytical themes required interpretation and explanatory constructs [17]. Themes and subcategories were developed inductively. Two co-authors (NZ and EZ) randomly checked the coding system during the line by line and descriptive coding. The final coding system, developed during analytical coding, was discussed and confirmed during multiple meetings with all authors. The MAXQDA plus 2020 software was used to assist the data extraction and synthesis.

The confidence of each finding was assessed with the Confidence in the Evidence from Reviews of Qualitative research (CERQual) approach [23], using the GRADE-CERQual Interactive Summary of Qualitative Findings (iSoQ) computer programme [24]. This approach is becoming the standard in assessing the confidence in findings of a systematic review of qualitative research [25]. CERQual assesses the confidence in the evidence based on (i) methodological limitations [26], (ii) coherence [27], (iii) data adequacy [28], and (iv) relevance [29]. After assessing the degree of concern of each of the four components, the overall confidence of each review finding was judged to be high, moderate, low or very low. High confidence suggests that it is highly likely that the review finding is a reasonable representation of the phenomenon of interest, while very low confidence indicates that it is not clear whether the review finding is a reasonable representation of the phenomenon of interest [25]. The assessment was performed by one author (MH), checked by another author (NZ or JH), and finalised after consensus with four authors (MH, NZ, JH, SB).

RESULTS

Studies included

A total of 23,677 studies were identified, of which 97 studies met our inclusion criteria. The search and selection process is presented in Figure 1. The 97 qualitative studies, each representing between n=5 and n=73 participants, included in total n=1817 participants experiencing problems with work participation due to a chronic medical condition. The included studies had a wide range of chronic medical conditions, including cancer (n=24), brain injury (n=11), mental illness (n=10), cardiovascular problems (n=8), back pain (n=7), knee replacement (n=4), arthritis (n=4), other (n=10), and studies including a specific patient population with a wide range of chronic conditions (n=19). In addition, the work status of the populations in the included studies were: (1) being on (long-term) sick leave (n=11); (2) coping with problems with work participation while staying at work (n=5); and (3) returned to work after sick leave (n=22). A combination of these groups was included in n=52 of the studies, and for the participants from n=7 included studies the current work status was unknown. An overview of all study characteristics of each study is shown in the online Supplementary Appendix Table 2. The results of the CASP qualitative checklist for each study is presented in the online Supplementary Appendix Table 3. Of the included studies, n=62 (63.9%) studies were rated as high-quality studies (8-10), n=33 (34.0%) studies as medium quality (5-7), and n=2 (2.1%) studies as low quality (0–4) [22].

Identified needs

A broad variety of needs regarding work-focused healthcare as addressed by participating patients were identified, displayed in an overview of 17 subthemes. These 17 subthemes were inductively subdivided into four main themes: 1. substantive guidance; 2. clear and continuous process; 3. supportive attitude and behaviour; and 4. tailored approach. Hereby, a great variety of healthcare professionals involved in the delivery of work-focused healthcare were mentioned by participating patients. See the online Supplementary Appendix Table 2 for information about the reported professionals per included study. We will discuss below each of the four main themes and their subthemes. An overview of the identified main themes and subthemes, including the brief description for each subtheme, can be found in Table 1. A concept map of the identified themes and subthemes can be found in Figure 2.

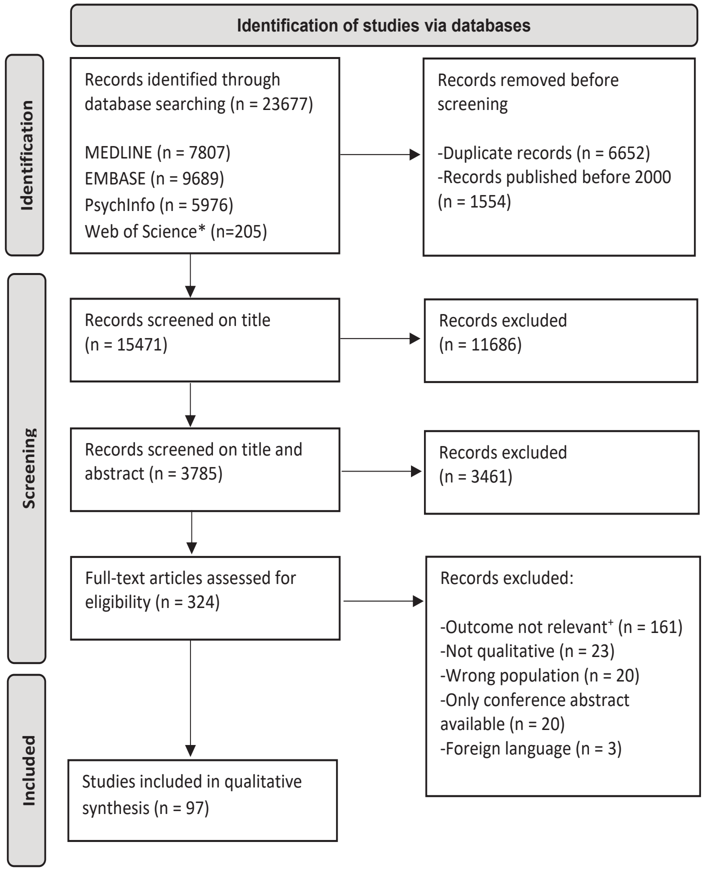

Figure 1. PRISMA 2020 flow diagram. *Two conference proceedings Citations of the Web of Science (Citation Index Science & Citation Index Social Sciences and Humanities), +No needs or experiences which reflect on a certain need regarding the topic of this paper

Substantive guidance

The theme substantive guidance comprises the needs regarding the specific content of work-focused healthcare provision. The subthemes represent the identified needs for: work as a topic in healthcare delivery, practical and specific guidance, psychological support, and vocational rehabilitation.

Table 1. Overview of the needs regarding work-focused healthcare from the patient's perspective

Main theme	**Subtheme**	**Brief description of the need**
Needs regarding:	Identified needs:	Need for…
1. **Substantive guidance**	1.1 Work as a topic in healthcare delivery	Work-focused support by all professionals throughout the healthcare delivery process, including the medical specialist and rehabilitation professional, to facilitate staying at work or returning to work.
	1.2 Practical and specific guidance	Receive practical tips, e.g. on work modifications, and targeted and phased rehabilitation and return to work plans including realistic goals, in order to help the patient avoid exceeding their limits.
	1.3 Psychological support	Psychological assessment and support to help process the impact of the medical condition on impairment in living and working.
	1.4 Vocational rehabilitation	Vocational rehabilitation to gain insight into and restore functional abilities and to explore suitable work arrangements.
2. **Clear and continuous process**	2.1 Early access to support	Early presence and access to work-focused healthcare support, by being able to easily reach out and make timely appointments with relevant professionals.
	2.2 Continuity in support	Continuous work-focused consultations, including continuous presence of support after full return to work, and the option to fall back on someone when struggling with problems with work participation.
	2.3 Transparency in the process steps	Transparency in the multiple process steps, for example by offering a clear overview of the role and responsibility of each professional in the process and clear feedback on how decisions affect the process.
	2.4 Interdisciplinary teamwork and coordination	Coherent interaction and constructive collaboration between professionals involved in work-focused healthcare, as well as towards the employer. Involvement of an independent mediator to coordinate the process is suggested.
	2.5 Information about rights and regulations	A clear overview of the rights and regulations regarding the work-focused healthcare process and the patient's obligations, in different formats at multiple time points throughout the process.
3. **Supportive attitude and behaviour**	3.1 Trustful relationship	A trustful relationship with the professional, developed by being treated with respect, taken seriously, being trusted, and an emphatic and in-person approach from the professional.
	3.2 Motivational attitude	An encouraging, positive, and proactive attitude from professionals, by sharing positive thoughts about the patient's abilities, to motivate the patient to return to work.
	3.3 Equal partnership	An equal partnership, with equal power dynamics, between the professional and patient in making decisions regarding vocational reintegration, by listening and valuing the patient's choices.
	3.4 Patient advocacy	The professional to act in the patient's interests instead of in the interests of other parties, such as the employer.
4. **Tailored support**	4.1 Flexibility in work-focused healthcare	Flexibility in the work-focused healthcare provision, and flexibility in the application of the rules in the context of the patient's needs, in order to receive more tailored support.
	4.2 Attention for the personal situation	Attention for the personal situation, including understanding of work capabilities and knowledge of the specific medical situation, on the part of the professional.
	4.3 Inclusion of patient-focused goals	Inclusion of patient-focused goals, meeting the patient's own goals and motivation.
	4.4 Disease-specific informationin relation to work	Information provision on the expected disease-specific consequences on work, such as expected return to work timelines and impact on work-capacity due to the diagnosis.

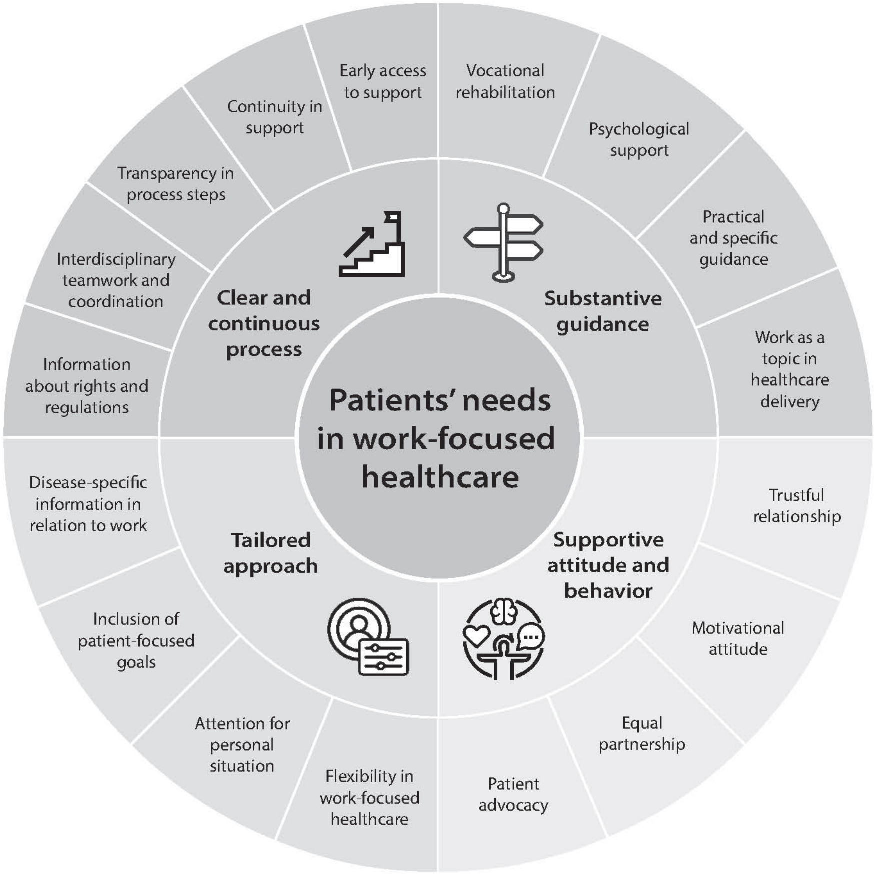

Figure 2. Concept map of the identified patients' needs in work-focused healthcare

Work as a topic in healthcare delivery

Need for work-focused support by all professionals throughout the healthcare delivery process, including the medical specialist and rehabilitation professional, to facilitate staying at work or returning to work (CERQual assessment: high confidence).

Receiving work-focused healthcare support was pointed out as being necessary to SAW or RTW [30,31,32,33]. When patients experienced a deficiency in work-focused healthcare support, they reported longer durations of being on sick leave [34,35,36]. Patients indicated the need for incorporating work as a topic within their clinical treatment [36,37,38,39,40,41,42,43,44, 45,46,47,48,49,50,51,52,53,54,55,56,57,58] and throughout their rehabilitation programmes [59,60,61,62,63]. The absence of such integration gave patients the feeling of being on their own [49,64]. Additionally, patients indicated to highly value the opinion of medical specialists and general practitioners regarding their possibilities to RTW [39,55,60,65,66,67]. In this context, patients indicated to feel responsible for integrating the topic of work into the consultation with the medical specialist [54]. However, patients experienced a feeling of not knowing how to start the conversation about work-related challenges and ask the right question to understand the information given [54,68,69]. Therefore, information about how to communicate with professionals on work-related matters was identified as a need [70].

Practical and specific guidance

Need to receive practical tips, e.g. on work modifications, and targeted and phased rehabilitation and RTW plans including realistic goals, in order to help the patient avoid exceeding their limits (CERQual assessment: high confidence).

A need for explicit and specific advice was identified [49,50,69,71,72,73], since the absence of advice when discussing work [49,74] or receiving advice without explicit and specific advice gave patients a feeling of uncertainty [37,41,44,60,75,76]. In particular, specific rehabilitation [35,39,62,77,78,79] and phased RTW plans [34,35,37,39,72,75,77,80,81,82,83,84] were mentioned, including specific advice about when and how to RTW [48,68,72,85]. In this context, it was mentioned that it is extremely important to set realistic goals with objective measurable outcomes [30]. In addition, practical advice on work modifications [12,32,35,44, 45,49,50,70,75,77,79,86,87], assessment at the work-site [30,75] and advice on finding a balance between social and working life patterns [50,61,77,79] can help patients to avoid exceeding their work ability.

Psychological support

Need for psychological assessment and support to help process the impact of the medical condition on impairment in living and working (CERQual assessment: high confidence).

A need for psychological support was identified [43,62,67,88,89], since cognitive support was considered particularly helpful in order to feel mentally strong enough to RTW [32,72, 83,84]. Psychological support was mentioned as being helpful when providing: support in accepting, and adjusting to, living and working with the chronic medical condition [31,70, 80,88,89,90,91]; strategies to overcome negative thoughts [30,42]; and learning how to set boundaries to avoid exceeding physical abilities [70]. In addition to this need for psychological support from a psychologist, the need for psychological assessment by other professionals was identified [32,59,72,89,92,93]. Support groups connecting patients with similar experiences and involvement in patient interest organisations were also considered helpful in accepting and adjusting [30,32,40,59]. In addition to psychological support for themselves, patients also indicated the need for psychological support for their families [88].

Vocational rehabilitation

Need for vocational rehabilitation to gain insight into and restore functional abilities and to explore suitable work arrangements (CERQual assessment: moderate confidence).

Vocational rehabilitation, including opportunities to explore varied work tasks and undergo physical assessment, could give patients insight into their altered work capabilities and aid them in finding a suitable job [45,75,77,94,95]. For patients with physical limitations, such as after total knee arthroplasty, support from physiotherapy was highly appreciated to restore functional capacities in order to facilitate RTW [60]. Unemployed patients indicated a need for information about companies that hire patients who experience problems with work participation [45,70,96]. For employed patients such information was also deemed important to facilitate a job switch that aligned with their adjusted work ability [42,62,63,74,97].

Clear and continuous process

The theme clear and continuous process comprises the needs focusing on clarifying and optimising the work-focused healthcare process. The subthemes represent the identified needs for: early access to support, continuity in support, transparency in the process steps, interdisciplinary teamwork and coordination, and information about rights and regulations.

Early access to support

Need for early presence and access to work-focused healthcare support, by being able to easily reach out and make timely appointments with relevant professionals (CERQual assessment: moderate confidence).

Participating patients indicated that work-focused healthcare support should be initiated as soon as possible [31,43,77,84,98,99], at the latest prior to the start of complex problems [42,87]. This results in the needs for the early presence of vocational rehabilitation [30,45,63,71,88,89] and work-focused coaching directly after discharge [87,88,100]. It is thereby highly important to be aware of the available types of support [46,70,73], and be able to easily reach out [42,59 ,63,70,75,77,79,84,89,92,101] and make a timely appointment with the relevant professional [60,79], even for self-employed workers [42], to avoid a feeling of isolation [31]. However, professionals from the occupational health services should keep in mind that an invitation for a consultation soon after onset of work participation problems can give the patient a feeling of distrust and lack of understanding for their situation [91].

Continuity in support
Need for continuous work-focused consultations, including continuous presence of support after full RTW, and the option to fall back on someone when struggling with problems with work participation (CERQual assessment: moderate confidence).

A low frequency of guidance, including an early and unforeseen discontinuation of support, led to feelings of confusion, uncertainty and a feeling of being overlooked among patients [8,40,41,59,71,89,94,102,103]. Additionally, since patients indicated to wait until their next consultation before deciding on the next step [39], the need for continuous support, including frequent follow-up consultations [104] and automatically planned appointments [79, 88], was identified [31,40,50,79,84,89,93,100,105]. In addition, the continued presence of post-reintegration support from a professional who acts as a safety net for the patient to fall back on when struggling to RTW or being back at work was characteristic [30, 41,49,50,67,84,92,106,107,108]. Someone to fall back on was highlighted as a comforting thought [92]. However, when ongoing check-ins are too frequent, patients indicated the follow-ups as being unnecessary and that they experienced a feeling of being put under pressure [71]. Furthermore, to maintain a continuous process, a lack of referral pathways [58,63,88,90,109], an overload of mandatory paperwork [73], long waiting times [43,54,62,93,109], and an excessive number of professionals need to be avoided [8,34,43,71,88,95,96,102,110].

Transparency in the process steps
Need for transparency in the multiple process steps, for example by offering a clear overview of the role and responsibility of each professional in the process and clear feedback on how decisions affect the process (CERQual assessment: high confidence).

Transparency in the multiple process steps [63,89,94], and clear feedback and reflection on how certain decisions affect the process [64,79,84,93] were highlighted as contributing to good patient expectation management [63,69,75,79,89,103,111]. In addition, patients mentioned a lack of understanding regarding the support and responsibility they could expect from certain professional during the process [75,77,87,92,94,105], and some assumed that delivery of work-focused healthcare was outside the realm of the medical specialist [40,44,68]. Therefore, the

need for information provision regarding the multiple steps in the work-focused healthcare process, such as: what is done, what will happen next, what to expect [79,96,100,110], who is doing what and whose responsibility it is was identified [40,79,100].

Interdisciplinary teamwork and coordination
Need for coherent interaction and constructive collaboration between professionals involved in work-focused healthcare, as well as towards the employer. Involvement of an independent mediator to coordinate the process is suggested (CERQual assessment: high confidence).

Patients experienced a lack of communication between medical, psychological and occupational professionals regarding work issues [54,63,75,97,108,110,111,112,113], which gave patients the feeling they were acting as their own gatekeeper in the work-focused healthcare process [56,71,110,114]. The lack of communication resulted in inconsistent information and discrepancy in information provision towards patients, causing feelings of confusion, frustration and discouragement [33,38,39,40,41,72,110]. In addition, requesting information regarding medical and functional status from the medical system can give patients a feeling of distrust regarding the occupational healthcare professional [111]. Therefore, patients highlighted the importance of coherent interaction and constructive multidisciplinary collaborations between these professionals to facilitate RTW [8,30,56,61,63,72,73,79,84,8 9,105,115], and the need for an independent mediator to coordinate the patient's process and maintain regular contact between professionals involved [42,52,58,67,79,88,89, 91,94,99,104,105,116,117]. Thereby patients suggested to include occupational healthcare professionals within the multidisciplinary team in clinical care [56].

In addition, in order to put pressure for the advised work modifications to be implemented [44,46,75,83,109,118] and to advise and educate the employer about disability management [40,59,85,90,91,92,105,109], communication from work-focused healthcare professionals in the direction of the employer was seen as an important asset [43,44,45,46,79,83]. Patients stated that when their employer is less supportive, more support by occupational health professionals is needed [32,49,85]. On the other hand, the input of the employer's expectations regarding RTW give the patient the opportunity to highlight the work requirements within the work-focused healthcare process [49,65].

Information about rights and regulations
Need for a clear overview of the rights and regulations regarding the work-focused healthcare process and the patient's obligations, in different formats at multiple time points throughout the process (CERQual assessment: low confidence).

Contradictory or missing information on the legal aspects of the process [31,70,78,110,116] results in a feeling of distrust [111] and leading to patients fearing they will lose their financial benefits [89]. Therefore, it was indicated that it is important to learn about the legal rights and obligations of both patients and employers with regard to sick leave and social security shortly after diagnosis [42,63,68,85,100]. Additionally, patients need practical information on existing regulations [54,74,88,100,116,119], e.g. a checklist [88] that can be used as input for certain decisions and taking responsibility in their own process [74,100]. However, patients indicated that the content of such information [41,50,119] and the timing of information provision was often not in line with their needs [49,63,111]. It was suggested that information should be provided in diverse formats including verbal and written information at different sources, for example websites, pamphlets, and magazines, as well as at several time points during the healthcare delivery process [49,73,100,111].

Supportive attitude and behaviour

The theme supportive attitude and behaviour comprises the needs focusing on a positive and supportive attitude and behaviour of the healthcare professional that patients encounter throughout their health journey. The subthemes represent the identified needs for: trustful relationship, motivational attitude, equal partnership, and patient advocacy.

Trustful relationship

Need for a trustful relationship with the professional, developed by being treated with respect, taken seriously, being trusted and an emphatic and in-person approach from the professional (CERQual assessment: moderate confidence).

Patients indicated being treated with respect [43,78,89,93,100,116], being taken seriously [12,79,81,100,101,102,112,120], being trusted [54,70,71,89,95,100,109,112,115,121], and receiving empathy and compassion [62,87,109,115] from professionals as forming the fundamentals of a trustful relationship. Furthermore, developing a trustful relationship with the patient includes generating a feeling of being welcome, being carefully examined, not being questioned and professionals providing spontaneous information about the process [79,93,112]. A trustful relationship strengthens the feeling of being of value to society [79]. However, professionals need to take into account that it takes time to develop a trustful relationship with a patient [116]. In order to provide a feeling of being listened to by the professional, the importance of enough time and in-person consultation was emphasised [38, 40,54,55,57,60,71,75,79,89,101,112,115]. In this context, a strict and clear language and attitude of the professional supporting the trust is needed [79].

Motivational attitude

Need for an encouraging, positive, and proactive attitude from professionals, by sharing positive thoughts about the patient's abilities, to motivate the patient to RTW (CERQual assessment: high confidence).

An encouraging and positive attitude from professionals involved in work-focused healthcare to go back to work is highly appreciated and motivates patients to RTW [33,35,36,40,41,44, 59,62,78,79,112]. Professionals' advice to not RTW or reduce working hours was experienced as negative by the patients [35,42,53,69,78]. Therefore, the professional can act as a coach for the patient [119] by providing balanced encouragement [35,91,93,100,101,112], providing space to discuss the patient's fears [55,93], sharing a positive view on the patient's abilities [12,32,42,102,120] and confirming the patient's thoughts about RTW [39,40,76,87]. Furthermore, a proactive attitude by professionals, taking the initiative in providing solutions and information, was needed [42,50,59,70,115].

Equal partnership

Need for an equal partnership, with equal power dynamics, between the professional and patient in making decisions regarding vocational reintegration, by listening to and valuing the patient's choices (CERQual assessment: moderate confidence).

Patients highlighted the need for a relationship with an equal power dynamic in decisions [30, 64,69,72,76,93,95,101,103,112,113], in which they are recognized as equal by the professional [42,89,106,116,122]. To establish such an equal relationship, the professional needs to listen to, and value the patient's choices, views and experiences [43,60,61,64,73,79,84,95,99,101, 108,110,112,113,120]. In other words, the professional should not talk about the patient, but talk with the patient [73,101,122]. In addition, to establish equal power dynamics and allowing for shared decision-making, the need for good information provision was mentioned [110]. However, when the patient does not understand how to act, does not have sufficient energy to act, or in other ways needs to be relieved from responsibility in decision-making, it was experienced as a relief when the professional took over [32,89,100,112].

Patient advocacy

Need for the professional to act in the patient's interests instead of in the interests of other parties, such as the employer (CERQual assessment: moderate confidence).

Representation by occupational healthcare professionals who are affiliated with the company gave the patient mixed feelings about the independent status of these professionals [42,75,87]. They mentioned the satisfaction with, and need for, professionals acting in the patient's interest, instead of being employer-oriented [46,58,70,81,87,101,122].

Tailored approach

The theme tailored approach comprises the needs focusing on the delivery of work-focused healthcare tailored to the individuals' needs. The subthemes represent the identified needs for: flexibility in work-focused healthcare, attention for the personal situation, inclusion of individual goals, and disease-specific information in relation to work.

Flexibility in work-focused healthcare
Need for flexibility in the work-focused healthcare provision, and flexibility in the application of the rules in the context of the patient's needs, in order to receive more tailored support (CERQual assessment: high confidence).

Work-focused encounters were experienced as routine procedures focused on generic protocols and medical aspects, rather than tailored to the patient's individual needs and capacities [8,59,63,75,81,95,96,102,112,113,115,120]. Because of these routine procedures, independent of the patient's functional abilities, excessive pressure to RTW was experienced by patients [53,71,115,122,123]. That is why patients stated the need for flexibility in the system in order to receive tailored support and to be treated as a unique individual [39,42,47,48,62,64,70,85,100], with a focus on the bigger picture in their everyday life [33,42,47,54,70,73,79,106] and avoiding excessive pressure [58,64,77,81,103,110]. For this, professionals need to apply a flexible approach towards the delivered support [84,99] and a flexible application of the rules in the context of the patient's needs [34,42,43,60,61,62,71,78,93,96,102,107,110,112,116].

Attention for the personal situation
Need for attention for the personal situation, including understanding of work capabilities and knowledge of the specific medical situation, on the part of the professional (CERQual assessment: high confidence).

Patients indicated that the experience of not being understood delayed the time to RTW [30,33,40,73,78,84]. Therefore, a need for the professional to understand the patient's personal situation, such as the decreased work capabilities and the related personal needs, and its impact on the patient's daily life, was identified [74,81,86,89,91,99,100,121,122]. This understanding can be established by having conversations with, and listen to the patient [8,32,93], and thoroughly read the patient's files before the start of the consultation [70]. Additionally, knowledge about the specific medical situation, including the physical and psychological impairments, side effects and its complications [8,35,39,42,43,44,46,53,56,58,62,63,70,71,73,74,83,87,90,99,113,115,119] and understanding of the work situation [32,39,40,44,56,76,108,109] by the professional is crucial for patients to feel understood. In this context, patients indicated confidence in the judgment of their medical specialists, raising their confidence in RTW [49,76]. To promote understanding of the personal problems with work participation at the workplace, information provision by the occupational healthcare professional towards the colleagues and employer about the consequences of the specific medical condition and individual work-related advice is considered important [12,35,49,62,63,69,84,88,90,94].

Inclusion of patient-focused goals
Need for professionals to include patient-focused goals, meeting the patient's own goals and motivation (CERQual assessment: moderate confidence).

Patients pointed out feeling that the goal of the supporting professional, regarding RTW, support frequency or work tasks, did not always match their own goals [43,44,66,69,76,83,121]. Therefore, patients determined the need for the professional to set patient-focused goals, adjusting the support to their motives to work, their openness to receive guidance [34,50,56,61,93,113], and their interest, to achieve a common goal [40,42,80,100].

Disease-specific information in relation to work
Need for information provision on the expected disease-specific consequences on work, such as expected RTW timelines and impact on work-capacity due to the diagnosis (CERQual assessment: high confidence).

A lack of knowledge about the disease, the duration of treatment, potential complications and the influence of these on work made it hard for patients to decide on RTW and to perform effectively while at work [43,46,51,57,61,71,78,82,92,99,119]. Therefore, a need for more information about disease- and treatment-specific results on work ability, including self-care [77], and disease-specific coping strategies [34,50,54,68,90,102,104,124], was identified [12,49,50,56,62,63,70,78,80,88,90,100], including timelines of expected recovery and impact of side effects on work-capacity over time [46,51,65,68,70,71,98,111].

Confidence in the review findings
Using the CERQual approach, all identified subthemes (n = 17) were assessed for confidence in the representation of the phenomenon of interests. In the quality assessment, nine identified needs (53%) were assessed as high confidence, seven identified needs (41%) as moderate confidence, and one identified need (6%) as low confidence. The main concern identified in the quality assessment was concerning relevance, because a large number of studies representing a small range of geographical, high-income settings. The findings of the assessment with the CERQual approach, including written justification, can be found in the summary of qualitative findings table (Table 2). For insights into the reasoning and explanations behind these assessments for each review finding, see the evidence profile table (online Supplementary Appendix Table 4).

Table 2. Summary of qualitative findings

#	Summarized review finding	GRADE-CERQual assessment of confidence	Explanation of GRADE-CERQual assessment	References
Substantive guidance				
1.1	**Work as a topic in healthcare delivery** - Need for work-focused support by all professionals throughout the healthcare delivery process, including the medical specialist and rehabilitation professional, to facilitate staying at work or returning to work.	High confidence	Minor concerns regarding methodological limitations, No/Very minor concerns regarding coherence, No/Very minor concerns regarding adequacy, and No/Very minor concerns regarding relevance	(30-70)
1.2	**Practical and specific guidance** - Need to receive practical tips, e.g. on work modifications, and targeted and phased rehabilitation and return to work plans including realistic goals, in order to help the patient avoid exceeding their limits.	High confidence	No/Very minor concerns regarding methodological limitations, No/Very minor concerns regarding coherence, No/Very minor concerns regarding adequacy, and Minor concerns regarding relevance	(12, 30, 32, 34, 35, 37, 39, 41, 44, 45, 48-50, 60-62, 68-87)
1.3	**Psychological support** - Need for psychological assessment and support to help process the impact of the medical condition on impairment in living and working.	High confidence	No/Very minor concerns regarding methodological limitations, No/Very minor concerns regarding coherence, No/Very minor concerns regarding adequacy, and Minor concerns regarding relevance	(30-32, 40, 42, 43, 59, 62, 67, 70, 72, 80, 83, 84, 88-93)
1.4	**Vocational rehabilitation** - Need for vocational rehabilitation to gain insight into and restore functional abilities and to explore suitable work arrangements.	Moderate confidence	No/Very minor concerns regarding methodological limitations, Moderate concerns regarding coherence, No/Very minor concerns regarding adequacy, and Minor concerns regarding relevance	(42, 45, 60, 62, 63, 70, 74, 75, 77, 94-97)
Clear and continuous process				
2.1	**Early access to support** - Need for early presence and access to work-focused healthcare support, by being able to easily reach out and make timely appointments with relevant professionals.	Moderate confidence	No/Very minor concerns regarding methodological limitations, Minor concerns regarding coherence, No/Very minor concerns regarding adequacy, and Minor concerns regarding relevance	(30, 31, 42, 43, 45, 46, 59, 60, 63, 70, 71, 73, 75, 77, 79, 84, 87-89, 91, 92, 98-101)
2.2	**Continuity in support**- Need for continuous work-focused consultations, including continuous presence of support after full return to work, and the option to fall back on someone when struggling with problems with work participation.	Moderate confidence	No/Very minor concerns regarding methodological limitations, Minor concerns regarding coherence, No/Very minor concerns regarding adequacy, and Minor concerns regarding relevance	(8, 30, 31, 34, 39-41, 43, 49, 50, 54, 58, 59, 62, 63, 67, 71, 73, 79, 84, 88-90, 92-96, 100, 102-110)
2.3	**Transparency in the process steps**- Need for transparency in the multiple process steps, for example by offering a clear overview of the role and responsibility of each professional in the process and clear feedback on how decisions affect the process.	High confidence	No/Very minor concerns regarding methodological limitations, No/Very minor concerns regarding coherence, No/Very minor concerns regarding adequacy, and Minor concerns regarding relevance	(40, 44, 63, 64, 68, 69, 75, 77, 79, 84, 87, 89, 92-94, 96, 100, 103, 105, 110, 111)
2.4	**Interdisciplinary teamwork and coordination** - Need for coherent interaction and constructive collaboration between professionals involved in work-focused healthcare, as well as towards the employer. Involvement of an independent mediator to coordinate the process is suggested.	High confidence	No/Very minor concerns regarding methodological limitations, No/Very minor concerns regarding coherence, No/Very minor concerns regarding adequacy, and No/Very minor concerns regarding relevance	(8, 30, 32, 33, 38-46, 49, 52, 54, 56, 58, 59, 61, 63, 65, 67, 71-73, 75, 79, 83-85, 88-92, 94, 97, 99, 104, 105, 108-118)
2.5	**Information about the rights and regulations**- Need for a clear overview of rights and regulations regarding the work-focused healthcare process and the patient's obligations, in different formats at multiple time points throughout the process.	Low confidence	No/Very minor concerns regarding methodological limitations, No/Very minor concerns regarding coherence, No/Very minor concerns regarding adequacy, and Serious concerns regarding relevance	(31, 41, 42, 49, 50, 54, 63, 68, 70, 73, 74, 78, 85, 88, 89, 100, 110, 111, 116, 119)
Supportive attitude and behaviour				
3.1	**Trustful relationship** - Need for a trustful relationship with the professional, developed by being treated with respect, taken seriously, being trusted and an emphatic and in-person approach from the professional.	Moderate confidence	No/Very minor concerns regarding methodological limitations, Minor concerns regarding coherence, No/Very minor concerns regarding adequacy, and Minor concerns regarding relevance	(12, 38, 40, 43, 54, 55, 57, 60, 62, 70, 71, 75, 78, 79, 81, 87, 89, 93, 95, 100-102, 109, 112, 115, 116, 120, 121)
3.2	**Motivational attitude**- Need for an encouraging, positive, and proactive attitude from professionals, by sharing positive thoughts about the patient's abilities, to motivate the patient to return to work.	High confidence	No/Very minor concerns regarding methodological limitations, No/Very minor concerns regarding coherence, No/Very minor concerns regarding adequacy, and Minor concerns regarding relevance	(12, 32, 33, 35, 36, 39-42, 44, 50, 53, 55, 59, 62, 69, 70, 76, 78, 79, 87, 91, 93, 100-102, 112, 115, 119, 120)
3.3	**Equal partnership**- Need for an equal partnership, with equal power dynamics, between the professional and patient in making decisions regarding vocational reintegration, by listening and valuing the patient's choices.	Moderate confidence	No/Very minor concerns regarding methodological limitations, Minor concerns regarding coherence, No/Very minor concerns regarding adequacy, and Minor concerns regarding relevance	(30, 32, 42, 43, 60, 61, 64, 69, 72, 73, 76, 79, 84, 89, 93, 95, 99-101, 106, 108, 110, 112, 113, 116, 120, 122)
3.4	**Patient advocacy** - Need for the professional to act in the patient's interest instead of the interests of other parties, such as the employer.	Moderate confidence	Minor concerns regarding methodological limitations, No/Very minor concerns regarding coherence, Moderate concerns regarding adequacy, and No/Very minor concerns regarding relevance	(42, 46, 58, 70, 75, 81, 87, 100, 101, 122)

	Tailored approach			
4.1	**Flexibility in work-focused healthcare**- Need for flexibility in the work-focused healthcare provision, and flexibility in the application of the rules in the context of the patient's needs, in order to receive more tailored support.	High confidence	No/Very minor concerns regarding methodological limitations, No/Very minor concerns regarding coherence, Minor concerns regarding adequacy, and Minor concerns regarding relevance	(8, 33, 34, 39, 42, 43, 47, 48, 53, 54, 58-64, 70, 71, 73, 75, 77-79, 81, 84, 85, 93, 95, 96, 99, 100, 102, 103, 106, 107, 110, 112, 113, 115, 116, 120, 122, 123)
4.2	**Attention for the personal situation** - Need for attention for the personal situation, including understanding of work capabilities and knowledge of the specific medical situation, on the part of the professional.	High confidence	No/Very minor concerns regarding methodological limitations, No/Very minor concerns regarding coherence, No/Very minor concerns regarding adequacy, and Minor concerns regarding relevance	(8, 12, 30, 32, 33, 35, 39, 40, 42-44, 46, 49, 53, 56, 58, 62, 63, 69-71, 73, 74, 76, 78, 79, 81, 83, 84, 86-91, 93, 94, 99, 100, 108, 109, 113, 115, 119, 121, 122)
4.3	**Inclusion of patient-focused goals**- Need for professionals to include patient-focused goals, meeting the patient's own goals and motivation.	Moderate confidence	No/Very minor concerns regarding methodological limitations, No/Very minor concerns regarding coherence, Minor concerns regarding adequacy, and Minor concerns regarding relevance	(34, 40, 42-44, 50, 56, 61, 66, 69, 76, 80, 83, 93, 100, 113, 121)
4.4	**Disease-specific information in relation to work**- Need for information provision on the expected disease-specific consequences on work, such as expected return to work timelines and impact on work-capacity due to the diagnosis.	High confidence	No/Very minor concerns regarding methodological limitations, No/Very minor concerns regarding coherence, No/Very minor concerns regarding adequacy, and No/Very minor concerns regarding relevance	(12, 34, 43, 46, 49-51, 54, 56, 57, 61-63, 65, 68, 70, 71, 77, 78, 80, 82, 88, 90, 92, 98-100, 102, 104, 111, 119, 124)

DISCUSSION

Summary of main findings

This qualitative evidence synthesis included 97 studies representing perspectives on work-focused healthcare from patients with varied chronic medical conditions in different work settings. We identified a wide range of patients' needs regarding work-focused healthcare provided by various healthcare professionals (n=17), categorized into four main themes: 1. substantive guidance, 2. clear and continuous process, 3. supportive attitude and behaviour, and 4. tailored approach. Overall, the confidence in the identified needs was rated moderate to high using the CERQual approach, which makes it highly likely that the review findings are a reasonable representation of patients' needs regarding work-focused healthcare when experiencing problems with work participation due to a chronic medical condition.

Agreements and disagreements with other studies or reviews

In accordance with the patient's perspective as highlighted in this review, earlier studies show that healthcare professionals also agree that work is an important outcome for health and wellbeing [125]. In addition, patient-centred healthcare delivery has been found to increase patient satisfaction [126]. However, healthcare professionals acknowledge that actual provision of patient-centred work-focused healthcare is often limited [125,127]. Supporting evidence-based medicine interventions is considered important by healthcare professionals to improve their patient-centred work-focused healthcare delivery [128].

Some of our findings, including long waiting times for referrals, difficult access to consultations, and poor long-term support, have also been identified as common barriers for proper care delivery in the curative care from patients' perspective [129]. Earlier studies found that healthcare professionals identified a lack of communication with other professionals as a barrier for patient-centred care [130]. In line with our review findings, the need for accessible care and good information provision regarding the care process were previously identified in primary and curative healthcare [131].

Furthermore, earlier research, as well as findings from the current study, shows that problems with work participation may vary between individuals, emphasising the importance of tailored work-focused healthcare [132]. Aligning with our current study findings, earlier studies in curative care report the need for an individualized, flexible, and holistic relationship with the healthcare professional, who is familiar with the patient's specific medical conditions and their goals [129,131]. In a work-focused healthcare setting, our findings also show that patients require a tailored approach that is sensitive to the patient's situation and needs. Our findings support shared decision-making as an approach that could be explored in work-focused healthcare delivery by tailoring care to the patient's individual needs [133], while supporting an equal partnership between the patient and professional [134,135,136].

In earlier research, multiple strategies have been described to enhance communication between professionals involved in work-focused healthcare, for example by implementing a protocol or a communication form [128,137,138]. As also considered true in the findings of the current study, interdisciplinary teamwork between professionals may not only promote a clear and continuous care process, but may also increase trust and commitment levels of patients in the process [139]. A trustful relationship and equal partnership between the patient and professional, which is found to be an important need in the context of the current study, is also considered important by both professionals and patients regardless of whether the healthcare setting is focused on work or not [140,141]. Supporting our review findings, empathy, as the basis of a trustful relationship between the professional and patient, needs to consist of understanding the personal situation of the patient, and communicating this understanding to the patient in a supportive way [142]. Moreover, in accordance with this review, it is suggested that a motivational attitude on the part of the healthcare professional towards the patient may assist in patients' behavioural changes, patients' autonomy and fulfilment of patient-centred goals [143].

Strengths and limitations

The strengths of the current qualitative evidence synthesis lie in its extensive search across multiple databases, large number of studies included, and broad target population, enhancing the generalisability of the findings. Methodologically, the use of the CERQual approach, which aligns with international recommendations [23], ensures transparency in the confidence of the findings [25]. In addition, consensus meetings between authors further improved the trustworthiness of our evidence synthesis.

Nevertheless, there were also some methodological limitations in the current qualitative evidence synthesis. Although the pragmatic decision was made to only include studies published in the English language, we may have excluded relevant literature from other perspectives in other languages. Nonetheless, given the large number of studies and countries included, the impact of this language restriction may be limited [144]. Moreover, as indicated in the assessment by the CERQual approach, the majority of the included studies were conducted in high-income countries where workers typically have stronger social security regulations. This dominance may limit the generalisability of our findings to healthcare systems from low- or middle income countries where workers may receive lower levels of work-related protection and support.

Implications for practice

New strategies are needed to realise patient-centred work-focused healthcare. The needs from the patient's perspective, as reflected on in this qualitative evidence synthesis, provide the starting point for policy makers and (occupational) healthcare professionals to change current practice to achieve better patient-centred work-focused healthcare. In addition, to assess the success of such innovations, patient-centred outcomes should be monitored within work-focused healthcare [145].

Moreover, the broader understanding of patients' needs in work-focused healthcare can help (occupational) healthcare professionals adopt a more patient-centred approach in practice. Professionals can assess their patient-centredness using the identified needs as a checklist, guideline or communication tool during consultations.

Implications for research

In this evidence synthesis, we showed a considerable number of needs that fit the aims of work-focused healthcare in patients with a chronic disease. It may be relevant to explore whether these needs vary in intensity or priority in different subgroups, for example different types of diseases and workplace characteristics. In addition, as the timing of care may influence patients' needs within the work-focused healthcare provision [146], we suggest that future qualitative studies should consider the time and place of care delivery within the individual patient trajectories during the work-focused healthcare process. Exploring the intensity or priority of the needs identified in this study among different subgroups or at different time points may enhance theory development in the future.

In addition, the need for information about the rights and regulations was assessed with low confidence due to serious concerns regarding relevance, thereby questioning the timing and form of this information provision. Other studies identified the need for more clarity regarding the rights and regulations among professionals involved in work-focused healthcare [147]. Therefore, future research needs to assess the requirements for education on rights and regulations in work-focused healthcare for all stakeholder groups.

CONCLUSION

This review identified four main themes, representing 17 subthemes, containing needs regarding work-focused healthcare from a broad patient population. Increasing insight into patients' needs in work-focused healthcare can guide policymakers and (occupational) healthcare professionals in developing new intervention and care strategies important for patient-centred work-focused healthcare. Future research should investigate whether the intensity or priority of the needs identified in this study varies among different subgroups or at different time points. Insight is also needed into what these new strategies should consist of.

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SUPPLEMENTARY MATERIALS

Additional file 1: Contains Supplementary Appendix table 1-4

5

Work-focused healthcare from the perspective of employees living with cardiovascular disease: a patient experience journey mapping study

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ABSTRACT

Background: People living with cardiovascular diseases (CVD) often experience work participation problems. Good work-focused healthcare, defined as the received advice, treatment, and guidance focusing on work participation, can support the patient and workplace. However, experiences with work-focused healthcare are generally not always positive which is a barrier for work participation. Therefore, the objective of this study is to gain insight into the work-focused healthcare journey from the perspective of patients with work participation problems due to CVD, to understand their experiences and needs, and to derive opportunities for improving work-focused healthcare service at a system level.

Methods: Semi-structured interviews, preceded by preparatory assignments, were conducted with 17 patients who experience(d) work participation problems due to CVD. The patient experience journey map (PEJM) approach was used to visualise the patients' work-focused healthcare journey, including experiences and needs over time and place, from which opportunities to improve work-focused healthcare from the patient's perspective were derived.

Results: An aggregated PEJM consisting of six phases was composed and graphically mapped. The first phase, working, represents a period in which CVD health problems and subsequent functional limitations occur. The next two phases, short- and long-term sick leave, represent a period of full sick leave. The last three phases, start, partial, and full vocational reintegration, focus on the process of return to work that takes place ranging from a few months up to several years after sick-listing. For each phase the touchpoints, timespan, stakeholders, activities, experiences and needs from the perspective of the patients were identified. Finally, for better work-focused healthcare nine opportunities for improvement were derived from the PEJM, e.g. emphasise the need for work adjustment prior to the medical intervention, provide more personalised advice on handling work limitations, and putting more compelling pressure on the employer to create suitable work positions for their employees.

Discussion/conclusion: This paper contributes insights to provide a more patient-centred work-focused healthcare trajectory for patients employed in paid jobs when living with CVD. The PEJM provides an understanding of the patients' perspectives throughout their work-focused healthcare journey and highlights opportunities for improvement towards a better suited and seamless patient journey. Although this research was conducted within the Dutch healthcare system, it can be assumed that the findings on integrated work-focused healthcare are largly transferable to other healthcare systems.

BACKGROUND

Cardiovascular diseases (CVD) are the leading cause of chronic disease morbidity and mortality industrialized countries [1,2]. A large proportion of these individuals already live with CVD during the working age [3]. This number is expected to increase further due to the rising retirement ages in Western countries, such as the Netherlands [4,5,6]. Within the working population, CVD often leads to temporary or prolonged (partial) sick leave [7,8], and factors such as mental health problems and negative perceptions are reported as barriers to successful return to work (RTW) [9,10,11]. However, work participation is crucial for improving health and wellbeing [12]. Therefore, CVD patients with disease-related presenteeism and sickness absence express the need for work-focused healthcare that supports staying at work, or returning to work, thus helping them overcome these barriers [13,14]. Work-focused healthcare refers to the advice, treatment, guidance and support received, with a specific focusing on work participation [15]. Professionals providing work-focused healthcare can include those from occupational healthcare, such as occupational physicians and labour experts, as well as clinical care professionals like cardiologists and cardiac rehabilitation specialists [16,17,18].

However, previous studies have indicated that people living with CVD did not always have positive experiences with the current work-focused healthcare system. They reported a lack of (early) advice regarding RTW, a lack of motivation to RTW from professionals and a lack of follow-up appointments to discuss RTW [13,14,19]. These negative experiences were attributed to a lack of knowledge and awareness about the topic work of healthcare professionals [20], and the use of a one-size fits all approach in work-focused healthcare systems [21]. These negative experiences were identified as barriers to work participation. Therefore, earlier literature suggested to need to better align the organisation of the work-focused healthcare delivery system with the needs and preferences of patients, known as patient-centred care [21,22,23].

To implement true patient-centred care within the organisation of work-focused healthcare for patients with CVD, it is essential to thoroughly understand how these patients experience work-focused healthcare services and their related needs over time (e.g. short-term and long-term sick leave) and in different settings (e.g. at home, at work, during consultations). This understanding should also take into account the specific factors of the healthcare system being mapped [24]. Gaining insights into patients' positive and negative experiences, and how they relate to their needs requires comprehending healthcare services at a system level [25]. Patient experience journey mapping (PEJM), an approach from the field of human-centred design, is a method that enables an aggregated graphical representation of sociotechnical healthcare services at a system level capturing patients' experiences and needs over time and in different settings [25,26,27]. The PEJM approach thus facilitates the identification of opportunities to improve the healthcare service to better meet patients' needs [26].

The objective of this study is to gain insights into the work-focused healthcare journey from the perspective of patients with work participation problems due to a CVD, to understand their experiences and needs, and to derive opportunities from these experiences and needs for improving work-focused healthcare service at a system level. The research questions are as follows: (1) What does the work-focused healthcare journey look like for patients who experience work participation problems due to a CVD? (2) What are the experiences and needs of these patients during their work-focused healthcare journey? (3) Which opportunities for improvement can be derived from the patients' experiences and needs regarding work-focused healthcare over time and in different settings? Since this study is conducted in the context of the Dutch healthcare system, an explanation of the work-focused healthcare system in the Netherlands can be found in Text table 1.

Text table 1. Work-focused healthcare for employees in the Netherlands

Different from other healthcare systems worldwide, in the Dutch work-focused healthcare system there is a strict division between the medical roles of clinical and occupational healthcare professionals [1]. Clinical healthcare professionals are involved in treating the patients' disease, while occupational healthcare professionals are responsible for certifying sickness absence, providing return to work guidance, and assessing social security benefits, as regulated by the Dutch Improved Gatekeeper Act and the Act on Work and Income according to Work Capacity. This strict division between the clinical and occupational roles is for occupational healthcare professionals to perform their tasks, as providing sick notes, without any conflict of interest by a physician-patient relationship [2].

Work-focused healthcare for employees is mainly delivered by occupational healthcare professionals, including occupational physicians, insurance physicians and labour experts. When an employee reports sick to their employer, the employer is financially responsible for the first two years [3]. Additionally, the employer has a legal obligation to contract an occupational health service and an occupational physician within the first week of the employee's sick leave [3]. The occupational physician must provide a problem analysis and return to work plan for sick employees six weeks after the start of the sick leave. Every employee has the legal right to consult an occupational physician [4].

In current practice, occupational healthcare is often delivered by case managers and occupational health nurses under delegated responsibility of an occupational physician [5]. After two years, an insurance physician working for the Dutch Social Security Institute: the Institute for Employee Benefit Schemes (SSA) assesses whether the sick-listed employee is eligible for a long-term disability benefit [8]. The Sickness Benefits Act provides for workers who are sick-listed and no longer have an employment contract. After reporting sick, these workers receive sickness benefit and are entitled to occupational healthcare by the SSA during the sickness benefit period.

METHODS

Design and setting

To gain insight into the work-focused healthcare system from the perspective of patients living with CVD and to identify potential areas for improvement throughout the care system, we conducted a qualitative data collection using semi-structured interviews. The collected data was then analysed using the PEJM approach, which is a method derived from the human-centred design discipline. This approach aims to analyse patients' experiences within the sociotechnical system studied and to identify areas where improvements can be made to enhance the overall experience of patients [26]. The Consolidated criteria for reporting qualitative research (COREQ) checklist was used for reporting the methods and results [34].

Participants

Inclusion criteria

Individuals were eligible to participate if they met the following criteria: 1) diagnosed with and having received healthcare for CVD; 2) of working age (between 18 and 67 years); 3) employed in paid work (temporary or permanent employment contract) at the moment of CVD diagnosis; 4) experienced work participation problems due to CVD that resulted in (partial) sick leave or adjustments in work for at least six weeks as this aligns with the point when occupational health consultation starts within the Dutch work-focused healthcare system; and 5) fluently speak and understand the Dutch language.

Recruitment of the participants

Participants were obtained from two different sources to ensure a variety of time points and locations within the (work-focused) healthcare system. First, participants were recruited through purposive sampling by a personal invitation from their treating medical professional from two Dutch hospitals (Cardiologist at the St. Antonius Hospital, Nieuwegein, The Netherlands; Nursing specialist at the Amsterdam UMC, VU University Medical Centre, Amsterdam, The Netherlands). The invitations were based on two criteria: the age of the patient (working age, between 18 and 67 years) and whether medical information had been requested by an occupational physician in the past six months. Sixteen invitees were willing to participate (St. Antonius n=14, VUmc n=2), of which nine met the inclusion criteria and were included in the study. Second, participants were recruited through the SSA. The SSA randomly invited a group of patients with CVD (n=60) by sending them a letter to participate in the study. After two weeks, a reminder letter was sent. Ten positive responses were received, and eight of these respondents met the inclusion criteria and were included. In both recruitment strategies, the first or second author contacted interested patients by phone for further screening of the inclusion criteria. When the patient met all inclusion criteria, an online interview was scheduled. All participants provided written consent. Initially, the goal was to include fifteen participants to ensure reaching data saturation [35].

Table 2. Demographic characteristics of the participants (n=17)

Variables	Mean (SD)	n	%
Age, years	53.8 (11.2)		
18-29		1	5.9
30-39		2	11.8
40-49		1	5.9
50-59		7	41.2
60-67		6	35.2
Gender			
Male		14	82.4
Female		3	17.6
CVD diagnosis			
Cardiac sarcoidosis		1	5.9
Endocarditis		1	5.9
Heart failure		2	11.8
Heart rhythm disorder		2	11.8
MINOCA		2	11.8
Pericarditis		2	11.8
Stroke (multiple)		7	41.2
Time since diagnosis, years[+]	2.1 (1.4)		
Job sector*			
Education and training		1	5.9
Engineering, production and construction		1	5.9
Healthcare and wellbeing		4	23.5
Security and public administration		3	17.6
Trade and services		3	17.6
Tourism, recreation and catering		1	5.9
Transport and logistics		4	23.5
Type of work agreement*			
Contracted employee		15	88.2
Temporary worker		2	11.8
Number of hours working before CVD diagnosis*			
Full-time, >32 h		9	52.9
Part-time, ≤ 32 h		8	47.1
Working status[+]			
Fully returned to work		7	46.7
Partly returned to work		4	26.7
Not returned to work		4	26.7
Duration sick leave[a]			
< 2 years sick leave		4	36.4
> 2 years sick leave (receiving benefit)		7	63.6

SD, standard deviation; CVD, cardiovascular disease; MINOCA, myocardial infarction with non-obstructive coronary arteries.*At the time of diagnosis/start medical intervention. +At the time of the interview. aWhen at partial or full-time sick leave at the time of the interview.

Participant characteristics

This study included 17 patients of which 14 males. The participants had a mean age of 53.8 (SD 11.2) years old and were in different stages after being diagnosed with CVD, experiencing various work participation problems. At the time of the interviews, the participants had a mean disease duration of 2.1 years (SD 1.4) since their CVD diagnosis. Prior to their diagnosis, the participants were either full-time (n=9) or part-time (n=8) working as a contracted employee (n=15) or temporary worker (n=2). At the time of the interview, some participants had fully returned to work (n=6), had partly returned to work (n=4), or had not (yet) returned to work (n=7). For an overview of the demographic characteristics of the participants, see Table 2. For an overview of the proportions of participants over the PEJM and their position at the moment of the interview, see Supplementary Material 1.

Data collection

Preparatory assignments

All participants were given preparatory assignments prior to the interview. The aim of these preparatory assignments was twofold. First, to stimulate, encourage and motivate participants to reflect on their experiences with work-focused healthcare in their own time and environment [27,36]. Second, for the researchers to gain insight into the personal context of the participant prior to the interview, enabling them to delve further into specific topics during the interview [27,36]. The preparatory assignments consisted of three tasks: 1) Listing all professionals they encountered during their (work-related) healthcare process; 2) Presenting changes in work participation after the onset of their CVD and identifying the healthcare professionals involved using a graphical timeline; 3) Listing all professionals who shared information or communicated about work (For the English translation of the full assignments, see Supplementary Material 2). All participants received the preparatory assignments in hard copy at their home address and returned them via a pre-paid envelop before the interview. During the online interviews, PowerPoint slides were utilised to display the indicated timeline and list of professionals as supporting material.

The semi-structured interview

Semi-structured interviews (n=17) of approximately one hour were conducted between February 2021 and July 2021, through a video call platform (Microsoft Teams). One interview was conducted through a telephone call, due to problems with the internet connection. An interview guide with listing topics and open-ended questions aiming to get insight into the patients' journey and related experiences and needs was used as a memory aid for the interviewer during the interview (see Supplementary Material 3). The interview guide and the use of the supporting materials were piloted twice with individuals recruited from the authors' own network. These individuals experienced work participation problems, but their conditions were related to chronic diseases other than CVD. All interviews were conducted by the first (MH) and second author (NZ), alternating the role of the first and second interviewer. All interviews were performed in Dutch and were voice recorded with the permission of the participants. The voice recordings of the interviews were transcribed verbatim and de-identified for data analysis. The transcripts were sent back to each interviewee for member checking, allowing them to provide feedback concerning the completeness of the written material. Any additional follow-up questions of the researchers were shared with the interviewee following the interview and asked for a written response. These responses were added to the transcripts (n=8). No repeat interviews were carried out.

Data analysis

The graphical representation of the PEJM was created using the PEJM approach to analyse and map the patients' experiences identified from the semi-structured interviews [37]. The development of the PEJM consisted of three steps: In step one, the first author (MH) analysed the interviews for segments containing the patient's perspective on work-focused healthcare, checked by the second author (NZ). In step two, the third author (FO) aggregated these segments into the four different layers of information a PEJM exists of [38]: i) Phases and touchpoints, i.e. all stages that the patient goes through including all moments of contact with the healthcare system, ii) activities, i.e. what patients do to get their needs addressed, iii) positive and negative experiences that help or prevent patients from achieving their needs or goals, and iv) needs, i.e. a job to be done, a goal or need that the patient wants to have achieved. Subsequently, per phase a timespan indicating the elapsed time within a certain phase and all relevant stakeholders for that phase were defined [26]. The identified positive and negative experiences were aggregated within an emotion curve, substantiated with representative quotes showing a certain level of confirmability of the findings. The aggregated content of all components were iteratively developed, improving the PEJM, by discussion between the first three authors (MH, NZ, FO) to secure consistency. In step three, opportunities for improvement were derived from the aggregated data of the positive and negative experiences and the associated needs by the researchers (MH, NZ, FO) [39]. During subsequent sessions with almost all authors (MH, NZ, FO, JH, PW, CH, MM, SB), the researchers decided on the most important opportunities for improvement established based on a specific degree of significance.

The online platform Miro[1], an online whiteboard for visual collaboration, was employed to aid the cluster and iteration process. The PEJM visualisation was iteratively developed by the third author (FO) using Adobe Illustrator. The participants did not verify the findings. A thematic analysis of these interviews, presenting the findings on a more comprehensive analytical level, will be published elsewhere.

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[1] https://miro.com

Role of the researchers and ethical considerations

The first author (MH) had no prior experience with conducting qualitative research. However, the second author (NZ) is an experienced researcher in qualitative studies and took on the role of educating and supporting the first author. Additionally, the first author (MH) underwent a multi-day training to familiarise herself with qualitative studies and conducting interviews prior to the interviews of this study. Both MH and NZ are full-time researchers, without a background as (occupational) health experts, which helps minimise bias in the findings. The third author (FO) was involved as a research assistant and had experience in developing a PEJM. The other authors (JH, PW, CH, EC, MM, SB) are experienced researchers within the field of occupational health or human-centred design and helped shaping the study's aim and relevance.

There were no established relationships between the interviewers and the participants prior to the study. Written consent was obtained after informing the patients about the objectives of the study. All participants received a small compensation for their time. The Medical Ethics Committee of the Amsterdam University Medical Centre granted ethical approval for the study. The committee declared that the study design did not require comprehensive ethical review, as the Medical Research Involving Human Subjects Act ('Wet Medisch-wetenschappelijk Onderzoek met Mensen') did not apply to this study (Reference number: W20_556 # 20.619).

RESULTS

Figure 1 depicts the work-focused healthcare journey of people living with CVD that is aggregated based on all interview data. Based on the patients' input six main phases are identified. The first phase, i.e. working, represents a period in which problems with health and functioning first occur. The next two phases, i.e. short-term sick leave and long-term sick leave, represent a period of full-time sick leave. The last three phases, i.e. start vocational reintegration, partial vocational reintegration, and full vocational reintegration, focus on the process of reintegration that takes place sometime within the two years after initial sick leave. This time frame is in concordance with the Dutch Gatekeeper Improvement Act, which provides guidelines for the employer and employee in order to get the sick-listed employee back to work as quickly as possible.

The six phases are described below, providing further explanations on related touchpoints, timespan, stakeholders, activities, experiences, emotions, and needs, as graphically represented in Figure 1. The long-term sick leave phase is subdivided into four sub-phases (part 1–4) because of the long time span. The nine opportunities for improvement derived from the PEJM are highlighted at the end of the results section.

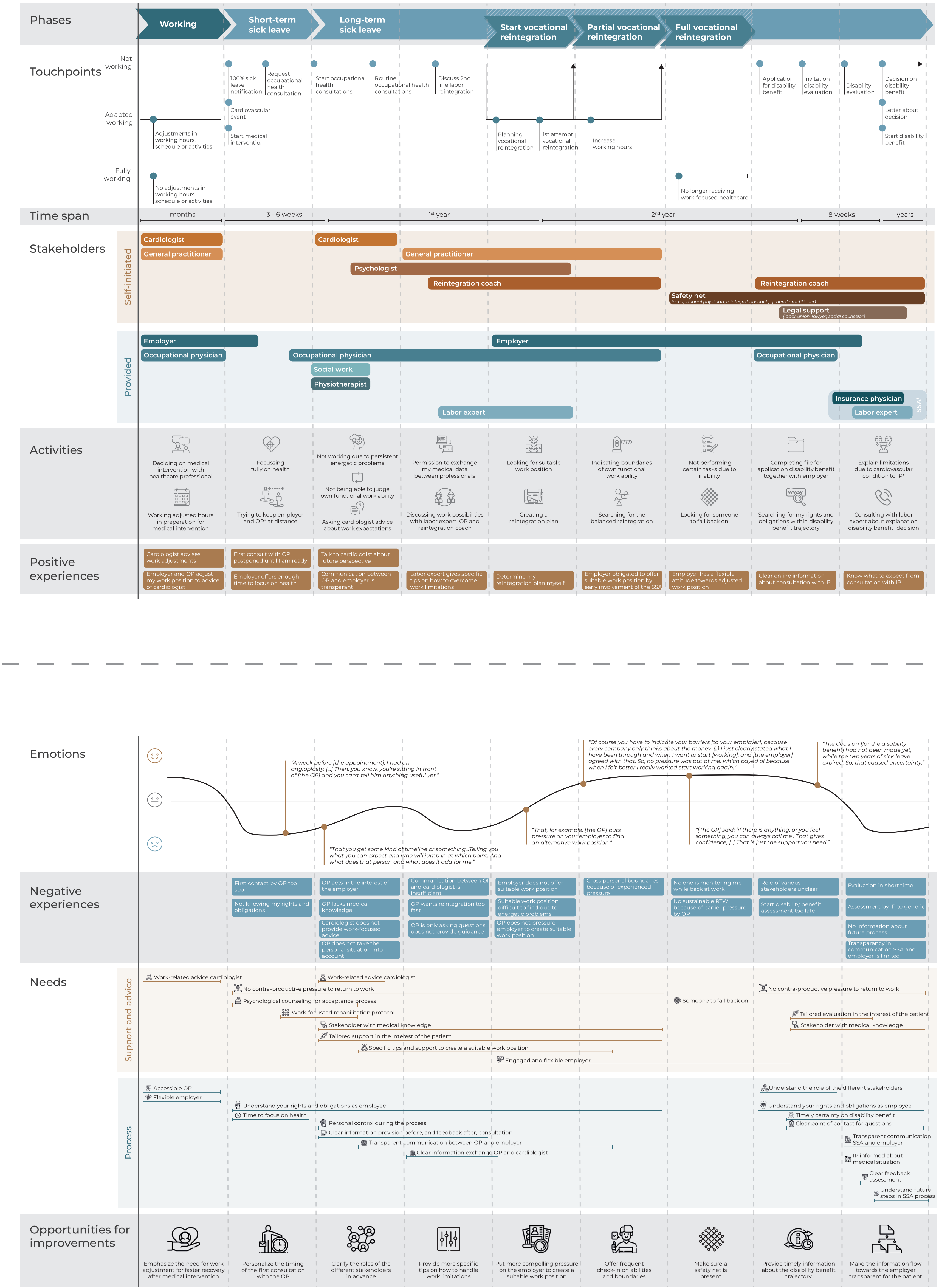

Figure 1. The work-focused healthcare journey of people living with cardiovascular disease. Legends: Vertical axis show the multiple building blocks this Patient experience journey map exists of. Horizontal axis shows the data of the multiple building blocks over time. IP=Insurance physician, OP=Occupational physician, RTW=return to work, SSA=Social security agency

Working

The working phase, pre-sick leave, contains two paths: adapted working and fully working. The adapted working path presents patients who knew they had CVD, and adapted their work, e.g. hours or activities, in preparation for their scheduled surgery (see Fig. 1; touchpoints: adapted working, and activities). These patients decided on, and waited for, their surgery in consultation with their general practitioner and cardiologist (see Fig. 1; stakeholders and activities). During this phase patients experienced receiving work-focused advice from the cardiologist in preparation for the surgery to be positive (see Fig. 1; positive experiences and needs).

> *"I told the [cardiologist taking the intake for the surgery], I was working night shifts. And then he said: 'You should stop [with working the night shifts], you just need to be in the best condition before surgery. (..) He explicitly gave me advice about [work]."* – pt 9

However, to put work-focused advice from the cardiologist into practice, patients indicated the need for a flexible employer, and an accessible occupational physician, for the realisation of work adjustments (see Fig. 1; stakeholders, positive experiences, and needs). The fully working path includes patients who reported no work adjustments because they had not yet experienced cardiovascular problems or were unaware of their underlying cardiovascular problem (see Fig. 1; touchpoints: fully working).

Short-term sick leave

All patients had a period of full-time sick leave at the onset of the cardiovascular event or the start of their medical intervention, e.g. surgery (see Fig. 1; touchpoints). Following this onset of sick leave, the occupational physician contacted the patients for occupational health consultation (see Fig. 1; touchpoints). A large share of the patients indicated that this first contact made by the occupational physician was too soon after the start of their medical intervention (see Fig. 1; negative experiences), highlighting the need for some time to focus fully on their recovery and accept their medical condition and bodily impairments (see Fig. 1; activities and needs).

> *"The week before [the appointment with the occupational physician], I had an angioplasty. (..) Then, you know, you're sitting in front of [the occupational physician] and you can't tell him anything useful yet."* – pt 2

Therefore, in this phase, patients indicated that they tried to avoid any formal contact with the employer and occupational physician (see Fig. 1; activities). Employers offering enough time to focus on recovery and postponing the consultation with the occupational physician contributed positively to this process of acceptance (see Fig. 1; positive experiences). Patients mentioned psychological counselling and a work-focused rehabilitation protocol to be important (see Fig. 1; needs). However, psychological consultation often was not provided, resulting in self-initiated psychological consultation later in time (see Fig. 1; stakeholders: self-initiated). In addition, patients expressed the need to understand their rights and obligations during sick leave (see Fig. 1; needs and negative experiences).

> *"At the moment you come home [after hospitalization], one of the most annoying things is that you are not aware of your rights [as an employee]. You do not know what is coming next and what you can do to stand up for yourself."* – pt 6

Long-term sick leave

Part 1—first few months

After approximately six weeks of sick leave, the first consultation with the occupational physician took place (see Fig. 1; timespan and touchpoints). The occupational physician supported patients in finding the optimal work position, matching their energetic limitations, and understanding the consequences for their functional work ability (see Fig. 1; activities). However, patients expressed the need for more medical knowledge, more tailored support in the interest of the patient, and no counterproductive pressure for vocational reintegration during consultation with the occupational physician (see Fig. 1; negative experiences and needs). Besides discussing future work ability with the occupational physician, patients indicated to highly value work-focused advice from their cardiologist (see Fig. 1; positive experiences and needs). Herefore, some patients asked for work-related advice from the cardiologist (see Fig. 1; activities and negative experiences).

> *"The cardiologist knows exactly what my diagnosis means. I like that, if I ask [my cardiologist] about what I can do [regarding work activities], you get an answer that you can rely on. You can take [the cardiologist] at his word."* – pt 1

According to the process of consultations, patients mentioned to value a clear information provision before, and feedback after consultation with professionals involved in their work-focused healthcare. In addition, the patients highlighted the need for transparency in the communication from their healthcare professionals towards the employer (see Fig. 1; positive experiences and needs).

> *"I would prefer to receive a summary [of the consultation with the occupational physician], including what we are going to do in the future, what [the occupational physician] is expecting, and his vision. I would really like to know that."* – pt 9

Part 2—towards the end of the 1st year

The long-term sick leave phase continued with discussing work possibilities during routine occupational health consultations and second line labour expert consultations, exploring alternative work positions outside the current job sector (see Fig. 1; touchpoints and activities). Patients experienced counterproductive pressure for vocational reintegration when the occupational physician put pressure on vocational reintegration too fast (see Fig. 1; negative experiences and needs). Besides, patients highlighted the need for specific guidance on how to overcome any work limitations (see Fig. 1; positive experiences and needs), since only answering the occupational physicians' questions regarding work limitations and expectations were experienced negative (see Fig. 1; negative experience).

> *"You do not get any guidance, [the occupational physician] only asks you questions."* – pt 2.

In this phase, patients also expressed the need for clear information exchange between the occupational physician and cardiologist, for which the patients gave consent (see Fig. 1; activities). This information exchange was often experienced as insufficient due to long waiting times or incorrect information (see Fig. 1; negative experiences and needs).

> *"The occupational physician did ask the cardiologist [via a letter] about my diagnosis and what restrictions the cardiologist did impose on me. Then the cardiologist answered: 'I did not impose any restrictions on the patient'. Which is true, the cardiologist did not do that, but my body did. But the occupational physician then was convinced I could work again."* – pt 10

Part 3—towards the end of the 2nd year

When (full) vocational reintegration was not possible or successful, patients applied for a disability benefit at the SSA in collaboration with their employer towards the end of the second year of (partial) sick leave (see Fig. 1; touchpoints and activities). At this point, the need for a better understanding of the role of the stakeholders was mentioned (see Fig. 1; needs), since a lack of understanding is a bottleneck for the patients to properly prepare for the SSA trajectory (see Fig. 1; negative experiences).

> *"When applying for the disability benefit, at that moment I realised that I actually had no idea how the system works. (..) I felt like it would be useful at this point if I had a better understanding of which professional played with role in my process."* – pt 14

Following the application, patients were invited for disability evaluation by the insurance physician and the labour expert from the SSA (see Fig. 1; touchpoints). Patients identified being satisfied with the provided information about the upcoming consultations with the insurance physician (see Fig. 1; positive experiences). In case of any remaining questions, the need for a clear point of contact was highlighted (see Fig. 1; needs).

In addition, patients found it of great importance to have timely certainty on the outcome of the disability benefit assessment (see Fig. 1; needs). Planning the disability evaluation too late could cause a lot of uncertainty regarding future income (see Fig. 1; negative experiences and emotions).

> *"The decision [for the disability benefit] had not been made yet, while the two years of sick leave expired. So, that caused uncertainty."* – pt 15

Subsequently, patients searched continuously for their rights and obligations in preparation for, and during the disability evaluation process (see Fig. 1; activities). Therefore, patients regularly engaged stakeholders, such as a labour union, a lawyer or social counsellor, to provide legal support (see Fig. 1; stakeholders).

Part 4—after the 2nd year

During the disability evaluation by the insurance physician working for the SSA, patients explained their functional limitations in daily life and participation due to their cardiovascular condition (see Fig. 1; touchpoints and activities). However, patients often felt insecure during consultation with the insurance physician, due to limited time, standardised protocols, and the feeling that the insurance physician was not sufficiently informed about their medical situation prior to the evaluation (see Fig. 1; negative experiences and needs).

> *"The insurance physician decides the percentage of work disability based on standard protocols. If you are a heart patient, they take a look in the protocol and it describes a percentage. It is the same for all heart patients. Which makes me wonder if they really assess the personal situation."* – pt 6

Subsequently, patients were informed about the decision regarding the disability benefit during consultation with the labour expert, and received a letter about the decision afterwards (see Fig. 1; touchpoints and activities). Patients highlighted lacking transparency in communication between the SSA and the employer regarding this decision (see Fig. 1; negative experiences and needs).

> *"But I do not know if my employer (..) received some kind of report [from the SSA about the decision of the disability benefit]. I have no idea, but I hope that was the case."* – pt 14

After granting the disability benefit (see Fig. 1; touchpoints), patients experienced a lack of information provided regarding the future disability benefit trajectory (see Fig. 1; negative experiences and needs). Besides, the need for someone to fall back on remained (see Fig. 1; needs).

Start vocational reintegration

When planning vocational reintegration, patients looked for a suitable work position matching their functional limitations supported by the labour expert, occupational physician, and eventually the reintegration coach (see Fig. 1; touchpoints, stakeholders, and activities). With the support of these stakeholders, a reintegration plan was created (see Fig. 1; activities), in which patients expressed their own decision-making to be important (see Fig. 1; positive experiences). Subsequently, patients consulted the reintegration coach and general practitioner to identify the boundaries in functional work ability and balance between working and private life (see Fig. 1; activities and stakeholders). However, finding a suitable work position could be difficult and employers did not always show flexibility and engagement by offering adjusted work positions (see Fig. 1; negative experiences and needs). When the employer lacked this flexibility and engagement, patients expressed the need for work-focused healthcare professionals to put pressure on the employer to stimulate to create a suitable work position (see Fig. 1; negative experiences and needs).

> *"I expected that the SSA would chase the employer [when the employer does not fulfill its obligations]. (..) But that did not happen."* – pt 13

Creating a suitable work position was followed by the first attempt at vocational reintegration (see Fig. 1; touchpoints).

Partial vocational reintegration

When the first attempt for vocational reintegration was successful, working hours were increased (see Fig. 1; touchpoints). Here, patients highlighted searching for a balanced vocational reintegration (see Fig. 1; activities), in which again the patients appreciated efforts by the employe, the occupational physician or the SSA to create a sustainable work position (see Fig. 1; positive experiences and needs). Also, patients indicated their functional boundaries to the employer and occupational physician, to protect themselves from any counterproductive pressure and prevent relapse to full-time sick leave (see Fig. 1; activities and negative experiences).

> *"Of course you have to indicate your barriers [to your employer], because every company only thinks about the money. (..) I just clearly stated what I have been through and what I'm feeling and when I want to start [working]. (..), and they [the employer] agreed with that. So, no pressure was put at me, which payed of because when I felt better I really wanted start working again."* – pt 18

Full vocational reintegration

When patients succeeded to build up working hours, the next and final step was full vocational reintegration (see Fig. 1; touchpoints). During this phase, patients could still not perform certain tasks due to chronic bodily impairments (see Fig. 1; activities). Therefore, patients mentioned an engaged and flexible attitude from the employer to be valuable (see Fig. 1; positive experiences and needs).

> *"[The employer] took the moments of stress during work away, by limiting my number of customers. (..) Furthermore, I do not lift heavy boxes by using special equipment for that. Those were the adjustments made [by my employer] to help me get fully back to work."* – pt 5

Patients felt insecure because no one was monitoring them while back at work (see Fig. 1; negative experiences), and expressed the need for someone to fall back on (see Fig. 1; needs and activities). Patients welcomed the offer from various stakeholders, e.g. the occupational physician, reintegration coach, or medical specialist, to contact them whenever needed (see Fig. 1; stakeholders and emotions).

> *"[The GP] said: 'if there is anything, or you feel something, you can always call me'. That gives confidence, (..) That is just the support you need."* – pt 11

Opportunities for improvement to better meet the patient's needs

Opportunities to improve work-focused healthcare from patients' perspectives were identified throughout the various work-focused healthcare phases, based on the experiences and needs of the patients. Below, nine opportunities for improvement and their impact are presented in the order in which they appear in the PEJM (see Fig. 1, final row; opportunities for improvement).

Emphasise the need for work adjustment for faster recovery after medical intervention (phase: working): Urging the need for, and supporting patients in, adjusting their work (work tasks and/or work environment) before medical intervention by involved professionals may contribute to a faster recovery and thus faster vocational reintegration.

Personalise the timing of the first consultation with the occupational physician (phase: short-term sick leave): The large variety in the personal situation, and therefore, the timing of readiness to talk with occupational health professionals requests for adjusting the timing of the first consultation to the personal situation which may prevent the feeling of counterproductive pressure and rush.

Clarify the roles of the different stakeholders in advance (phase: long-term sick leave, part 1): Improving information provision regarding the role of stakeholders towards the patients may facilitate less uncertainty and more autonomy at a later moment in time during the work-focused healthcare process.

Provide advice on how to handle work limitations (phase: long-term sick leave, part 2): Offering the patients more specific tips on how to deal with their functional limitations during work, including tips regarding adjustments in work demands, working hours or workplace, may give the patients better ability and self-efficacy for vocational reintegration.

Put more compelling pressure on the employer to create a suitable work position (phase: start vocational reintegration): Putting more pressure on the employers to offer opportunities for adjustments in work position, may facilitate a faster patient's vocational reintegration.

Offer frequent check-in on abilities and boundaries (phase: partial vocational reintegration): Offering more frequent check-ins with professionals to discuss work throughout the patient's journey, supporting the search for a balanced reintegration and setting personal boundaries, may support the patient's vocational reintegration.

Make sure a safety net is present (phase: full vocational reintegration): Offering the patients the opportunity for continuity in support after full vocational reintegration or during the disability benefit, may prevent relapse and even potentially allow the patients to build up working hours further in some cases.

Provide timely information about the disability benefit trajectory (phase: long-term sick leave, part 3): Clear and timely information on all process steps within the SSA trajectory, including the timeline of the disability benefit and reassessments, role of stakeholders and possibilities for reintegration support, may give the patients better knowledge of what to expect which can result in higher satisfaction levels.

Make the information flow towards the employer transparent for the patient (phase: long-term sick leave, part 4): A more transparent information flow towards the employer, may give the patient more insight into, and a better understanding of, the employer's actions.

DISCUSSION

In this qualitative study, we aimed to gain insight into the work-focused healthcare journey from the perspective of patients with work participation problems due to a CVD, to understand their experiences and needs, and to derive opportunities from these experiences and needs for improving work-focused healthcare service at a system level. The work-focused healthcare journey as perceived by these patients was explored using the PEJM approach, which enabled us to identify multiple phases within the work-focused healthcare system, along with related touchpoints, timespan, stakeholders, activities, positive and negative experiences, emotions, and needs. Six main phases were identified in the patients' work-focused healthcare journey: working, short-term sick leave, long-term sick leave, start vocational reintegration, partial vocational reintegration and full vocational reintegration. While we found various inconsistencies between the identified experiences and needs in the data, we derived nine opportunities for improvement being most significant for each (part of a) phase, in order to convey a clear message for practice. These opportunities included, among others, adjusting consultation timing, improve information provision and exchange over time, provide more personalised advice on handling work limitations, and put more compelling pressure on the employer to create suitable work positions for their employees.

A broad and holistic understanding of the work-focused healthcare system over time and place from the patients' perspective is the starting point to identify bottlenecks and opportunities for patient-centred improvements in the healthcare process [27]. While previous literature has discussed similar experiences with work-focused healthcare for both patients living with CVD [13,14,19,40,41,42] and other chronic conditions [43,44,45], to our knowledge, a graphical time-bound representation of the patients' full work-focused healthcare journey, including their experiences and needs over time and place, was not presented before. Consequently, earlier literature did not systematically identify opportunities for improvement to better meet the patients' needs within work-focused healthcare. However, this method of deriving opportunities for improvement from PEJM data has been previously employed in studies enhancing patient experiences in healthcare [46].

Looking into the individual opportunities for improvement identified in this study, the opportunity describing the provision of more specific person-oriented advice on how to handle work limitations is supported by earlier literature, since addressing their individual needs is appreciated by patients [47], and may result in better patient-satisfaction and quality of care [48]. The opportunities for improvement related to information provision to patients, such as timely clarifying the roles of the different stakeholders and providing timely information about the disability benefit trajectory, are grounded in patients' expressed needs for predictability, control, and security during their sick leave, as reported in previous literature [49]. Similar needs for clear information on the roles of healthcare professionals and disability benefits were also observed in studies focusing on other patient populations, as patients with acquired brain injury and cancer [50,51,52]. To ensure comprehensive information provision during sick leave, additional practices can be employed, such as involving the employer in providing necessary information [53], or designating a coordinator in the RTW process to guide patients [54].

Moreover, the opportunity to enhance work-focused healthcare by placing greater emphasis on the importance of appropriate workplace adjustments, is supported by earlier literature describing the need for pre-surgery education and RTW planning for patients living with CVD [55]. Additionally, medical specialists' advice and assessment regarding work-related matters were found to be trusted by patients [56]. However, earlier literature indicated that medical specialists often face constraints in discussing work-related issues with patients or occupational physicians due to limited capacity and time [57]. Furthermore, patients' preferences for personalised timing of the first consultation with the occupational health professional, frequent check-ins, and the presence of a safety net were also earlier identified in studies focussing on other patient populations [58,59,60]. In addition, in this study, patients reported limited flexibility of the timing of the first and follow-up consultations, being a hindrance to meet individual needs effectively. The lack of availability and flexibility in work-focused healthcare could be attributed to the existing shortage of occupational healthcare professionals [61,62] and the minimal standard support mandated by the Dutch legislations [31]. Furthermore, existing literature highlighted a lack of unity among the multiple stakeholders within work-focused healthcare. For example, earlier literature reported an employers' preference for financial advantageous acknowledged by occupational physicians and a lack of visibility of occupational physicians indicated by employers [61,63]. To improve this unity among stakeholders, it is suggested to stimulate involvement and transparency between the multiple stakeholders within work-focused healthcare [64,65].

Methodological considerations

Although the application of the PEJM approach in work-focused healthcare is quite novel, it is a well-established system approach to visualise the dynamics of a sociotechnical healthcare system over time [66,67]. The use of multiple layers identified and visually represented per phase provides a comprehensive overview of patients' perspectives in their work-focused healthcare journey. To create an aggregated PEJM, representing only the most relevant findings from the data, a specific degree of significance was assigned based on the interpretations and experiences of the authors [38]. The study reached data saturation, as no new theoretical insights emerged during the analysis of the last two interviews.

Given the retrospective character of the interviews and the average of more than two years post-diagnosis, there might be a certain level of recall bias. However, efforts were made to restrain the influence of recall bias on the findings by the use of the preparatory assignments within the study design [36]. Additional prospective observations are suggested to develop a more complete understanding of patients work-focused healthcare journey [66]. It is important to acknowledge that our sample of participants may skewed towards patients with a specific interest in the topic or those with overly positive or negative experiences with work-focused healthcare. This bias could potentially result in a lack of negative experiences and subsequently missed opportunities for improvement if the sample is overly positive, or a lack of positive experiences if the sample is overly negative with derived opportunities for improvement limited to a small group. However, we did not observe a disproportionate distribution between positive and negative experiences. Nonetheless, there remains some uncertainty regarding the potential influence of selection bias on our results since information on non-responder characteristics was unavailable due to privacy regulations. Besides, excluding non-Dutch speakers, the use of preparatory assignments and online interviewing might have contributed to a selection bias in favour of native Dutch speakers and digitally educated participants. As a result, the experiences and needs of non-(native) Dutch speakers and lower digital literacy may be underrepresented. In total, 17 interviews were conducted, including participants with a large range of disease duration and current working status, ensuring data saturation and transferability. However, workers with temporary contracts were underrepresented in our sample [68], which may limit the generalisability of the findings to this group of employees. The skewed distribution between contracted and temporary employees might be explained by the recruitment strategy, which involved sampling patients for whom medical information was requested by an occupational physician, leaving out temporary workers who might have applied to The Sickness Benefits Act with work-focused healthcare provided by an insurance physician after losing their employment contract while on sick leave. Moreover, few women were included in this study, which may partly be explained by the smaller amount of women diagnosed with CVD [69]. This may impact the generalisability of the findings, given the gender-specific differences in prioritizing work and social roles [70]. The member checking, pilot testing and validity checks within the research team ensured the credibility and trustworthiness of the data [71].

Implications for future research

In this study we conducted a qualitative study, limiting the generalisability to a broader population of employees experiencing work participation problems due to CVD. To establish greater generalisability, additional quantitative research could be conducted to validate the identified experiences, needs and effects of interventions based on the opportunities for improvement across a wider range of individuals. It is important to note that our study only included employees, not taking into account the position of the self-employed workers in the work-focused healthcare context. The generalisability of our PEJM to self-employed workers might be limited due to differences in access to occupational healthcare and work disability insurance. Therefore, further research is needed to explore the experiences and needs of self-employed workers for work-focused healthcare to identify potential opportunities for improvement. Although this study successfully identified and visualised the work-focused healthcare journey for patients living with CVD, it may be interesting to study the generalisability of the findings to a broader range of chronic diseases. Previous literature on other patient populations suggests that similar experiences and needs might be prevalent [72,73,74,75]. It is expected that implementation of interventions addressing the identified opportunities for improvement may face various barriers, such as (privacy) laws and financing issues for personalising consultation time or enhancing information exchange transparency. Although it is anticipated that incorporating these interventions would enhance the experiences of patients within work-focused healthcare [76], this is not yet confirmed. Further research is required to investigate the possibilities and challenges of implementing interventions targeting the suggested opportunities for improvement and their impact on the experiences of patients, as well as other stakeholders, including a.o. occupational and insurance physicians. Additionally, it would be valuable to explore the perceived barriers and facilitators experienced by professionals while striving to provide patient-centred work-focused healthcare. Understanding these factors could help identify further opportunities to improve patient-centred work focused healthcare.

Implications for practice

Although this research was conducted in the specific jurisdiction of the Netherlands, the findings related to patients' activities, experiences, needs and opportunities for improvement targeting the general work-focused healthcare system are likely being transferable to healthcare contexts outside the Netherlands. For instance, the opportunities for improvement aiming at better patient-centred work-focused healthcare systems, such as personalising the timing of the first consultation with the occupational healthcare professional or providing a safety net after full RTW, may also hold relevance for healthcare systems in other countries [41,42]. Moreover, the aspects of time and place in relation to the patient's perspective, characterising the PEJM approach, are in line with the current focus in healthcare towards integrated patient-centred delivery of care at the right time and place [77,78]. Insight into the patients' experiences over time and place empowers professionals within the work-focused healthcare journey and guideline makers to continuously improve the patient-centredness within the system. Some of the suggested opportunities for improvement can be immediately implemented by professionals in their provided services. For instance, clinical care professionals can emphasise the need for work adjustment prior to medical intervention, while occupational health professionals can provide more personalised advice on handling work limitations. Additionally, other opportunities for improvement, such as adjusting consultation timing and offering a safety net, may serve as an impetus for guideline makers to design work-focused healthcare systems more patient-oriented. Understanding the patients' work-focused healthcare journey and the corresponding opportunities for improvement promotes creative thinking to reform work-focused healthcare and facilitates meaningful dialogue within and between the multiple stakeholder groups searching for solutions [79]. Moreover, the PEJM approach facilitates professionals with insights into the involvement and activities of other stakeholders, which promotes better collaboration among multiple stakeholders [80]. Work-focused healthcare providers can use the insights from this PEJM during shared decision-making with patients, enabling discussions that revolve around more patient-centred outcomes [76].

CONCLUSION

This paper makes a significant contribution to enhancing a more patient-centred work-focused healthcare system for patients employed in paid jobs when living with CVD. It achieves this by providing a comprehensive understanding of the patients' perspectives throughout their work-focused healthcare journey and highlighting opportunities for improvement over time and place. For instance, the identified opportunities for improvements emphasise the need for work adjustment for faster recovery after medical intervention. Additionally, there is a call for improving information provision and exchange over time. Besides, providing specific person-oriented advice on how to handle work limitations is also deemed crucial. Moreover, putting more compelling pressure on the employer to create a suitable work position is identified as a vital area of improvement.

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SUPPLEMENTARY MATERIALS

Additional file 1: Contains Supplementary Materials 1-3

Additional file 2: Contains Figure 1 for better zooming options

6

Towards person-centred work-focused healthcare for people with cardiovascular disease: a qualitative exploration of patients' experiences and needs

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ABSTRACT

Objective: To explore the experiences and needs concerning work-focused healthcare of patients experiencing problems with work participation due to cardiovascular disease based on all facets of person-centred care.

Methods: Nineteen patients who experienced or continue to experience problems with work participation due to cardiovascular disease participated in semi-structured interviews preceded by preparatory written assignments. The transcripts were analysed by means of directed qualitative content analysis. Adapted principles of the Picker Institute for Person-Centred Care provided a template for the analysis.

Results: 28 experiences and needs emerged and were grouped into the eight principles for person-centred work-focused healthcare. Randomly presenting one theme for each of the eight principles, the themes included: (1) frequent encounters with occupational healthcare professionals; (2) substantive work-related advice; (3) transparency in communication; (4) support for family; (5) information provision on the work-focused healthcare process; (6) personal control during the process; (7) empathy for the personal situation; and (8) tailored work-focused support.

Conclusion: The identified experiences and needs for work-focused healthcare of patients experiencing problems with work participation due to cardiovascular disease clearly indicate the need to improve the delivery of person-centred work-focused healthcare to better meet the individual needs of patients.

BACKGROUND

The prevalence of cardiovascular diseases (CVD) in the population of working age is rising [1], often resulting in a temporary or permanent impact on patients' work ability [2,3]. At an individual level, impairments of the patient's ability to work may lead to a diminished quality of life, an increased risk of cardiovascular mortality and financial strain resulting from the potential loss of employment or reduced productivity [4–6]. On a societal level, reduced work ability exacerbates the financial strain through work disability benefits and contributes to an overall decline in workforce productivity [7]. Therefore, for patients with CVD experiencing work participation problems related to their disease, there is a need for healthcare services that target their work ability. These services, from now on called work-focused healthcare, should aim to facilitate the patient to stay at work (SAW), or return to work (RTW) by identify patients' abilities and limitations concerning work participation and work ability, and offer advice on functional recovery [8–10]. From a patient's perspective the delivery site of these services can vary in both professional as well as setting, for example embedded in cardiac rehabilitation programmes or within the setting of occupational healthcare [11]. Hence, given the increasing number of patients with CVD experiencing disease-related work participation problems, the provision of effective and efficient work-focused healthcare for patients living with CVD holds significant importance for both patients and society [12,13].

Over the past years, multiple interventions have been developed with the aim of enhancing the delivery of work-focused healthcare by a wide range of healthcare professionals [14–17]. However, research consistently reveals that work-focused healthcare continues to fall short in tailor-made addressing all patients' individual needs, remaining a persistent barrier for SAW and RTW [18,19]. Therefore, previous literature highlights the needs of individuals with chronic diseases to strive for optimal work participation through the integration of person-centred work-focused healthcare [8,20,21]. Person-centred healthcare means that the healthcare delivery is tailored to the patient's needs, an approach which is expected to improve health and functional outcomes that are most important to the patient [22]. To establish high-quality person-centred healthcare, the Picker Institute, an internationally renowned non-profit organisation dedicated to developing and promoting a person-centred approach to healthcare, highlights eight principles of person-centred care [23]. Today, these Picker Principles of Person-Centred Care have been widely adopted in healthcare initiatives aiming to provide high-quality person-centred care [23]. In the field of cardiology, evidence-based therapies and guidelines are commonly implemented in accordance with the Picker Institute's eight principles of care, such as heart failure clinics and acute ST-segments care teams [24]. The Picker Principles include: (i) Fast access to reliable healthcare advice; (ii) Effective treatment by trusted professionals; (iii) Continuity of care and smooth transitions; (iv) Involvement and support for family and carers; (v) Clear information, communication and support for self-care; (vi) Involvement in decisions and respect for preferences; (vii) Emotional support, empathy and respect; and (viii) Attention to physical and environmental needs.

To establish high-quality person-centredness in the delivery of work-focused healthcare for patients experiencing work-participation problems due to CVD, it is paramount to have a comprehensive understanding of these patients' experiences and needs for work-focused healthcare, encompassing all eight principles of person-centred care. Therefore, the objective of the present study is to explore the experiences and needs for work-focused healthcare of patients facing work participation problems due to CVD, guided by the Picker Principles for Person-Centred Care.

METHODS

Design and setting

To identify experiences and needs for work-focused healthcare from the patients' perspective, a qualitative explorative study was performed. Data were collected through individual semi-structured interviews with individuals experiencing work participation problems due to CVD. The interviews were conducted by two researchers (MH, NZ) from the department of Public and Occupational Health, Amsterdam UMC, the Netherlands. The transcripts were analysed by means of directed qualitative content analysis. Adapted principles of the Picker Institute for Person-Centred Care provided a template for the analysis [23]. The Consolidated criteria for reporting qualitative research (COREQ) checklist was used for reporting the results [25]. As the present study was conducted in the Netherlands, below, the Dutch work-focused healthcare context is explained.

Work-focused healthcare in the Dutch context

The Dutch work-focused healthcare context is characterised by a strict division that separates the medical roles of clinical and occupational healthcare professionals. Clinical healthcare professionals are mainly responsible for treating the patient's medical condition, while occupational healthcare professionals focus primarily on work-related health aspects. This includes providing support for staying at work, the sickness absence certification, providing RTW guidance, giving advice on treatment of work-related health problems and assessing of eligibility for social security benefits. These roles are regulated by the Dutch Gatekeeper Act and the Act on Work and Income according to Work Capacity. In the context of cardiac rehabilitation programmes, typically delivered by specialised cardiac rehabilitation teams in ambulatory care settings [26], integration of RTW support involves specific attention to barriers related to the resumption of work [27,28].

Moreover, it is important to note that for gainfully employed workers on a full-time or temporary contract, the employer bears financial responsibility for the first two years of sick leave. The employer is legally obligated to contract an occupational health service to provide a problem analysis and RTW plan for sick employees. After the initial two year period, the Dutch Social Security Institute: the Institute for Employee Benefit Schemes (SSA) assesses whether the sick-listed employee is eligible for a long-term disability benefit. For temporary agency workers and unemployed workers, the provision of occupational healthcare and financial responsibility falls directly under the SSA's purview. Self-employed workers must arrange private disability insurance themselves to access occupational healthcare and disability benefits, although this is not compulsory.

Participants

Individuals were eligible to participate if they had been diagnosed with CVD, were of working age (18–67 years), and were either employed or self-employed at the onset of CVD complaints. Additionately, they needed to have experienced complete or partial sick leave or adjustments in work for at least six weeks due to CVD, and they were required to be fluent in Dutch.

Participants were recruited through purposive sampling, ensuring maximum variation based on the eligibility criteria. Patients were individually invited to take part in the study at two Dutch hospitals (St. Antonius Hospital, Nieuwegein, The Netherlands; Amsterdam UMC, VU University Medical Center, Amsterdam, The Netherlands). The recruitment process was overseen by one healthcare professional from each of these hospitals. Patients were selected for invitation based on their age and/or whether contact (written or otherwise) between the treating cardiologist and the occupational physician had occurred in the previous six months, indicating CVD-related work participation problems. In addition, participants were recruited through the SSA. A group of randomly selected patients with CVD (n = 60) were invited by letter, including a reminder letter after two weeks, to participate in the study. Invitees who expressed interest in participating were contacted by the first (MH) or second (NZ) author by phone for further screening of the eligibility criteria. Initially, the goal was to include fifteen participants to ensure reaching data saturation [29].

In total n = 26 (hospitals n = 16; SSA n = 10) invitees expressed interest in participating, of which n = 19 individuals were included. Out of the remaining seven invitees, two were excluded because they did not speak Dutch fluently, one did not have a CVD diagnosis, one was neither employed or self-employed at the onset of CVD complaints, two could not be reached for further contact, and one exclusion was based on self-assessment, since this invitee deemed participation to burdensome due to burn-out. The included individuals comprised of a diverse group of workers (84% male), attributed by the different stages after their CVD diagnosis and varying degrees of work participation problems. The participants had a mean age of 54.3 (SD 10.8) years. The demographics of the participants are presented in Table 1. The demographics of each of the participants individually can be found in Supplementary Material 1.

Table 1. Demographic characteristics of the participants (n = 19).

Variable	Mean (SD) or n (percentage)
Age	54.3 (10.8)
Gender (male)	16 (84%)
Time since diagnosis (years)	2.1 (1.4)
Type of CVD	
Cardiac arrest	1(5.3%)
Cardiac sarcoidosis	2 (10.5%)
Endocarditis	1 (5.3%)
Heart failure	2 (10.5%)
Heart rhythm disorder	2 (10.5%)
MINOCA	2 (10.5%)
Pericarditis	2 (10.5%)
Stroke (multiple)	7 (36.8%)
Type of work agreement*	
Self-employed	2 (10.5%)
Contracted employee	15 (79.0%)
Temporary worker	1 (5.3%)
Temporary agency worker	1 (5.3%)
Job sector	
Education and training	2 (10.5%)
Engineering, production and construction	1 (5.3%)
Healthcare and wellbeing	4 (21.1%)
Security and public administration	3 (15.8%)
Trade and services	4 (21.1%)
Tourism, recreation and catering	1 (5.3%)
Transport and logistics	4 (21.1%)
Work status**	
Fully returned to work	7 (36.8%)
Partly returned to work	4 (21.1%)
Full sick leave	8 (42.1%)

SD, standard deviation; CVD, cardiovascular disease; MINOCA, myocardial infarction with non-obstructive coronary arteries.*At the moment of diagnosis/start medical intervention. **At the moment of the interview.

Procedure

Data was collected between February and July 2021 through semi-structured, individual, online video call (Microsoft Teams) interviews (n = 19) with durations ranging from 50 to 78 minutes. The decision to utilise online video interviews was primarily driven by the ongoing Covid-19 pandemic. Due to governmental regulations conducting contactless interviews was considered the most appropriate and safe approach. One interview was conducted through a telephone call, due to internet issues. The interviews were conducted by the first (MH) and second authors (NZ), alternating the role of facilitating the conversation and asking additional questions while managing the screen sharing. All participants received preparatory assignments prior to the interview to trigger participants to think about their own experiences and needs related to the topics discussed during the interview beforehand, and for the researchers to understand the personal situation of the participant and facilitate further elaboration on specific topics during the interview [30]. The preparatory assignments included: (i) listing of professionals involved in their work-focused healthcare process with an indication of the level of involvement experienced; (ii) listing of work-related topics discussed with the involved professionals and at what point in the care process; and (iii) an inventory of professionals who shared information and/or communicated with each other during the patients' care process (see Supplementary Material 2). All participants received the preparatory assignments in hard copy at their home address and returned them via a pre-paid envelope before the interview. The answers from the preparatory assignments were used as supporting material during the online interview.

An interview guide listing topics and open-ended questions was developed by MH and NZ to explore the patients' experiences and needs regarding work-focused healthcare, including three categories: (1) patient characteristics, (2) experiences and needs regarding the work-focused healthcare process and (3) experiences and needs regarding information exchange and communication (see Supplementary Material 3). The interview guide was used as a memory aid for the interviewer during the interview. Two pilot interviews took place with workers suffering from chronic diseases recruited through the researchers' own network. While the core construct of the interview guide remained unchanged following the pilot testing, we modified the approach for sharing information related to the preparatory assignments, shifting from an interactive Whiteboard platform to PowerPoint slides. All interviews were voice-recorded and transcribed verbatim and anonymised. The transcripts were sent back to the participants for review, including any additional questions of the researchers. Additional questions included asking participants to elaborate on specific experiences, for example when a participant mentioned experiencing pressure from the occupational physician: 'Could you briefly elaborate on why you felt pressured by your occupational physician?'. Additional written answers of the participants were added to the transcripts (n = 10). No repeat interviews were carried out. Note that the data collection served a dual purpose: First, to identify patients' experiences and needs regarding work-focused healthcare based on the Picker Principles of Person-Centred Care as presented in the present study, and second, to map the work-focused healthcare process for workers experiencing work-participation problems due to CVD. These results were published elsewhere [11].

Data analysis

Directed qualitative content analysis was performed [31–33]. Adapted principles of the Picker Institute for Person-Centred Care provided a template for the analysis [34]. The Picker Institute for Person-Centred Care describes eight principles addressing the patient's experiences and needs throughout every aspect of care across the patients' care process [34]. This model was considered most suitable for the present study, as it is widely acknowledged as preferred framework for healthcare providers to assess the extent to which the care they provide is person-centred [23]. Therefore, prior to the data analysis, we enhanced the eight principles by enriching them with the Dutch guidelines for occupational physicians for patients with ischaemic heart disease [35]. The aim of this enrichment was to align the principles with a focus on work participation and work-focused healthcare for individuals living with CVD. This resulted in the following eight principles (Figure 1): (1) Access to reliable healthcare that supports work participation, entailing the type and speed of services; (2) Effective work-focused healthcare delivery by trusted professionals, entailing the perception of receiving appropriate and effective care; (3) Continuity of care and smooth transitions between all professionals involved in work-focused healthcare, entailing the coordination in the work-focused healthcare journey; (4) Involvement and support for family and carers in work-focused healthcare, entailing the involvement of patient's support networks; (5) Clear information, communication and support for self-care regarding work participation, entailing the support for patients to make informed decisions and manage their own work participation; (6) Involvement in decisions and respect for preferences regarding work participation, entailing involvement of the patient's preferences in decisions regarding work-focused healthcare; (7) Emotional support, empathy and respect in work-focused healthcare, entailing the empathy, respect, recognition and emotional needs in work-focused healthcare; and (8) Attention to physical, personal and environmental needs regarding work participation, entailing the attention which is paid to individual needs of the patient. The full definitions of these eight principles can be found in Supplementary Material 4.

For each transcript, open codes were assigned to all relevant text fragments and deductively subdivided into the adapted principles of the Picker Institute for Person-Centred Care, independently by the first (MH) and second (NZ) author [36], using MAXQDA 2020 [37]. Disagreements were resolved by discussion. Secondly, themes were formulated by identifying relations between the codes. In cases where themes overlapped with multiple principles, deliberate consideration of the first (MH) and second (NZ) author led to the selection of the most suitable principle for each theme, ensuring the development of a comprehensive overview. Finally, emerged themes were again reorganised and reformulated in multiple discussions within the research team (MH, NZ, MM, PW, CH, EC, JH & SB) with the aim of reaching agreement on the final coding. The findings were not checked by the participants.

Role of the researchers and ethical considerations

The first (MH) and second (NZ) author are full-time researchers without a background as (occupational) health experts. The other authors (MM, PW, CH, EC, JH & SB) are experienced researchers within the field of occupational health or human-centred design, who helped shape the aim and relevance of the study. The first author (MH) was unexperienced with, and thus received training in, conducting qualitative research at the beginning of the present study. The second author (NZ) was experienced in conducting qualitative research and in performing interviews.

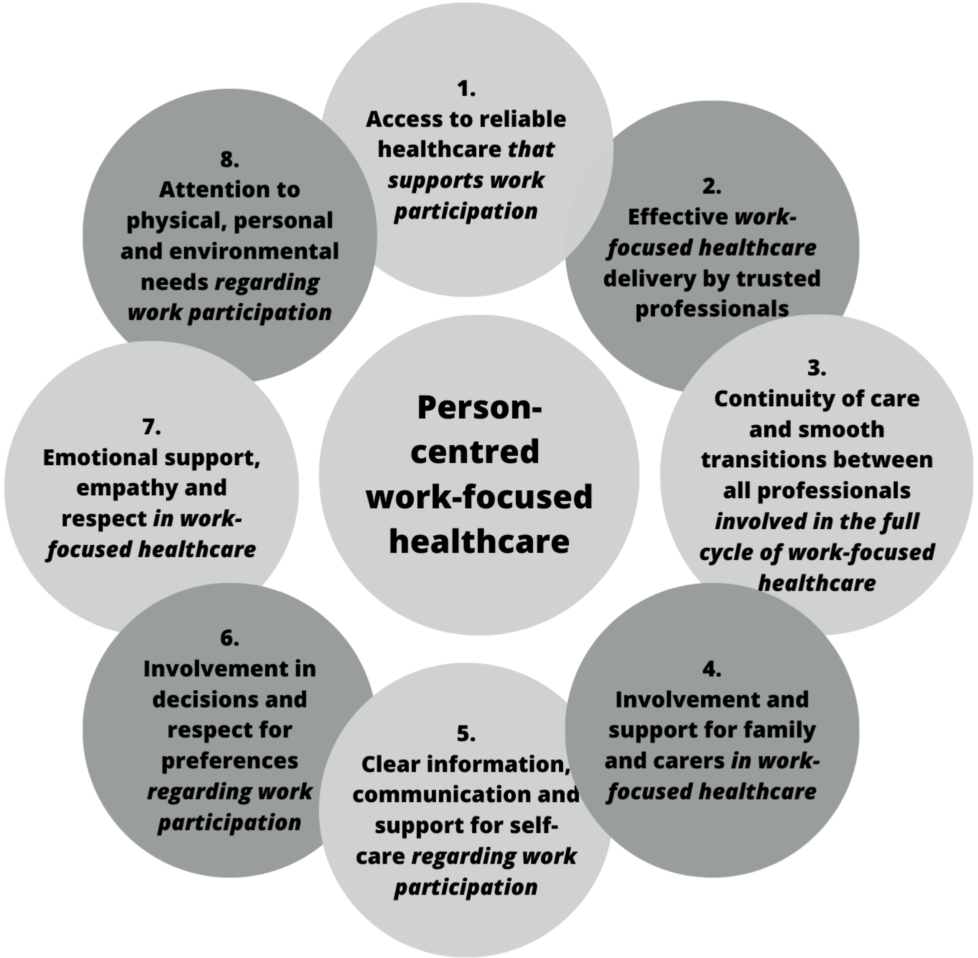

Figure 1. Graphical representation of the adapted principles of Picker for person-centred work-focused healthcare. Changes to the original Picker Principles are indicated in italics [23]

None of the authors had any relations with the participants prior to the study. All participants signed an informed consent form, sent along and returned with the hard copy preparatory assignment, after informing them about the study's objectives by phone. All participants received a small compensation in return for their participation. The Medical Ethics Committee of the Amsterdam University Medical Center declared that the study design did not require comprehensive ethical review, as the Medical Research Involving Human Subjects Act ("Wet

Medisch-wetenschappelijk Onderzoek met Mensen") did not apply to the present study (Reference number: W20_421 # 20.468).

RESULTS

For the purpose of the present study, the identified experiences and needs from the perspective of patients are presented for each of the eight principles for person-centred work-focused healthcare. Below, the corresponding themes for all eight principles are described. Additional representative quotes for each theme can be found in Table 2.

1. Access to reliable healthcare that supports work participation

With respect to the accessibility of work-focused healthcare, planning of occupational healthcare encounters was explicitly mentioned by many of the participants. They indicated the need for a "tailored start of occupational healthcare provision" adapted to their personal situation. The participants often indicated that in current work-focused healthcare, consultations with occupational healthcare professionals started too early as they were not yet ready to think about work at that stage.

> *"[At the moment of the first encounter with the occupational healthcare professional] there was simply no room to think about anything related to work."*- PT 6 (male, 57, contracted employee, full sick leave)

In addition, several participants highlighted that access to "frequent encounters with occupational healthcare professionals" contributed to a feeling of confidence in a good assessment of their personal situation. Moreover, many indicated that "timely notification on the outcome of occupational healthcare assessment and/or guidance" was needed, especially when the outcome of the encounter concerned the patient's financial stability.

> *"At that moment [at the end of the first two years of sick leave] a period of uncertainty started. (.) The SSA had not given any clarity [about receiving a disability benefit] at that time."*- PT 15 (male, 35, contracted employee, partly returned to work)

A few participants mentioned that they found it difficult to adequately communicate their personal situation in a short encounter time. Notably, both self-employed workers reported a lack of work-related guidance.

> *"No, [I received no work-focused guidance] by no one. (.) In terms of occupational healthcare and guidance from the private disability insurer it was really very poor."*- PT 7 (male, 54, self-employed, full sick leave)

Furthermore, multiple participants expressed the need for access to "ongoing support after successful RTW". Thereby, some reported a feeling of improved confidence to SAW or RTW when they had the possibility to contact an occupational healthcare professional when work-related problems occur, and a few participants indicated that they made thankful use of this possibility.

> *"At that moment [the last appointment with the occupational healthcare professional] I will have fully returned to work. (.) If I still experience any work-related complaints at that point, then I can still rely on that safety net [appointment with the occupational healthcare professional] that I can fall back on."*- PT 4 (female, 54, contracted employee, full returned to work)

2. Effective work-focused healthcare delivered by trusted professionals

Regarding the delivery of appropriate work-focused healthcare, a lack of "knowledge of CVD within occupational healthcare" was mentioned by almost all participants, regardless of whether they had a common or rare type of CVD. This lack of medical knowledge resulted in a lack of confidence in the guidance and assessment.

> *"[The occupational healthcare professional] did not even know what a shock was, or what an implantable cardioverter defibrillator was. That did not instill a lot of confidence in her [assessment of work ability]."*- PT 10 (male, 63, contracted employee, full sick leave)

However, the participant's confidence in advice on functional recovery by the clinical healthcare professionals was experienced as high, whereby almost all expressed the need for "work-related advice within clinical care". However, in some cases the time spent on work-related advice within clinical care was experienced as limited.

> *"I would have liked more guidance from [the clinical care professional]. (.) I would have appreciated it if the medical specialist had said: "take a break for two months and then start building up [working hours]." But [the clinical care professional] did not do that at all."*- PT 10 (male, 63, contracted employee, full sick leave)

Thereby, a majority of the participants emphasised the significance of a certain level of "substantive work-related advice" by the occupational healthcare professionals. It was emphasised by these participants that this substantive work-related advice was particularly evident during the provision of work-related advice regarding work opportunities and reintegration. The importance of this type of advice lies in its ability to enable the delivery of appropriate care. Current work-related advice by all professionals involved in work-focused healthcare was often experienced being absent or too general. In addition, all participants showed a great need for “psychological counselling” to support the acceptance process of their disease and functional limitations, to find a balance between private and work activities that contributes to meaningful living and to set their own physical and mental boundaries.

> *"During conversations with the psychologist, we were looking for things that would give me energy which I could do without making mistakes. (.) To be meaningful to the company."*- PT 7 (male, 54, self-employed, full sick leave)

Furthermore, multiple participants highlighted the importance of receiving “legal guidance”. Some participants also mentioned that their employer often lacked legal knowledge regarding sickness absence and work disability, and needed legal guidance as well, to prevent errors during their sick leave process.

> *"I should have never returned to work before completing the long-term disability benefit process, (.). My employer did not know [about these rules and regulations] either. (.) [My employer] should have received help with [the rules and regulations]."*
> - PT 16 (male, 36, contracted employee, fully returned to work)

3. Continuity of care and smooth transitions between all professionals involved in the full cycle of work-focused healthcare

Almost all participants indicated that they experienced limited transparency in communication between the various professionals, and, thereby, highlighted their need for “transparency in communication” between all professionals involved in work-focused healthcare to get better insight into which professional has which information. Also, one participant expressed being more interested in transparency in the communication between their occupational healthcare professionals and their employer, while being less interested in transparency in communication between two occupational healthcare professionals.

> *"[The occupational healthcare professionals] need to discuss my case. I would find it a bad thing if they don’t. (.) I do not need to know what they’re discussing, (.) I just want to know if there is contact between the employer and the SSA, or the employer and the occupational healthcare professionals."*- PT 15 (male, 35, contracted employee, partly returned to work)

In addition, a few participants reported they experienced mistrust in their self-supplied information when occupational healthcare professionals additionally requested the same medical information from the clinical healthcare professional.

> *"[The occupational healthcare professional] did not trust me, otherwise you would not request my medical file."*- PT 2 (male, 57, contracted employee, fully returned to work)

Furthermore, various participants expressed the need for more “consistency in the provided information” in work-focused healthcare, as upon reflection they observed a lack of consensus among multiple professionals regarding the approach to work ability and reintegration.

> *"Then [the occupational healthcare professional working for the SSA] said: “I worry that you are working too much, too fast again.” I said: “That is what my other occupational healthcare professional wants.” One thinks black and the other white, 100% the opposite of each other."*- PT 19 (male, 62, contracted employee, partly returned to work)

Moreover, many participants reflected on their needs for more “interdisciplinary teamwork” in work-focused healthcare, which was experienced to be lacking as a result of the different interests at stake. Therefore, multiple participants suggested that this can be solved by introducing an process coordinator in the work-focused healthcare process. Hereby, a few participants indicated that they highly valued “permanent professionals”, reflecting on the trustful relationship they develop with a professional over time. However, when a transition towards another professional was strictly necessary due to professional reasons, all participants indicated to appreciate the new professional being appropriately informed about the personal situation and having a similar view on the reintegration abilities of the patient.

> *"I was referred to another occupational healthcare professional. (.) I only spoke with the occupational healthcare professional three or four times. So, it did not bother me that I had to switch. (.) The [new occupational healthcare professional] had a somewhat similar approach to reintegration which was nice."*- PT 4 (female, 54, contracted employee, full returned to work)

4. Involvement and support for family and carers in work-focused healthcare

Participants did not express the need for work-focused healthcare to involve their family and carers. Only one participant mentioned the need for “support for family”, since his partner was feeling very insecure as a result of his CVD diagnosis, however, this was not work-related.

5. Clear information, communication and support for self-care regarding work participation

Many participants highlighted the importance of a “clear purpose and outcome of an encounter” by discussing the goals at the beginning of the encounter to manage or to remove any insecurity on the part of the patient.

> *"I was very nervous [for this consultation]. But [the occupational healthcare professional] immediately indicated (.) the goal of reintegrating me within my previous work position. (.) I immediately felt much more confident during the consultation, which was nice."*- PT 12 (female, 46, contracted employee, partly returned to work)

Following the encounter, it was deemed crucial for almost all participants that the professional provided a clear and comprehensive report on the encounter. This report serves to confirm and validate the information provided by the patient, encompassing the personal story of the patient.

> *"I would prefer to receive some kind of report with a summary [of the encounter], what we will do in the future, what are [the occupational physician's] expectations and what is [the occupational physician's] vision."*- PT 9 (male, 61, contracted employee, full sick leave)

Many participants specified the need for better "information provision on the work-focused healthcare process", since they experienced a lack of clarification on the full work-focused healthcare process. With regard to the disability benefit process, a lot of participants mentioned that they received enough guidance and information about the application process. Although, there appears to be a lot of uncertainty due to a lack of information about the steps to be taken in the future. When experiencing uncertainty during the disability benefit process, they indicate knowing where to go with their questions. However, some participants did not make use of the opportunity to ask questions mainly due to their fear that any misunderstanding could have negative financial consequences.

> *"Maybe [the SSA] told me, but I am not 100% sure whether I will be reassessed [for disability benefit] again after a year or two. I do not know. (.) I think, there is a threshold [to ask your questions at the SSA]. It is the SSA after all. You might be afraid of being misunderstood."*- PT 13 (male, 59, contracted employee, partly returned to work)

Furthermore, many participants indicated that the role of the various professionals was not communicated clearly. It was often not clear what they could expect from and ask of the multiple professionals involved in work-focused healthcare, and what information these professionals need or not. Therefore, a need for better "information provision on the role and possibilities of the professionals" was highlighted.

Thereby, several participants indicated that, even when they were on full sick leave, it was considered important to maintain good "informal contact with the workplace" in order to feel connected and meaningful at an informal level. In contrast, both self-employed workers indicated the need for a self-operating workplace, stimulating them to not get involved too much.

> *"I was at the office every Friday afternoon, just for coffee and a chat with my colleagues. (.) This [contact] encourages someone to return to work as soon as possible."*- PT 2 (male, 57, contracted employee, fully returned to work)

6. Involvement in decisions and respect for preferences regarding work participation

Some participants indicated that their own "personal factors" within work-focused healthcare influences their openness to receiving guidance, such as their personality and work responsibilities. Participants who reported a strong vision on their personal reintegration plan or high work responsibilities, such as the self-employed workers, considered work-focused healthcare guidance to be of less importance and indicated navigating reintegration more based on their own intuition.

> *"The question is if you want to accept the support offered [from professionals involved in work-focused healthcare]. (.) I just could not accept it, I am not an ordinary worker. (.) I am too stubborn."*- PT 7 (male, 54, self-employed, full sick leave)

In addition, some participants expressed that being younger motivates the desire to RTW more than being older. Moreover, some participants highlighted the feeling that their openness towards the professional was experienced as a positive influence on the patient-doctor relationship and on stimulating trust. However, a few indicated not sharing all important information when they do not trust the intentions of the professionals.

> *"[The psychologist] told me to share these [private matters we discussed] also with [the occupational healthcare professional]. But I did not do this. Because the guidance with the occupational healthcare professional was disappointing, my confidence was damaged."*- PT 8 (male, 56, contracted employee, full sick leave)

Therefore, when considering the patients' experiences and needs regarding the extent to which the patient is involved in the decisions in their work-focused healthcare, a majority of the participants reported that "personal control during the process" was important. Especially notable is that those who expressed a strong vision on their personal reintegration plan or having high work responsibilities considered themselves most crucial in their reintegration process. These participants strongly emphasised that, even when a reintegration plan was created in work-focused healthcare, adherence with the reintegration plan in practice was determined by themselves.

> *"Yes, a [reintegration] plan was made together [with the occupational healthcare professional]. However, (.) I did not stick to this plan, I went my own way."*- PT 10 (male, 63, contracted employee, full sick leave)

However, because of the reduced energy levels of many CVDs, some participants indicated not always having the strength to lead their own recovery process and to fight for their own rights and needs.

7. Emotional support, empathy and respect in work-focused healthcare
With respect to the patients' experiences and needs regarding the emotional support given, all participants reported that a lack of empathy experienced during encounters with professionals involved in work-focused healthcare resulted in lower credibility and trust in fair guidance and assessment. Therefore, many participants mentioned that a certain level of provided "empathy for the personal situation" by all professionals involved in work-focused healthcare is needed. Participants brought up that this empathy can be shown by: taking into account, and showing sympathy for, the personal situation of the patient; showing genuine interest towards the patient; ensuring an equal partnership during encounters; and face-to-face contact between professional and patient.

> *"[The occupational healthcare professional] was a nice person that I had a mutual conversation with. Someone who listened to my story and my experiences."*- PT 15 (male, 35, contracted employee, partly returned to work)

In addition, many participants expressed experiencing contra productive pressure for early RTW resulting in crossing the patient's physical and/or mental boundaries and a relapse in their RTW, such as working hours, at a later time. Therefore, the need for appropriate recovery time with "no contra productive pressure" to RTW or SAW was determined.

> *"Of course, you want to work (.). But, expecting it to happen as quickly as [the occupational healthcare professional] wants it to, that is just unrealistic. (.) I always got the impression that [the occupational healthcare professional] just wanted me back to work as soon as possible. That is not the support you want."*- PT 2 (male, 57, contracted employee, fully returned to work)

Besides the importance of emotional support from all professionals involved in work-focused healthcare, a few participants also indicated that "emotional support from their social environment" was a very important factor in their choices regarding (return to) work. Discussing work-related experiences with peers living with a similar medical condition and a motivational attitude by family members can provide patients support, enabling them to feel stronger in the process, and contributing to their confidence in making work-related choices.

> *"I have a few friends who also suffer from CVD. Their advice was genuinely helpful. (.) Sometimes, seeing how someone else deals with a situation serves as a good example. He (a friend living with CVD) was a strong role model for me."*- PT 1 (male, 28, contracted employee, fully returned to work)

8. Attention to physical, personal and environmental needs regarding work participation
Multiple participants indicated that they experienced some encounters with care professionals as a formality following standard protocols. In addition, a few reported an absence of work-focused healthcare during cardiac rehabilitation, as the result of a lack of tailoring of the rehabilitation programme towards their needs.

> *"Within the cardiac rehabilitation programme, everything was focused on older [CVD] patients. (.) I really wanted to follow [the rehabilitation programme], but it did not help me at all."*- PT 12 (female, 46, contracted employee, partly returned to work)

Moreover, some participants expressed the feeling of a mismatch in the relationship between some professionals involved in work-focused healthcare. This mismatch was felt because these professionals are either hired by the employer or work for the SSA. A majority of the participants mentioned concerns about these professionals potentially prioritizing the interest of the employer or SSA over those of the patients themselves. Therefore, they highlighted appreciating more "tailored work-focused support," in which all professionals involved in work-focused healthcare "act in the interest of the patient."

> *"Independent, not affiliated with the company, as the company has to bear the cost. (.) You just need an independent body that will assess [your work ability]. Not everything needs to be arranged by the employer."*- PT 3 (male, 57, temporary agency worker, full sick leave)

Hereby, various participants reported that, for the professionals to be able to tailor and act in accordance with the patients' individual needs for work-focused healthcare, it is important that all involved professionals are "sufficiently informed about the medical situation" of the patient. For instance, by carefully preparing the encounter by reading the medical file or by carefully listening to the patient during a consultation.

> *"[The occupational healthcare professional and I] talked extensively about how I feel, what I am going through, how I got there, and what my current complaints are. Based on this information, the disability benefit was awarded."*- PT 13 (male, 59, contracted employee, partly returned to work)

Table 2. Overview of the identified themes including representative quotes

Theme	Representative quote
1) Access to reliable healthcare that supports work participation	
Tailored start of occupational healthcare provision	"At a certain moment, you recognize that you are feeling better, and you can think about work again. When I reach that point, I am curious about the opinion of [the occupational healthcare professional]."- PT 9 (male, 61, contracted employee, full sick leave)
Frequent encounters with occupational healthcare professionals	"[The occupational healthcare professional] really had the time to observe my development over time, which helped in making a decision about [my future work ability]."- PT 15 (male, 35, contracted employee, partly returned to work)
Timely notification on the outcome of occupational healthcare assessment and/or guidance	"Bizarre. How [the occupational healthcare professional] (..) can assess [your work ability] within half an hour. (..) I really had no idea which way [the disability assessment] was going."- PT 12 (female, 46, contracted employee, partly returned to work)
Ongoing support after successful RTW	"I thought it was a shame that there was no follow-up [after full RTW]. How things went from that moment on. You have to figure it out yourself."- PT 19 (male, 62, contracted employee, partly returned to work)
2) Effective work-focused healthcare delivered by trusted professionals	
Knowledge of CVD within occupational healthcare	"[The clinical care professional] knows all about [my health problem]. (..) When you ask [the cardiologist] what you can do or cannot do, you get an answer you can rely on."- PT 1 (male, 28, contracted employee, fully returned to work)
Work-related advice within clinical care	"Of course, [the clinical care professional] [informed me] what I could still do, the status of my heart, and how much time I could work. We talked a lot about this during [the first sick leave] period."- PT 15 (male, 35, contracted employee, partly returned to work)
Substantive work-related advice	"The only tip I received [from the occupational healthcare professional] was: 'keep moving (..)'. Some general comments, I could have come up with that myself."- PT 18 (male, 65, temporary agency worker, full sick leave)
Psychological counselling	"I feel way too young for this, I had a fantastic job (..), I had different plans for the future, and then everything collapses. (..) you simply need support on a psychological level as well. (..) With my psychologist, I am currently in a process of acceptance."- PT 6 (male, 57, contracted employee, full sick leave)
Legal guidance	"At the moment you are back home [after hospitalisation and start of your sick leave], it is really frustrating that you are not aware of your rights, (..) you do not know what you can do to stand up for yourself."- PT 6 (male, 57, contracted employee, full sick leave)
3) Continuity of care and smooth transitions between all professionals involved in the full cycle of work-focused healthcare	
Transparency in communication	"I do not know if my employer also received the report from the UWV. A report that informs the employer about what they should pay attention to. I have no idea, but I hope that was the case."- PT 12 (female, 46, contracted employee, partly returned to work)
Consistency in the provided information	"[My rehabilitation professional] drew up a report [about his view on my work ability], (..) and sent it to [the occupational healthcare professional] by email. But [the occupational healthcare professional] disregarded the report. She just did what she thought was the right thing to do."- PT 19 (male, 62, contracted employee, partly returned to work)
Interdisciplinary teamwork	"[The occupational healthcare professional] only has one interest: how to get my patient back to work as soon as possible? While [the clinical care professional] had the goal of: How can I get my patient better again? There are all kinds of interests."- PT 6 (male, 57, contracted employee, full sick leave)
Permanent professional	"I simply prefer [a professional] who knows what you are going through, understands where you stand [in your process]. When you get a new [occupational healthcare professional], the question is to which extent they are aware of your situation. (..) I prefer a permanent [professional]."- PT 6 (male, 57, contracted employee, full sick leave)
4) Involvement and support for family and carers in work-focused healthcare	
Support for family	"Besides, your partner also feels insecure, saying, 'oh my husband has a cardiovascular disease'."- PT 6 (male, 57, contracted employee, full sick leave)
5) Information, communication and support for self-care regarding work participation	
Clear purpose and outcome of an encounter	"The letter stating that the disability benefit is granted is a reassuring statement at that time. However, there is a kind of calculation behind it which I still do not understand."- PT 13 (male, 59, contracted employee, partly returned to work)
Information provision on the work-focused healthcare process	"[The rehabilitation professional] explained how the process works. At the moment you become ill, there is something about to happen that you do not know much about at that moment. (..) They guided me through it."- PT 15 (male, 35, contracted employee, partly returned to work)
Information provision on the role and possibilities of the professionals	"During the application for the disability benefit, (..) I had the feeling that I had no idea how the process worked. (..) It would be better if you know the role of the professionals, what they know or do not know and which information they receive."- PT 16 (male, 36, contracted employee, fully returned to work)
Informal contact at the workplace	"I have an employee at the office who can take over all my duties. He (this employee) knows exactly what I am working on. So there is a setup in place that when I am absent everything keeps going."- PT 11 (male, 63, self-employed, fully returned to work)
6) Involvement in decisions and respect for preferences regarding work participation	
Influence of personal factors	"When you are talking to someone who is 35 years old, (..) still at the beginning of their career, these questions [regarding reintegration] become much more important. There is a greater motivation to get back to work. I am just about to retire, that is a different story."- PT 18 (male, 65, temporary agency worker, full sick leave)
Personal control during the process	"I was too sick to fight. (..) I had to tell [to the employer]: 'you are just going to arrange [a suitable working position]. But at that point, I just was too tired."- PT 3 (male, 57, temporary agency worker, full sick leave)
7) Emotional support, empathy and respect in work-focused healthcare	
Empathy for the personal situation	"I really got the feeling that [the occupational healthcare professional] was not interested in my situation. And then I think to myself [during the encounter]: what am I doing here?"- PT 2 (male, 57, contracted employee, fully returned to work)
No contra productive pressure	"I have been given ample space [for recovery] within the process. (..) Professionals do not need to put pressure [on RTW], especially for cardiovascular patients."- PT 6 (male, 57, contracted employee, full sick leave)
Emotional support from social environment	"My wife told me to call in sick. (..) [My wife] was highly involved in this process."- PT 10 (male, 63, contracted employee, full sick leave)
8) Attention to physical, personal and environmental needs regarding work participation	
Tailored work-focused support	"[The occupational healthcare professionals] have a number of checklists they need to go through. (..) they make a report of it, so they can demonstrate that it happened. (..) they just tick the checklists, and then it is considered sufficient."- PT 16 (male, 36, contracted employee, fully returned to work)
Act in the interest of the patient	"I think [the occupational healthcare professionals] are compelled by the UWV to expedite your return to work as quickly as possible, so the disability benefit is minimised. It is not about you as an individual."- PT 2 (male, 57, contracted employee, fully returned to work)
Sufficiently informed about the medical situation	"If [the occupational healthcare professional] ask you things which are on the first page of you medical file, so to speak, you start doubting if they are taking you seriously. You become suspicious if they are aware of your personal situation."- PT 6 (male, 57, contracted employee, full sick leave)
Support to find an alternative work position	"Yes, [finding suitable work adjustments] went quickly and easily. (..) [my employer] easily adapted to [the situation]."- PT 9 (male, 61, contracted employee, full sick leave)

CVD: Cardiovascular disease, OP; occupational physician, RTW; Return to work, SSA; Dutch Social Security Institute: the Institute for Employee Benefit Schemes.

Additionally, due to the influence on their energy levels as a result of CVD, participants often indicate their need for “support to find an alternative work position” matching their reduced energy capacity. Therefore, various participants added that it is highly important that their employer takes the functional limitations of the patient into account and thinks along to create a suitable alternative work position. However, some participants experienced that the employer acts more in the interest of the company, which, according to them, could be addressed by exerting pressure on the employer by occupational healthcare professionals. In addition, the SSA, which already has the responsibility to assess whether the employer offered adequate reintegration opportunities, can compel the employer to provide suitable reintegration through sanctions, such as continued payment of wages.

DISCUSSION

In the present study, 28 themes describing the patients’ experiences and needs for work-focused healthcare emerged and were grouped into the eight principles for person-centred work-focused healthcare based on the Picker Principles. The number and variety of themes represent a comprehensive set of needs of people living with CVD (n = 19) regarding work-focused healthcare. The themes included, randomly presenting one theme for each of the eight principles, experiences with and needs for a tailored start of occupational healthcare provision; frequent encounters with occupational healthcare professionals; substantive work-related advice; transparency in communication; support for family; information provision on the work-focused healthcare process; personal control during the process; empathy for the personal situation; and tailored work-focused support. The overview of needs from the perspective of patients can be used to provide input to tailor and improve work-focused healthcare.

For multiple themes identified in the present study, agreements and disagreements with previous literature were found. For the first principle “Access to reliable healthcare that supports work participation,” the identified need of patients for ongoing work-focused healthcare support after RTW was previously identified in a qualitative study in patients after coronary bypass surgery [18]. Furthermore, consistent with our results, earlier literature studying a broad range of chronic diseases identified the need for access to occupational healthcare as soon as possible during sick leave [38]. In addition, a previous study examining individuals on long-term sick leave due to common mental disorders, have noted that an invitation for consultation shortly after the onset of work-related difficulties can evoke feeling of distrust and lack of understanding among patients [39]. This finding supports the necessity highlighted in the present study that the start of occupational healthcare provision needs to be tailored to the personal situation. For the second principle “Effective work-focused healthcare delivery by trusted professionals,” the present study is consistent with previous literature on CVD patients, emphasising the importance to receive work-related advice from clinical care providers [18,40] and psychological counselling [19,41]. Nevertheless, earlier literature has indicated that clinical care providers face obstacles in providing work-related advice, primarily due to time constraints and insufficient knowledge in this domain [42]. This observation aligns with the experiences reported by the participants in the present study. At the same time, in alignment with the findings in the present study, sufficient medical knowledge of occupational healthcare professionals has also been identified as a need by cancer survivors who face challenges in RTW [9].

For the third principle “Continuity of care and smooth transitions between all professionals involved in the full cycle of work-focused healthcare,” previous research focussing on RTW after various diseases have indicated that professionals involved in work-focused healthcare recognise suboptimal collaboration and information exchange between the involved professionals, resulting in a lack of continuity in the work-focused healthcare process [43, 44]. Consequently, both in the present study and in earlier literature addressing RTW after stroke, patients and professionals argue for the involvement of a process coordinator [44]. Such a process coordinator could take on the role of supporting the process of occupational healthcare as well as function as a permanent contact person for the patient [44]. For the fifth principle “Clear information, communication and support for self-care regarding work participation”, the participants in the present study indicated the need for information on rights and regulations during sick leave, which was also confirmed in a population of individuals living with brain injury [45]. Healthcare professionals, as highlighted in previous literature, acknowledged that these rules and regulations are not always in line with the needs of patients with CVD and can even hamper the RTW process [44]. Moreover, previous literature on sick leave after various diseases also emphasises the importance of implementing a structured process and good information provision early in the process, to foster a sense of empowerment, inclusion in the process and faster RTW [46].

For the sixth principle “Involvement in decisions and respect for preferences regarding work participation,” the present study aligns with previous literature on patients who underwent a carpal tunnel release surgery, emphasising the importance of involvement in decisions and respect for the preferences of the patient, recognising the importance of professionals supporting patients in their own decision-making process during RTW [47]. Following recommendations in earlier studies [47,48], professionals should, to empower patients in their own decision-making, communicate the short-term functional impact of the disease on work, discuss examples of what their RTW may look like, provide sufficient information, and use shared-decision making within work-focused healthcare as suggested in previous studies. Moreover, in a population of workers with mental health problems, it was found that the degree of work-focused guidance is affected by the attitude of the worker towards their own RTW process [49]. Workers who have a positive attitude towards their own RTW capacity may show more active problem-solving behaviour and request occupational healthcare support in order to RTW in comparison with workers with a more negative attitude towards their own RTW capacity [49].

For the seventh principle "Emotional support, empathy and respect in work-focused healthcare," earlier literature, particularly focusing on patients RTW after sick leave due to depression, suggested that professionals may be able to influence the perceptions and emotions of workers by taking the patient seriously, without any contra productive pressure to RTW [50]. However, participants in the present study frequently appointed perceived contra productive pressure. Additionally, in alignment with the findings in the present study, existing literature indicates that involving family and caregivers may potentially exert a beneficial influence on the patients' expectations of work participation [51]. However, as shown in the fourth principle of the present study "Involvement and support for family and carers in work-focused healthcare," input regarding the significance of support for family members in work-focused healthcare was derived solely from a single study participant. Regarding the last principle "Attention to physical, personal and environmental needs regarding work participation," the finding in the present study to adjust the work-focused healthcare support to the personal situation is reinforced by recommendations from prior studies investigating the requirements of patients with CVD, advocating for the flexible application of work-focused healthcare tailored to the patient's needs [52,53].

Methodological considerations

One strength of the present study lies in the utilization of the eight principles derived from the Picker domains for Person-Centred Care, which are extracted from a valid set of indicators [54]. These principles are applicable to various healthcare contexts [54], providing a structured overview for framing patients' experiences and needs [55]. There was overlap of themes across multiple principles; for instance, the theme interdisciplinary teamwork overlapped with effective work-focused healthcare, clear communication, and continuity of care. Nonetheless, we are confident that a comprehensive overview was achieved through careful selection of the most suitable principle for each theme. Another strength of the present study is that the participants exhibited a large variety in, for example, CVD, time since diagnosis, job sector and current work status, representing a wide range of patients involved in work-focused healthcare living with CVD. The independent coding by two authors (MH, NZ) and excessive discussion of the coding by the entire research team ensured confirmability of data. Other methodological measures ensuring the credibility and trustworthiness of the data were the pilot testing, the review of the transcripts by the participants, and the expertise and variability in the background of the research team [56]. A complete member check of the results was not conducted, which could potentially constrain the credibility and trustworthiness of the present study. Nevertheless, we aimed to strengthen credibility and trustworthiness through thorough discussion of the final themes with the entire research team.

We feel that conducting interviews via an online video call platform contributed both positively and negatively to the heterogeneity of participants. On a positive note, it allowed us to include participants with a wider geographical distribution. However, there was a potential downside, as it introduced the risk of selection bias towards patients with higher digital literacy [57]. Although no exclusions were made for this, it is plausible that some individuals chose not to respond due to the digital nature of the interviews. In addition, the study sample included an unequal distribution in gender, which may be explained by the lower prevalence of women diagnosed with CVD. This unequal distribution may limit the generalisability of the research findings given the gender-specific differences in experiences and needs within healthcare, and RTW strategies [58,59]. In addition, a certain level of recall bias can be expected in the present study due to the retrospective character. However, the influence of recall bias on the findings was reduced to some extent by using preparatory assignments for the participants prior to the interviews.

Implications for future research

The present study shows that the needs of individuals with CVD within work-focused healthcare can be categorized using an adapted version of the eight Picker Principles of Person-Centred Care. This observation suggests that existing interventions, designed to enhance person-centred care by targeting needs within one or more of the Picker Principles, could potentially be adapted for application in work-focused healthcare for these patients. Therefore, future research is necessary to explore the feasibility of implementing interventions aimed at promoting person-centred care within work-focused healthcare. Furthermore, the emphasis in our study was on capturing patients' perspectives. However, we recognize that exploring the views of healthcare professionals can provide valuable insights into potential challenges they face in meeting patients' needs. Future research could delve into understanding these challenges faced by healthcare professionals. Moreover, while examining the perspective of patients on work-focused healthcare, the present study did not encompass their workplace-related needs. Future research could delve into understanding the needs of individuals with CVD concerning their work environment. Additionally, the present study aimed to present a rich and inclusive overview of the diverse range of needs expressed by the participant. Subsequent research may focus on understanding the hierarchical significance of the identified needs. Furthermore, the importance of involvement and support for family and caregivers in work-focused healthcare was underrepresented in our data. We believe this was mainly caused by the focus on the patients' perspective on work-focused healthcare rather than the social environment. The involvement and support for family and caregivers needs to be further explored using additional qualitative research.

Implications for practice

Given the results of the present study, current needs of patients underscore the necessity for work-focused healthcare to be redesigned with a stronger focus on patient-centredness. Therefore, the rich overview of patients' needs given in the present study, based on all facets of person-centred care, is a starting point for healthcare professionals and policymakers to enhance the provision of person-centred work-focused healthcare. Some of these needs can be promptly addressed by healthcare professionals in their service delivery. For instance, healthcare professionals can ensure that patient do feel respected and do not face contra productive pressure to RTW or SAW. On the other hand, also broader systematic changes at the policy level are required to better meet the needs of patients. For example, adjustments in the system are necessary to ensure a smoother and more continues process for patients. In The Netherlands work-focused healthcare is incorporated into routine care within cardiac rehabilitation programmes [27]. However due to suboptimal implementation of these programmes, both SAW and RTW are addressed inadequately [60]. Furthermore, the findings of the present study also show that patients continue to perceive a lack of work-focused support within cardiac rehabilitation. Therefore, it is recommended that healthcare professionals involved in work-focused care should encourage participation in cardiac rehabilitation programmes and assist in customizing the SAW and RTW aspects of cardiac rehabilitation programmes to better match patient characteristics and needs.

While the present study was conducted in the specific context of the Dutch healthcare system, the similarities observed with studies examining the needs regarding work-focused healthcare of CVD patients in other healthcare settings [19,44,52,53] suggests that the overview of patients' needs presented in this study is applicable to healthcare contexts beyond the Netherlands. Besides, given the similarities in the identified needs regarding work-focused healthcare in other patient populations [9,45,46,50], the identified experiences and needs likely apply to a broad range of chronic diseases.

CONCLUSION

The present study shows work-focused healthcare received by patients with CVD often does not (yet) align with their needs. This encompasses the lack of appropriate timing for the start of consultations with the occupational healthcare professional based on the individuals' personal situation, as well as encountering inconsistencies in the exchange of information between the professionals and towards the patient. Therefore, enhancing person-centred work-focused healthcare for individuals with CVD involves aligning the work-focused healthcare provision more closely with the patients' needs, as outlined in the present study. This adjustment can include personalising the start of the consultation with the occupational healthcare professional based on the individuals' personal situation and ensuring a more consistent and clear information provision to the patient about the process.

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SUPPLEMENTARY MATERIALS

Additional file 1: Contains Supplementary Materials 1-4

Part III

A work-related standard set of outcome measures for patients with cardiovascular diseases

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7

Development of a standard set of key work-related outcomes for use in practice for patients with cardiovascular disease: A modified Delphi study

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ABSTRACT

Background: To facilitate the maintenance or resumption of participation in work for patients with cardiovascular disease (CVD), there is a need for high-quality work-focused healthcare. According to the concept of value-based healthcare, quality of care can be enhanced by understanding the outcomes that matter most to patients. However, a major challenge in assessing quality of work-focused healthcare in practice is the lack of consensus on which work-related outcomes should be measured.

Objective: The objective of this study was to identify a standard set of key work-related outcomes for patients with CVD to be used in practice of work-focused healthcare in the Netherlands, including standardised outcome measures and associated case mix factors. This standard set is intended to assist occupational and other health professionals in delivering work-focused healthcare that meets a patient's individual needs regarding work participation, and to enhance patients' engagement in their own work-focused care process.

Methods: A 2-round RAND-modified Delphi process was conducted. The process included literature searches, consecutive research team meetings, and several meetings and rounds of voting by a working group. The working group consisted of patients with CVD (n=6) and health professionals representing different stakeholders (n=11) involved in work-focused healthcare for this patient population in the Netherlands. Consensus was reached over four phases: (1) establishing the scope of the standard set and defining the population, (2) prioritising and defining the outcome domains, (3) selecting the outcome measures for the most important domains, including clinical data and patient-reported data, and (4) selecting and defining case mix factors.

Results: A 23-item patient-reported questionnaire was developed, called the Value@WORK-Q23, including questions on nine work-related outcome domains considered most important for patients with CVD: (1) work participation, (2) physical work ability, (3) mental work ability, (4) suitable work, (5) support from the work environment, (6) flexibility of the work environment, (7) communication with the patient, (8) person-centredness, and (9) interdisciplinary communication. In addition, nine case mix variables were selected, comprising demographic-, disease-, and work factors.

Conclusion: The Value@WORK-Q23 provides guidance on measuring the most important work-related outcomes for patients with CVD. Using this work-related set in practice, in addition to existing disease-specific standard sets for CVD may facilitate the provision of high-value work-focused healthcare for this patient population.

BACKGROUND

With the rise in the legal retirement age across most industrialised countries, the prevalence of cardiovascular disease (CVD) among the working age population is steadily increasing [1,2]. When working age individuals are diagnosed with CVD, one of their primary concerns is whether they can continue working [3,4]. Consequently, a decrease in the ability to work negatively affects the overall perception of their quality of life [5]. To prevent this, return-to-work or stay-at-work has been recognized as crucial indicators for general health, mental health and physical, social and emotional functioning [5]. Healthcare services that target work participation play a vital role in supporting patients with CVD in achieving a return to work or staying at work [6]. Many healthcare professionals can be involved in providing work-focused healthcare services, assessing a patient's abilities and limitations related to work participation, and providing advice and support for functional recovery [7]. However, despite the importance of work-focused healthcare in practice, its impact remains uncertain as professionals lack knowledge on how to deliver effective work-focused healthcare [8,9,10]. Therefore, the needs of working-age patients with CVD are not being consistently met [7,11].

According to the concept of value-based healthcare, quality of care can be improved by focusing on those outcomes that matter most to patients [12]. In value-based healthcare, outcomes are defined as the results of care in terms of the patient's health over time, in contrast to care processes or to interventions designed to achieve the results [13]. Measuring person-centred outcomes, including key outcomes related to the patient's context and surroundings, can improve quality of care at both aggregate and patient level [14]. Measuring outcomes at an aggregate level is used for benchmarking, enabling learning and improving across healthcare institutions [15]. At an individual level, person-centred outcomes reported by the patient are used as input during healthcare consultations, to support shared decision-making and to discuss the patient's needs [16,17,18]. A key challenge in improving the quality of work-focused healthcare in practice is the absence of consensus on which person-centred outcomes should be measured and how this should be done [19]. Therefore, there is a need for standardisation of person-centred work-related outcomes to enhance the delivery of high-value work-focused healthcare for all working-age patients with CVD.

Current research has focused on the development of an international generic core outcome set for work participation, seeking consensus on outcomes measuring the effects of interventions on work participation in intervention trials using the Core Outcome Measures in Effectiveness Trials methodology [20]. However, this generic core outcome set was developed primarily for research purposes to evaluate the effectiveness of interventions on outcomes, such as return to work and work status, designed to be applied to all health conditions. Additionally, this generic core outcome set was not developed for use in work-focused healthcare practice, and does not address the broad range of needs of patients in work-focused healthcare. The International Consortium for Health Outcomes Measurements (ICHOM) has developed standard sets of person-centred outcomes, targeting key outcomes for various medical conditions, including coronary artery disease [21]. However, we found that these ICHOM sets primarily focus on disease-specific key outcomes, in which work is often either not included at all or only addressed through a single outcome domain on work functioning.

The objective of this study was to develop a standard set of key work-related outcomes for patients with CVD. This set includes standardised outcome measures and a minimal set of associated case mix factors. The goal is to facilitate work-focused healthcare practices while minimising the registration burden by targeting a minimal set [14]. This standard set of work-related outcomes can complement existing disease-specific standard sets.

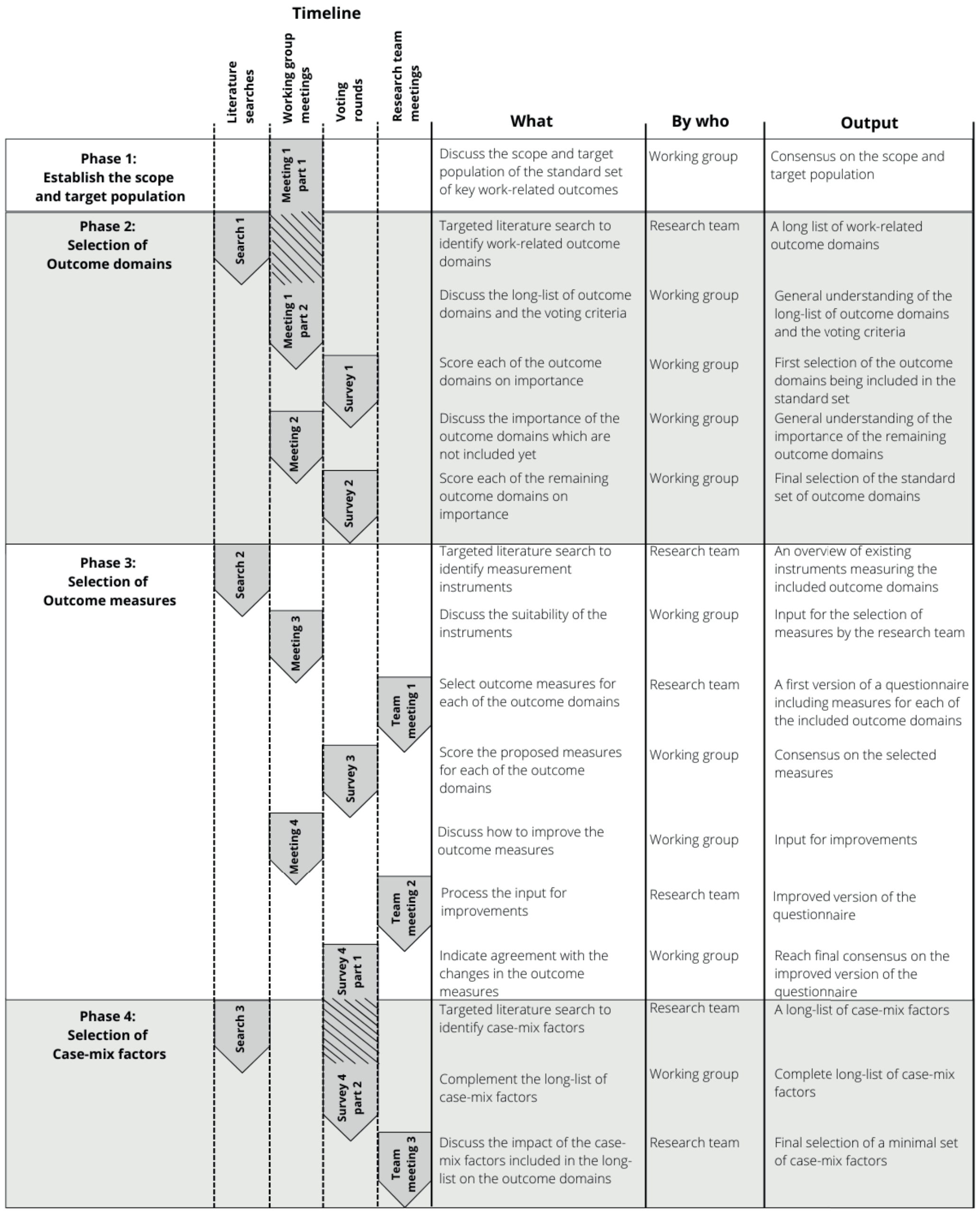
METHODS

Design and setting

For the development of this standard set, the approach used by ICHOM to developing person-centred standard sets was followed [21,22]. A 2-round modified Delphi process was conducted, following the RAND/University of California at Los Angeles methodology [23]. Consensus was reached over four phases (see Figure 1) including working group debate: (1) establishing the scope of the standard set and defining the population, (2) prioritising and defining the outcome domains, (3) selecting the outcome measures for the most important domains, including clinical data and patient-reported data, and (4) selecting and defining case mix factors [24]. This study is conducted in the context of the Dutch healthcare system. More information on the work-focused healthcare system in the Netherlands can be found in this study [7].

Working group composition and recruitment

Our aim was to establish an interdisciplinary working group encompassing a broad spectrum of specialities in work-focused healthcare, as outlined in the ICHOM approach [21,22]. The people invited to join the working group were representatives of healthcare professionals involved in work-focused healthcare and patients [7]. These specialities included: insurance physicians, occupational physicians, physiotherapists, labour experts, psychologist, cardiologists, general practitioners, and patients with CVD. Prospective members were informed and invited to participate through various channels, including personal invitations via the network of the research team, open calls on social media, and invitations extended to members of associations representing the interests of the different stakeholder groups, such as the Dutch Association for Insurance Medicine, Dutch Association for Heart, Vascular and Pulmonary Physiotherapy, and the Dutch Patient Federation. Invitees who expressed interest in participating were contacted by the first author (MH) by phone to discuss the aims of the research and the obligations associated with participation.



Timeline

	Literature searches	Working group meetings	Voting rounds	Research team meetings	What	By who	Output
Phase 1: Establish the scope and target population		Meeting 1 part 1			Discuss the scope and target population of the standard set of key work-related outcomes	Working group	Consensus on the scope and target population
Phase 2: Selection of Outcome domains	Search 1				Targeted literature search to identify work-related outcome domains	Research team	A long list of work-related outcome domains
		Meeting 1 part 2			Discuss the long-list of outcome domains and the voting criteria	Working group	General understanding of the long-list of outcome domains and the voting criteria
			Survey 1		Score each of the outcome domains on importance	Working group	First selection of the outcome domains being included in the standard set
		Meeting 2			Discuss the importance of the outcome domains which are not included yet	Working group	General understanding of the importance of the remaining outcome domains
			Survey 2		Score each of the remaining outcome domains on importance	Working group	Final selection of the standard set of outcome domains
Phase 3: Selection of Outcome measures	Search 2				Targeted literature search to identify measurement instruments	Research team	An overview of existing instruments measuring the included outcome domains
		Meeting 3			Discuss the suitability of the instruments	Working group	Input for the selection of measures by the research team
				Team meeting 1	Select outcome measures for each of the outcome domains	Research team	A first version of a questionnaire including measures for each of the included outcome domains
			Survey 3		Score the proposed measures for each of the outcome domains	Working group	Consensus on the selected measures
		Meeting 4			Discuss how to improve the outcome measures	Working group	Input for improvements
				Team meeting 2	Process the input for improvements	Research team	Improved version of the questionnaire
			Survey 4 part 1		Indicate agreement with the changes in the outcome measures	Working group	Reach final consensus on the improved version of the questionnaire
Phase 4: Selection of Case-mix factors	Search 3				Targeted literature search to identify case-mix factors	Research team	A long-list of case-mix factors
			Survey 4 part 2		Complement the long-list of case-mix factors	Working group	Complete long-list of case-mix factors
				Team meeting 3	Discuss the impact of the case-mix factors included in the long-list on the outcome domains	Research team	Final selection of a minimal set of case-mix factors

Figure 1. Overview of steps taken over the four phases of data collection and analysis

Data collection and analysis

To facilitate the process of debate and consensus during the four phases shown in Figure 1, three literature searches and three meetings were undertaken by the research team, and a combination of four meetings and four voting rounds by the working group were conducted. The four working group meetings were held between February and September 2023, comprising an one two-hour face-to-face meeting and three one-and-a-half hour online meetings. All meetings were chaired by either the first or second author (n=3 by MH, n=1 by NZ) and were supported by at least two team members in varying compositions (NZ, JH, PW, SB). Each working group meeting was followed by an online vote, administered through questionnaires created on the Microsoft Forms platform. Each meeting and voting round was supported by a poster or booklet presenting the results of the literature searches, minutes of previous meetings, proposed discussion points and/or results of the preceding voting round. The final standard set, including all measures as well as the case mix factors, was shared with the working group for their final approval. Afterwards, the final version of the standard set -intended to be completed by the patient- was checked by a professional writer to ensure a B1 language level.

Phase 1. Establishing the scope and target population

The proposed scope of the standard set was to identify a standard set of work-related outcomes most important for patients, with the dual objective of (1) assisting healthcare professionals in meeting individual patient needs related to work participation and (2) enhancing patient engagement in their own work-focused care process. The proposed target population comprises patients of working age living with CVD. During the first meeting the working group deliberated upon the proposed scope and the target population.

Phase 2. Selection of outcome domains

A targeted literature search was conducted by the research team in order to provide a long list of outcome domains extracted from literature and guidelines (see Fig. 1, Search 1 and Supplementary Material 1). To present the long list to the working group in a more structured way, the domains were organised into categories based on a previous subdivision of the workload and reintegration possibilities factor from the ICF model [25]. After discussing the long list of outcome domains and voting criteria established by the research team (see Fig. 1, Meeting 1), the working group was tasked with rating each of the outcome domains on a 9-point Likert scale ranging from 1 -not important at all- to 9 -very important- (see Fig. 1, Survey 1). The four voting criteria were as follows: (1) The outcome domain has a significant impact on the work participation of patients with CVD and/or on the patient's awareness and engagement with their work-orientated care process, (2) the outcome domain can be influenced by healthcare professionals involved in work-focused healthcare, (3) the outcome domain has the potential to be measured, and (4) the outcome domain influences societal costs. Outcome domains that were rated as 'very important' (7–9 points) by more than 70% of the working group were promptly included in the standard set. Outcome domains falling within the 30–70% range during the first voting round were discussed at the second working group meeting. Outcome domains rated as 'very important' by less than 30% of working group were immediately excluded. Likewise, during the second voting round, all outcome domains rated as 'very important' by more than 70% of the working group were included in the standard set, while outcome domains rated as 'very important' by less than 70% of the working group were excluded.

Phase 3. Selection of outcome measures

To provide an overview of existing measurement instruments for each of the included outcome domains, a targeted literature search was conducted by the research team (see Fig. 1, Search 2 and Supplementary Material 1). Upon reviewing the overview of existing measurement instruments, the working group discussed the suitability of these instruments for each of the outcome domains (see Fig. 1, Meeting 3). During these discussions, greater emphasis was placed on selecting standardised instruments, and efforts was made to retain as many original question and response options as possible. Taking into account this discussion, the research team formulated a proposal on how to measure each of the outcome domains (see Fig. 1, Research team meeting 1). Then, at the third voting round, the members of the working group were asked to rate the proposed outcome measures on the 9-point Likert scale, considering four voting criteria: (1) the suitability of the outcome measure for the outcome domain of interest, (2) the validity and reliability of the outcome measure, (3) the interpretation of the measurement score for clinical practice, and (4) the feasibility of implementing the measurement in practice. The results were interpreted in a similar manner to the thresholds for the outcome domains. At the fourth meeting, the working group discussed how to enhance the outcome measures. Feedback regarding the outcome measures was further analysed and discussed by the research team at an additional session (see Fig. 1, Research team meeting 2). At the fourth voting round the members of the working group were asked to indicate their agreement with the proposed changes to the outcome measures.

Phase 4. Selection of case mix factors

A targeted literature search was conducted by the research team to provide a long list of case mix factors extracted from literature and guidelines (see Fig. 1, Search 3 and Supplementary Material 1). The working group was then asked to add to this long list of case mix factors if they considered it necessary (see Fig. 1, Survey 4). Consensus on a minimal set of case mix factors was reached after discussion by the research team (see Fig. 1, Research team meeting 3). The selection of the minimal set of case mix factors was based on the influence of the factors on the selected outcomes. The final standard set, including the minimal set of case mix factors, was shared with the working group for final approval.

Role of the researchers and ethical considerations

All authors are experienced researchers in the field of occupational health and/or human-centred design. All participants signed an informed consent form and received compensation in return for their participation. The Medical Ethics Committee of the Amsterdam University Medical Center declared that the study design did not require comprehensive ethical review, as the Medical Research Involving Human Subjects Act did not apply to this study (Reference number: W22_304 # 22.382).

Table 1. Characteristics of the working group (n=17)

Variable	Mean (SD) or n (percentage)
Working group (n=17)	
Age	50.7 (9.9)
Gender (male)	8 (47.1%)
Patients (n=6)	
Age	51.5 (7.8)
Gender (male)	1 (16.7%)
Time since diagnosis (years)	3.2 (1.6)
Type of CVD	
Cardiac arrhythmia	2 (33.3%)
Coronary artery spasms	1 (16.7%)
Heart valve disease	1 (16.7%)
Aortic disease	2 (33.3%)
Employment status at moment of diagnosis	
Working fulltime	2 (33.3%)
Working part time	3 (50.0%)
Not working	1 (16.7%)
Type of work arrangements	
Self-employed	1 (16.7%)
Contracted employee	4 (66.6%)
Temporary worker	1 (16.7%)
Current employment status	
Fully working	2 (33.3%)
Partly working	2 (33.3%)
Not working	2 (33.3%)
Job sector	
Education and training	1 (16.7%)
Engineering, production and construction	1 (16.7%)
Healthcare and wellbeing	2 (33.3%)
Security and public administration	2 (33.3%)
Present comorbidities	
Musculoskeletal	1 (16.7%)
Neurological	3 (50.0%)
None	2 (33.3%)
Professionals (n=11)	
Age	50.3 (11.2)
Gender (male)	7 (63.6%)
Years of work experience	13.4 (9.7)

RESULTS

Working group composition and response rates

The working group comprised 17 members, of which 6 were patients and 11 healthcare professionals. The patients' diagnoses included various types of CVD (n=2 cardiac arrhythmia, n=1 coronary artery spasms, n=1 heart valve disease, n=2 aortic disease). At the time of diagnosis one patient was self-employed, four were contracted employees and one was a temporary worker. At the moment of this study, two were fully working, two were partly working and two were not working. The group of healthcare professionals included two insurance physicians, one working for the Dutch Social Security Agency and one working in the private sector, an occupational physician specialising in cardiovascular issues, a labour expert employed by both the Dutch Social Security Agency and a reintegration agency, a clinical physiotherapist involved in cardiovascular rehabilitation, an occupational physiotherapist, a nurse specialised in cardiology, a general practitioner, a psychologist employed by the Dutch Social Security Agency, a reintegration coach and a cardiologist. See Table 1 for further characteristics of the working group. In total the average attendance rate during the working group meetings was 85.3%, and the response rate for all voting rounds was 100%.

Phase 1. Establish the scope and target population

The working group reached the consensus that the proposed scope of the standard set should be aligned with the following objectives: firstly, to assist healthcare professionals in addressing the individual needs of patients related to work participation, and secondly, to enhance the engagement of these patients in their own work-focused care process. In addition, the working group reached consensus on the proposed target population, adhering to the definition of CVD as outlined by the World Health Organisation [26].

Phase 2. Selection of outcome domains

Based on a literature search, 33 outcome domains were identified and subsequently subdivided into 5 categories based on the ICF model (see Supplementary Material 3) [25]. These were: (1) work factors (n=5), (2) work ability (n=4), (3) personal factors (n=9), (4) external factors: work-focused healthcare (n=12), and (5) external factors: social and work environment (n=3). The working group reached consensus on 9 outcome domains rated as being most important in the first two voting rounds (see Figure 2 and Supplementary Material 3). The final 9 outcome domains comprised: (1) work participation, (2) physical work ability, (3) mental work ability, (4) suitable work, (5) support from the working environment, (6) flexibility of the working environment, (7) communication towards the patient, (8) person-centredness, and (9) interdisciplinary communication. The definitions of these outcome domains can be found in Table 2. Key points of discussion are listed below.

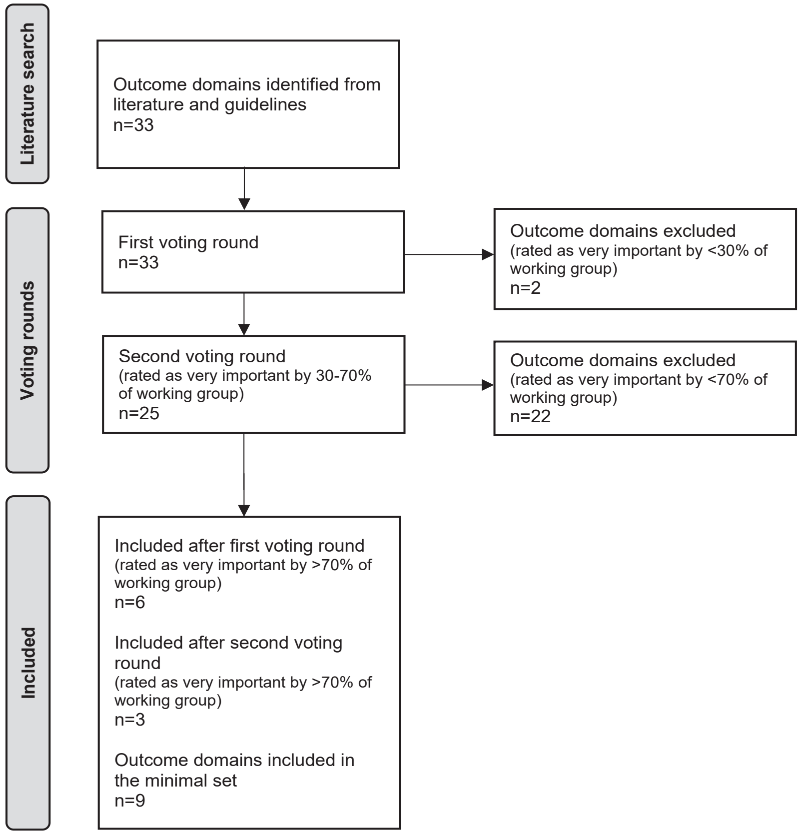


Figure 2. Flow diagram of the selection of the outcome domains. 'Very important' = 7–9 score on a 1–9 Likert Scale

Work participation

Although during the first survey the outcome domain work disability was immediately appointed as very important by more than 70% of the participants, defining this outcome domain proved challenging. The insurance physicians involved, representing both the Dutch Social Security Agency and the private sector, highlighted that work disability, as defined in the realm of insurance medicine practice, entails a comprehensive assessment of earning capacity based on established functional capabilities. Patients in the working group expressed their perception that work disability, as defined within the practice of insurance medicine, carries a legal connotation with negative implications. They argued that this definition did not align with the scope of this standard set. Therefore, to contextualise work disability appropriately, the working group discussed what they considered most important within the scope of this standard set. They collectively agreed it was especially important to delineate the context of work participation. Therefore, the working group decided to reframe this outcome domain, by no longer referring to it as 'work disability' but as 'work participation'.

Work ability

Four outcome domains related to work ability were included in the long list of outcome domains: physical work ability, mental work ability, sustainable recovery work ability, and social work ability. While the physical and mental work ability were promptly appointed as very important, the working group engaged in an extensive discussion regarding the importance of sustainable recovery work ability. However, consensus on this outcome domain was not reached.

Suitable work

Similar to the discussion regarding work participation, defining suitable work also proved to be challenging due to different interpretations among the members of the working group. Some members, including the occupational physician and the labour expert, interpreted suitable work in terms of what would be appropriate for a specific patient rather than focusing on the patient's current work situation. Following a thorough discussion, the working group reached consensus that the focus should be on the existing work situation. They noted that the outcome becomes irrelevant for patients who do not have an active work environment.

Person-centredness

During the working group discussions, several patients emphasised that the term 'patient-centredness' felt overly restrictive in defining their experiences and carried a negative connotation. They expressed the need for a broader perspective that encompasses all aspects of being human. Consequently, one of the professionals proposed the term 'person-centredness', which was welcomed by the entire working group.

Personal factors

While the category personal factors included nine outcome domains, none of these were included in the standard set. The working group identified and discussed the matter. However, ultimately they concluded that none of the outcome domains in this category stood out as being more important than any other.

Phase 3. Selection of outcome measures

A wide array of measurement instruments that could potentially measure the included outcome domains were identified by means of a literature search. When voting, the working group unanimously agreed on all proposals by the research team on how to measure each of the outcome domains (see Supplementary Material 4). Considering the suggestions for improvement by the working group, consensus was reached on a 23-item questionnaire for measuring the nine outcome domains. The measurement instrument for each of the outcome domains can be found in Table 2. The 23-item patient-reported questionnaire, called the Value@WORK-Q23, can be found in Supplementary Material 5. Significant discussion points, considerations and final decisions for selecting the outcome measures of all nine outcome domains are listed below.

Table 2. Proposed standard set of most important work-related outcomes to be used in practice for patients with cardiovascular disease.

Part of questionnaire* and included outcome domains	Definitions of the outcome domains	Origin of chosen outcome measures*	Items (n)*
Part 1 - Performance in paid work			
Work participation	Extent to which the patient participates in work, such as having a job, number of hours and type of work.	All items of the 'return to work' domain from the standard set for patient with hand and wrist conditions [28] were included and adjusted to the context of CVD.	6
Part 2 – Work ability			
Physical work ability	The extent to which the patient can physically perform work.	The Work Ability Score (WAS) was specified for general, physical, mental and energetic work ability [29].	4
Mental work ability	The extent to which the patient can mentally perform work.		
Part 3 – Suitable work			
Suitable work	Having suitable work that matches the patient's possibilities and limitations.	The fourth out of seven items of the Work Ability Index (WAI) [31] and the full Output Demand Scale of the Work Limitations Questionnaire (WLQ) [30] were both included.	6
Part 4 – Work environment			
Support from the work environment	The extent to which the work environment is involved and supportive for the individual.	A single item was derived from the 17-item first part on sociographic data and background information of the Work rehabilitation questionnaire (WORQ) [33]. The wording and response options were adjusted, including the addition of an additional question stating the context.	2
Flexibility of the work environment	The extent to which the work environment is able to take over tasks and offer adjustments in work.	A single item was derived from the 20-items 'my supervisor' scale of the Support for Workers with a Disability Scale (SWDS) [32]. The wording and response options were adjusted.	1
Part 5 – Person-centredness			
Communication towards the patient	The extent to which the patient experiences to be included in the flow of information within work-focused healthcare.	All items of the CollaboRATE questionnaire for patients 10-point scale [34] were included and adjusted to the context of work and health.	3
Person-centredness	Extent to which the patient feels that they are being treated correctly and that attention is paid to their personal situation.		
Part 6 – Interdisciplinary communication			
Interdisciplinary communication	The way in which information is exchanged between professionals involved in work-focused healthcare.	Self-developed item.	1

*The 23-item patient-reported questionnaire can be found in Supplementary Material 5.

Work participation

In the search for a suitable instrument to measure work participation, the research team found a core set that considered current employment status, work participation, and time to return to work to be the most important aspects when measuring work participation [27]. An earlier standard set for patients with hand and wrist conditions had included an outcome on return to work including outcome measures regarding these three aspects [28]. This original questionnaire on the hand and wrist was slightly adjusted to align with our focus on CVD.

Work ability

The Work Ability Score (WAS) was identified as an instrument to assess generic work ability, physical work ability and mental work ability, in accordance with the previous literature [29]. However, the patients in the working group indicated that energy levels and fatigue can significantly impact perceived work ability. Both patients and healthcare professionals concurred that energetic work ability cannot be adequately captured by measures regarding physical or mental work ability alone, as it is an independent aspect of work ability. Therefore, it was decided to incorporate a distinct question regarding energetic work ability within the domain.

Suitable work

In the search for a suitable measurement instrument for the outcome domain suitable work, the research team found multiple measurement instruments, each evaluating different aspects of suitable work. Consequently, to acquire a comprehensive understanding of the outcome suitable work, questions from two measurement instruments were combined: the fourth question from the Work Ability Index (WAI) and the Output Demand Scale from the Work Limitations Questionnaire (WLQ) [30,31].

Support from & flexibility of the working environment

The working group discussed whether the two outcome domains support from the working environment and flexibility of the working environment should be considered as separate definitions, each requiring different measures. The patients expressed the opinion that these indeed differ, and therefore required different measures. In the view of the patients, support from the working environment is the social part of the support, including the involvement of the working environment. While flexibility is more the practical side, including the extent to which work tasks can actually be adjusted. Nevertheless, to maintain a logical structure within the standard set, the working group recommended combining the two outcome domains into one theme, but including both measures. For support from the working environment one question was selected from the Work Rehabilitation Questionnaire (WORQ) and for flexibility one question from the Support for Workers with a Disability Scale (SWDS) was selected [32,33]. To interpret the answer on these measures, a self-developed question was added to quantify the extent to which support from the working environment is needed. These two outcome domains are irrelevant for those patients without an active work environment.

Communication towards the patient & person-centredness

For the outcome domains communication towards the patient and person centredness, the research team found that both outcome domains can be properly measured by the CollaboRATE Questionnaire. The CollaboRATE Questionnaire is a patient-reported measure for shared decision-making, including three questions relating to the effort made by the healthcare professional to understand the health issue, listen to the things that matter most about the health issue, and include what matters most to the patient [34]. These three questions transcended our previously established definitions of the two outcome domains, which led to the decision to merge the two outcome domains. However, the original version of the CollaboRATE lacks a work-related focus so with the permission of the developer, the CollaboRATE was slightly adjusted to include the work-related focus for our purpose.

Interdisciplinary communication

In the search for a suitable measurement instrument for patients with regard to their experiences of the communication between professionals, no instruments were found. Therefore, the research team suggested adding a self-developed question, which was discussed and refined by the working group.

Order in patient-reported standard set

In addition to the outcome domain-specific discussions, the working group suggested a specific order to present the outcome measures in the patient-reported questionnaire. This proposed order was based on their understanding of the relation between the outcome domains and their measures. They suggested initiating the list with work participation and work ability, followed by suitable work and support & flexibility from the working environment as these outcomes are all closely related to the current work situation. Lastly, they recommended connecting the three outcome domains targeting person centredness and communication.

Phase 4. Selecting case mix factors

The literature search identified a total of 21 case mix factors. These factors were subdivided into three categories including seven demographic factors (e.g. age and gender), seven disease specific factors (e.g. diagnosis and comorbidities), and seven work factors (e.g. type of employment contract and sector) (see Supplementary Material 6). Based on the input by the working group, the long list was supplemented with two additional case mix factors: the presence of depression (a disease specific factor) and previous periods of work disability (a work factor). Ultimately, the research team reached consensus on the importance of nine case mix factors. These case mix factors comprised four demographic factors, i.e. age, gender, educational level and postal code, two disease specific factors, i.e. type of CVD and comorbidities influencing work participation, and three work factors, i.e. work status prior to CVD, workload and previous periods of work disability. All members of the working group agreed on this selection. All definitions of the case mix factors are shown in Table 3. The items proposed for measuring these case mix factors can be found in Supplementary Material 7.

Table 3. Proposed minimal set of case mix factors to be able to compare the most important outcome domains on a group level.

Category	Case mix factor	Definition
Demographic	Age	Age of the patient.
	Gender	Gender of the patient.
	Education	The highest educational level the patient has completed.
	Postal code	The letters and digits assigned to the geographical area the patient lives in. The postal code may be associated with a certain socio-economic status.
Disease specific	Type cardiovascular disease	The type of cardiovascular disease diagnosis a patient has received.
	Comorbidities influencing work participation	The presence of one or more additional conditions or diseases that have an influence on the work participation of the patient.
Work	Work-status prior to cardiovascular disease	If and for how many hours, the patient was working in a paid job at the time of the diagnosis of the cardiovascular disease.
	Workload	How much capacity the patient needs to perform current paid work.
	Previous periods of work disability	Any periods in the past during which the patient was unable to work due to a disability or health-related issue.

DISCUSSION

With an interdisciplinary group of (occupational) healthcare professionals and patients, we developed a standard set of key work-related outcomes for patients with CVD to be used in the practice of work-focused healthcare. Consensus is reached for nine outcome domains being most important: (1) work participation, (2) physical work ability, (3) mental work ability, (4) suitable work, (5) support from the work environment, (6) flexibility of the work environment, (7) communication with the patient, (8) person-centredness, and (9) interdisciplinary communication. For each of these outcome domains, consensus was reached on how to measure them, resulting in a 23-item patient-reported questionnaire. This questionnaire was called the Value@WORK-Q23. The Value@WORK-Q23 was complemented by nine case mix variables, consisting of demographic, disease, and work factors. It is important to acknowledge that this set does not encompass all outcomes that are significant to this patient population. Our goal was to develop a minimal set of key work-related outcomes in order to reduce the registration burden during data collection [14]. To our knowledge, this is the first standard set of patient-centred work-related outcome measures for patients with CVD, originating from the principles put forward by the value-based healthcare concept [12].

It is envisioned that this newly developed work-focused standard set will complement existing disease-specific standard sets. For instance, the disease-specific standard set for coronary artery disease does not yet integrate work-related outcomes [21]. By incorporating this work-focused standard set alongside disease-specific ones in daily healthcare practice, healthcare professionals will potentially gain better insight into the patient's full personal situation, including their work situation. This additional insight helps healthcare professionals better meet the patient's work-related needs [17], which is essential for improving the patient's health-related quality of life [35]. Additionally, it has been found that completing patient-reported questionnaires encourages patients to reconsider their personal circumstances [36]. Our work-focused set may enhance the patient's engagement in their work-focused healthcare process, and support work-related shared decision-making [37]. Engaging patients by addressing their responses to the questionnaire may, in turn, also enhance their health-related quality of life [38]. Given the heterogeneity in our target population, it should be acknowledged that not all outcome domains are equally relevant or applicable to all patients, as their individual work circumstances and work status vary widely.

The literature underscores the importance of the outcome domains; for instance, work participation was highlighted as a key outcome in previously developed patient-centred standard sets [28,39]. Additionally, workplace accommodations and attitudes have been identified as influential factors affecting work participation, and have shown to influence the quality of care following stroke [40]. Furthermore, in a previous study patients emphasised the importance of person-centredness, effective information exchange, clear professional to patient communication, and interdisciplinary collaboration among healthcare professionals [11].

Somewhat surprisingly, no personal factors were included in our standard set. Consistent with the literature, our working group acknowledged the importance of the personal factors identified in relation to work participation [41]. However, the working group blamed the lack of consensus on the diverse and individually determined nature of personal factors, in which also the measurability and influenceability of these personal factors was questioned by healthcare professionals. Therefore, we suggest the personal factors should be candidate outcomes, and their importance should be considered on an individually patient basis.

Methodological considerations

A significant strength of our standard set is that we adhered to the standardised and comprehensive approach used by ICHOM in developing over 40 person-centred standard sets

[42]. However, the cut-off value for inclusion and exclusion of outcome domains and measures varied greatly between the different ICHOM studies [43]. Therefore, we chose our inclusion and exclusion rates of 70% and 30% respectively, based on averages found in the literature (66-80%; 0-50%) [24,43]. The 30% exclusion rate resulted in two outcome domains being omitted after the first voting round (Supplementary Material 3). We believe that including these two outcome domains in the second voting round would not have impacted the final set. Similarly, an exclusion threshold of 50% would not have impacted the final set (Supplementary Material 3). Four outcome domains were included in the final set based on consensus scores between 70% and 80% (Supplementary Material 3). A stricter inclusion threshold of 80% could have resulted in fewer outcome domains being included in the final set. However, we support our decision to use a 70% inclusion threshold, as it ensured that the number of outcome domains included were comprehensive yet manageable [14].

Another strength of our study is the recognition of diversity of our patient population. In line with our commitment to incorporate a variety of patient perspectives, six of our working group members were patients (35%), surpassing the typical 25% representation in ICHOM working groups [42]. This relatively high percentage reflected our dedication to patient-centred research. Our patient representatives came from diverse backgrounds, including different types of work arrangements, employment statuses and types and stages of CVD, ensuring a broad representation of the CVD population. However, in the development of another standard set [23], an additional patient advisory group (n = 300+) was involved alongside the working group, where they rated the importance of each proposed outcome. This input was made transparent to the working group, enabling them to incorporate this information into subsequent discussions and voting. While our working group had a relatively high percentage of patients directly participating in the consensus process, the ratings from a larger patient group were not assessed. Although the inclusion of such an additional patient advisory group is not standard practice in the ICHOM method [42], we believe it could have helped our working group in considering the importance of the outcome domains. To ensure a holistic and inclusive perspective, we engaged stakeholders from all relevant professions throughout the patient's work-focused healthcare process in the Netherlands [7]. Eleven healthcare professionals participated, providing balanced representation across various healthcare perspectives. This resulted in a working group of 17 members, which is a typical group size for developments of this kind (12–31) [43].

In addition, while most outcome measures in the developed standard set were selected from validated measurement instruments [30,31,32,44,45], several modifications were necessary to align the specific needs of work-focused healthcare. These adjustments included using single items, adapting measures to fit the context, or modifying response options. Such changes may have negatively impacted the external validity of the measures. The limited availability of appropriate measurement instruments for the included outcome domains once again underscores the novelty of measuring patient-reported work-related outcomes. Therefore, we had to rely on making adjustments to existing measures and to design new items to ensure the comprehensibility and manageability for patients, facilitating practical use. Therefore, the validity of the patient-reported questionnaire should be further investigated [46]. Future revisions of the standard set should consider newly validated outcome measures that require fewer adjustments to enhance overall validity.

Implications for future research

While most standard sets are developed in an international setting, this particular standard set was specifically tailored for use in practice within the Netherlands. This decision was driven by notable differences in healthcare systems worldwide, particularly the distinct separation between the medical roles of clinical and occupational professionals in the Netherlands [47]. Consequently, it remains uncertain whether this standard set includes universally important outcomes and whether it can be effectively applied for patients in healthcare contexts outside the Netherlands. However, we suggest that some of the included outcome domains are likely transferable to healthcare settings outside the Netherlands. For instance, we believe that the outcome domains on work ability hold relevance for all patients experiencing work participation problems due to CVD, regardless the healthcare system. However, the importance of outcomes such as support and flexibility of the work environment, or interdisciplinary communication may be more strongly influenced by legislation and regulations and the professionals involved in the different healthcare systems. Nevertheless, international adoption of a standard set is desirable to facilitate cross-border learning and improvement. Therefore, future research is needed to determine the transferability of this standard set to other contexts and which adaptations are necessary. Collaborating with ICHOM partners could facilitate the development of an internationally applicable outcome set, in which our standard set serves as the foundation. The current standard set developed for use in practice aims to encompass the key work-related outcomes for individuals, particularly those living with CVD. However, work is a critical outcome for all adults managing health conditions within the working-age population [39]. It can be assumed that the results in the standard set are not only important for people with CVD, but that the set can be generically applied with minimal adjustments for people who experience work problems due to chronic illness. Therefore, future research should investigate whether key work-related outcomes vary across different medical conditions to determine the generalisability of our work-related standard set. As a next step, the added value of the newly developed standard set needs to be tested in practice, in order to assess its feasibility for implementation, use and impact. Hereby, it would also be interesting to explore the feasibility and impact of measuring all the included outcome domains across different healthcare settings. For example, in curative healthcare, where patient-reported outcome sets are already widely used, the standard set could be distributed alongside other existing sets. Adding the full standard set could impose a burden for both patients and professionals. Therefore, selecting a subset of domains from this standard set that provide meaningful insights while minimizing the response burden for patients and administrative load for professionals may be essential for successful implementation. Additionally, studies should investigate the validity and reliability of these subsets to ensure they effectively capture essential patient-reported outcomes.

Implications for practice

The work-related standard set developed in the present study serves to help healthcare professionals and policymakers to deliver value-driven care. The developed standard set aims for person-centred quality improvements by means of a dual strategy at both an individual and an aggregate level. At an individual level, healthcare professionals gain insight into the patient's answers, enabling discussion during consultations on those work-related topics that are most important for the patient. This empowers shared decision-making by considering the individual's situation, their needs and preferences. It allows healthcare professionals to tailor care plans or return-to-work plans specifically for work-related concerns, thus enhancing patient engagement and satisfaction. At an aggregate level, healthcare institutions will be able to benchmark their performance against one another. Comparing institutions can reveal necessary quality improvements and facilitate learning across organisations. However, to enable such comparison between institutions, an infrastructure for sharing data, such as registries, should be available. In the Netherlands, work-focused healthcare and curative care are two distinct medical domains [7], which poses challenges for using, implementing and deploying standardised outcome sets in an integrated, team-orientated manner. Therefore, until an infrastructure for sharing outcome data across healthcare domains is established, we recommend that healthcare institutions integrate the standard set into their own digital environments for use at the individual level and exchange aggregate data within departments or with partners already involved in existing digital care pathways.

CONCLUSION

The newly-developed standard set measures key work-related outcomes for patients with CVD in practice. Using this work-related set in addition to existing disease-specific standard sets for CVD will facilitate high-value work-focused healthcare for this patient population.

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SUPPLEMENTARY MATERIALS

Additional file 1: Contains Supplementary Materials 1-7

8

Use and impact of the Value@WORK-Q23: Insights from user testing of a standard set of key work-related outcomes for patients with cardiovascular diseases in real-life consultations

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ABSTRACT

Objective: This study explored the use of the Value@WORK-Q23 (V@W-Q23) in real-life consultations with working-age patients diagnosed with cardiovascular diseases (CVD), examining the experiences with the use and its impact by both patients and healthcare professionals and identifying potential barriers and facilitators to its use.

Design: Exploratory mixed-method study.

Setting: User testing of the V@W-Q23 occurred in real-life consultations across four healthcare practices: occupational medicine, social insurance medicine, general practice, and cardiology.

Participants: Nationwide purposive sampling was used, with 16 consultations involving 12 healthcare professionals and 15 patients.

User testing: The V@W-Q23 was used in three steps: 1) the patient completing the V@W-Q23 independently before the consultation, 2) the healthcare professional reviewing the results, and 3) using the insights during the consultation.

Data: Consultations were observed, and semi-structured interviews were conducted with patients and professionals. Quantitative data were analysed using frequency counts, percentages and time points. Qualitative data underwent content analysis.

Results: The V@W-Q23 was primarily used to discuss items of interest to the patient or those deviating from the professional's expectations. Both patients and professionals found the items relevant, easy to understand, and manageable within time limits. The tool enhanced understanding of personal circumstances, increased attention to work-related topics, and improved interpersonal communication. Its impact was particularly notable for patients on temporary sick leave or those facing work-related challenges. Barriers included limited time, competing priorities, and unclear roles in work-focused healthcare. Facilitators included repeat measurements, a more appealing layout, clearer responsibilities for sending, receiving, and processing the V@W-Q23, and integration into electronic health records. The tool was also suggested for use in other chronic conditions.

Conclusion: The V@W-Q23 was well-received by both patients and healthcare professionals, promoting in-depth discussions about work-related issues during consultations. Its use improved understanding and attention to work-related factors, highlighting the potential for broader application in healthcare settings.

BACKGROUND

Patient-reported outcomes (PROs) offer a standardised approach to capture the patient's perspective on their own health status [1]. The use of PROs, at either an individual or aggregate level, can improve patient-centredness in healthcare provision [2]. At an individual level, healthcare professionals can use PROs to focus on the patient's individual goals and guide diagnostics and treatment decisions [3]. At an aggregated level, PROs can be used to guide benchmarking of performance between healthcare institutions, promote quality improvement and facilitate learning across organisations [4].

In recent years, the adoption of disease-specific patient-reported outcome measures (PROMs) and patient-reported experience measures (PREMs), as outcome measures for the PROs, have seen a notable increase in clinical settings [5,6]. Yet, we are experiencing a transformative phase in healthcare—shifting from a narrow focus on merely curing disease to a more comprehensive approach on health, well-being, and overall functionality [7,8]. Employment status, which is a crucial indicator for patients' general health, mental health and physical, social and emotional functioning [9], is, therefore, gaining importance in overall healthcare delivery [10]. Work-focused healthcare provides an important contribution by assessing patients' abilities and limitations related to work participation and providing advice, support and treatment for functional recovery [11]. Nevertheless, a prominent challenge in delivering patient-centred work-focused healthcare is the lack of adoption of work-related PROs [12].

To address this challenge, in an earlier study consensus was reached on the most important work-related health and functioning outcomes for patients with cardiovascular diseases (CVD) to complement existing disease-specific standard sets which lack the presence of work-related outcomes. In addition, the Value@WORK-Q23 (V@W-Q23) was developed. This questionnaire serves as an outcome measure to evaluate these most important work-related health outcomes and experiences [13]. CVD was used as a case in the development of this standard set due to its increasing prevalence among the working-age population [14,15] and its substantial negative impact on work ability, along with the societal effects of productivity loss and long-term work disability [16]. The standardised work-related PRO set, with the V@W-Q23 as an outcome measure, has been developed with the goal of enhancing patient-centredness in work-focused healthcare settings by assisting both healthcare professionals and patients in addressing individual needs of patients with CVD, this way enhancing the engagement of these patients in their own work-focused care process [13]. The next step is to explore how the V@W-Q23 can be adopted in real-life settings, and how patients and professionals experience its use.

This study aims to explore the use of the V@W-Q23 in real-life consultations with working age patients diagnosed with CVD, the experiences with the use and the perceived impact of the

V@W-Q23 on the (preparation for) the real-life consultations, and to identify potential barriers and facilitators to its use.

METHODS

Study design and setting

This manuscript describes an exploratory mixed-method study in which the V@W-Q23 was user-tested at an individual patient level in real-life consultations between patients and healthcare professionals. These real-life consultations were part of the usual care provided within various healthcare settings involved in work-focused healthcare across a wide range of (healthcare) practices in the Netherlands. Quantitative observational data were gathered to gain insights into the use, while qualitative interview data provided a deeper understanding of user experiences. The Mixed Methods Article Reporting Standards (MMARS) was used for reporting the results [17].

The Value@WORK-Q23 (V@W-Q23)

The V@W-Q23 is a 23-item patient-reported questionnaire. The V@W-Q23 serves as an outcome measure to evaluate a set of nine work-related health and functioning outcomes and experiences within work-focused healthcare considered most important for patients with CVD in the working age: (1) work participation, (2) suitable work, (3) physical work ability, (4) mental work ability, (5) communication with the patient, (6) person-centredness, (7) support from the work environment, (8) flexibility in the work environment and (9) interdisciplinary communication. Consensus on the nine work-related health outcomes and the V@W-Q23 was reached in a modified Delphi study with working age patients with CVD and healthcare professionals involved in work-focused healthcare. The detailed development of the set is described elsewhere [13].

Given the diversity within the target population, the V@W-Q23 is customized to each patient's work situation. Depending on whether patients report having a contract for paid work and/or are currently working, the outcome measures for (2) suitable work, (7) support from, and (8) flexibility within the working environment are included. In addition, items regarding nine case mix variables are included in the V@W-Q23. All items can be found in Supplementary Material 1.

Set-up of user testing

User testing in real-life consultations included three steps (see Figure 1): First, in the days before the consultation, the patient received a digital link to the V@W-Q23 in Microsoft Forms via email. Patients completed the V@W-Q23 independently before the scheduled consultation, and the first author (MH) facilitated the sharing of the results with both the healthcare professional and the patient. Second, the healthcare professional reviewed the patient's results as part of their preparation for the consultation. The participants did not receive any specified instructions on how to interpret and use the results. Third, during the consultation, both the healthcare professionals and the patients could use the insights from the results of the V@W-Q23 at their own discretion.

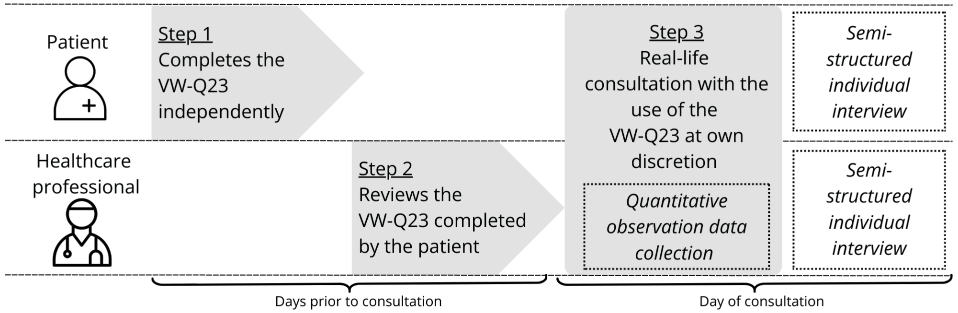

Figure 1. Set-up of user testing in real-life consultations. The dotted frames indicate the different data collections.

Participants and recruitment

User testing was performed across four professions involved in work-focused healthcare: occupational medicine, social insurance medicine, general practice, and cardiology. Therefore, both the healthcare professional and the patient of a pre-scheduled consultation had to be eligible and willing to participate. Eligible healthcare professionals included those employed in any of the medical fields mentioned above. Patients were eligible if they had a CVD diagnosis and were of working age (18-67 years). All participants needed to understand and speak Dutch. The recruitment was conducted through two distinct pathways. First, healthcare professionals were selected nationwide using purposive sampling. Recruitment of these healthcare professionals occurred through social media platforms and the researchers' professional networks. Interested and eligible healthcare professionals were tasked with recruiting eligible patients who were scheduled for an upcoming consultation. After a patient gave verbal consent to the healthcare professional to share their contact details with the researchers, the first author (MH) contacted the patient by phone to provide further information. Second, patients of working age who were diagnosed with CVD and an upcoming appointment with an occupational physician, social insurance physician, general practitioner (or practice assistant), or cardiologist were invited to participate through an open call on social media. The first author (MH) approached the healthcare professionals of interested patients to confirm their willingness to participate. The user test was conducted after both the patient and the healthcare professional expressed their willingness, confirmed their eligibility, and signed informed consent. Both healthcare professionals and patients could participate in two user testing settings, but not as part of the same pair.

Data collection

Observations

The first author (MH) observed all real-life consultations to assess how the set was utilised during each consultation (see Figure 1, Step 3). She observed either in person or virtually via video connection, depending on how the consultation was carried out and the researcher's ability to attend in person. A structured quantitative observation data collection method was employed, using an observation checklist (see Supplementary Material 2) to track various factors, including: consultation duration, whether the patient and/or healthcare professional kept the set to hand, points in time when the content of the set was discussed, duration of discussions related to the set, who initiated the discussion related to the set, and frequency of outcome measures discussed. Additionally, field notes were taken to capture the essence of discussions related to the outcome measures. The observer was non-participatory.

Semi-structured interviews

Semi-structured interviews were conducted by the first author (MH) with the patient and healthcare professional both individually. To ensure the data collection was momentary, all interviews were conducted directly after the real-life consultations (see Figure 1). Patients were asked how they experienced completing the set. Professionals were asked how they integrated the completed set into their preparation for the consultation. Both patients and professionals were asked about the use of the set during the consultation, about the experienced impact on their (preparation for the) consultation and the potential barriers and facilitators to its use. In addition, all participants were asked to rate their experienced ease of use and the impact of the V@W-Q23 in their real-life consultation with a grade from 0 (worst) to 10 (best). Interview guides listing topics and open-ended questions were developed for the patients and healthcare professionals separately (see Supplementary Material 3). These interview guides were used as a memory aid for the interviewer. All interviews were performed in Dutch and were voice-recorded with the permission of the participants. The voice recordings of the interviews were transcribed verbatim and de-identified for data analysis.

Data analysis

Analysis of the quantitative data

The quantitative data gathered from the observation checklists and ease of use and impact scores were processed by means of frequency counts, converting real time to minutes, and calculating percentages using SPSS version 28 [18]. Descriptive statistics were used to summarise the characteristics of the patients. Characteristics of the patients were extracted from the V@W-Q23.

Analysis of the qualitative data

All transcripts of the semi-structured interviews were analysed using qualitative content analysis [19]. For each transcript, open codes were assigned to all relevant text fragments and deductively subdivided into three subthemes concerning the 1) use, 2) impact and 3) barriers & facilitators for the use of the VW-23Q during real-life consultations, independently by two researchers (MH, LJ) using MAXQDA 2020 [20]. Disagreements were resolved by discussion. Finally, emerged themes were reorganised and reformulated in discussion with the research team (MH, NZ, MM, JH, PW & SB) with the aim of reaching agreement on the final coding. The findings were not checked by the participants. The field notes from the observations were reviewed by the first author (MH) to provide an overview of the context of the discussions related to the outcome measures.

Role of the researchers and ethical considerations

All authors are experienced researchers within the field of occupational health, human-centred design and/or value-based healthcare and helped to shape the aim and relevance of the study. Written informed consent was obtained from all participating individuals. The Medical Ethics Committee of the Amsterdam University Medical Centre granted ethical approval for the study. The committee declared that the study design did not require comprehensive ethical review, as the Medical Research Involving Human Subjects Act did not apply to this study (Reference number: 2023.0863).

RESULTS

Participant recruitment and characteristics

Following outreach through social media and direct invitations via the researchers' professional networks, 19 healthcare professionals expressed interest in participating. Two additional healthcare professionals expressed interest following a referral via already participating healthcare professionals. However, not all healthcare professionals were successful in recruiting eligible patients during the study period, resulting in user testing in 14 real-life consultations. On the patient side, five individuals responded to the social media call, all of whom had an upcoming appointment with a cardiologist. Ultimately, only one of these patients participated, resulting in user testing during two real-life consultations. In total, user testing was performed during 16 real-life consultations, carried out by 12 different healthcare professionals and 15 patients. Resulting in 32 semi-structured interviews, each lasting 10 to 45 minutes. See Figure 2 for more details on the recruitment process.

Three occupational physicians conducted a total of five user tests; three insurance physicians conducted a total of three user tests; two practice assistant general practitioners conducted a total of two user tests, and four cardiologists conducted a total of six user tests. For an overview of the demographic characteristics of the participants, see Table 1.

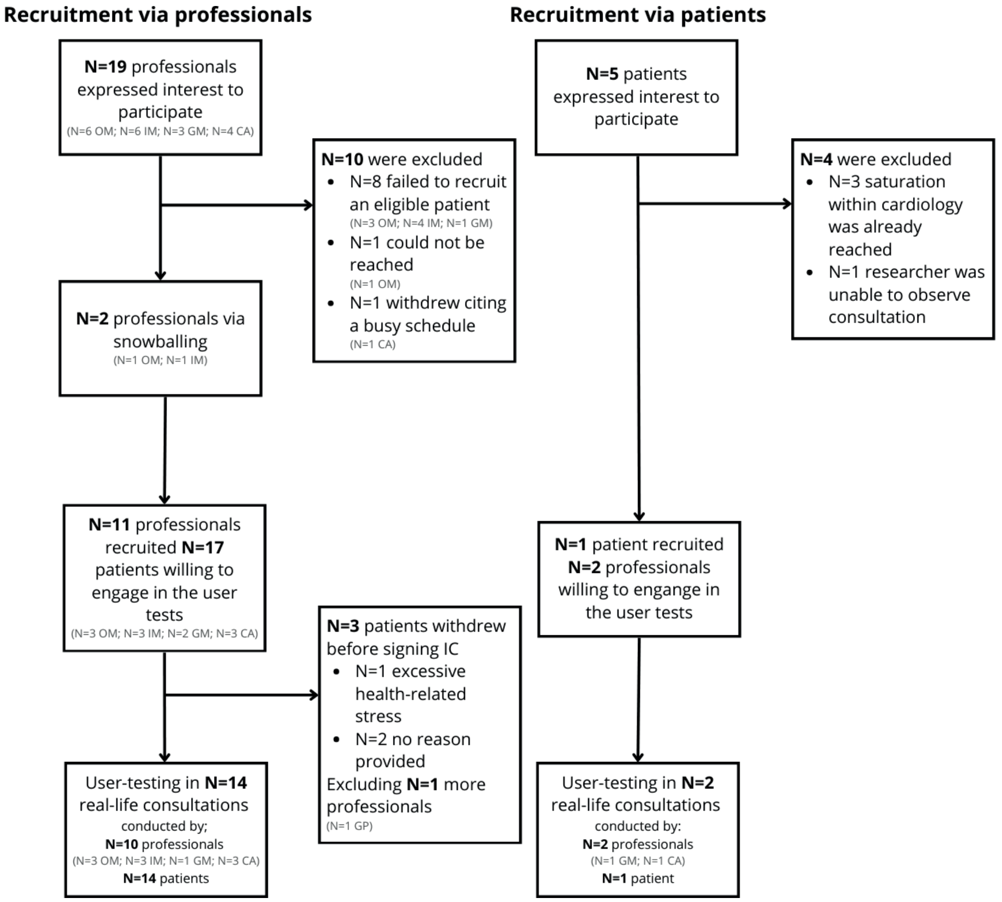

Figure 2. Flowchart of recruitment. Legend: IC = informed consent. Professionals from: OM = occupational medicine, IM = social insurance medicine, GM = general practice, and CA = cardiology.

The use of the V@W-Q23 in real-life consultations

The V@W-Q23 was discussed in 14 of the 16 consultations. It was observed that the primary strategy for utilising the V@W-Q23 was to discuss only a few items during the consultations. Only two professionals, an occupational physician and a cardiologist, reviewed all items with the patient and addressed any issues encountered. On average, the discussion regarding the V@W-Q23 was introduced at the ninth minute and lasted about five minutes on average, accounting for 20% of the total consultation time. Discussions predominantly involved work participation (n=7), work ability (n=8), work environment (n=6), and interdisciplinary communication (n=6), while the outcomes on suitable work (n=4) and person-centredness (n=3) were least addressed. It was observed that there were occasional instances in which a patient interpreted an item differently than intended. In all cases, this was clarified by discussion. Patients gave an average score of 8.3 (SD 0.6) for the ease of use of the V@W-Q23, and a 7.3 (SD 2.1) for its impact. Professionals rated the ease of use at 7.9 (SD 0.7) and the impact at 7.2 (SD 1.5). For an overview of the quantitative data, see Table 2.

Table 1. Participants characteristics.

Variable	Mean, SD, min-max	n	%
Amount of user tests		16	
Occupational medicine		5	31.2
Social insurance medicine		3	18.8
General practice		2	12.5
Cardiology		6	37.5
Healthcare professionals		12	
Occupational physicians		3	25
Insurance physicians		3	25
Practice assistant general practitioners		2	16.7
Cardiologists		4	33.3
Patients		15	
Age	53, 6.2, 45-64		
Gender (male)		10	66.7
Higher education			
Higher professional education		4	26.7
Secondary school		3	20
Secondary vocational education		6	40
University education		2	13.3
Current employment status			
Full sick leave		7	46.7
Partly working		3	20
Working as usual		5	33.3
Type of work agreement			
Contracted employee		7	46.7
Self-employed		4	26.7
Unemployed		4	26.7
Type of CVD			
Cardiomyopathy		2	13.3
Coronary Vascular Dysfunction		2	13.3
Coronary artery aneurysm		1	6.7
Heart failure		3	20
Heart rhythm disorder		2	13.3
Stroke		3	20
Valve insufficiency		2	13.3
Time since diagnosis (years)	4.5, 8.2, 0.1-29		
< 1 year		7	46.7
1-3 years		4	26.7
3-10 years		2	13.3
>10 years		2	13.3
Present comorbidities (yes)		8	53.3
Arthrosis		2	25
Asthma		1	12.5
Hypertension		1	12.5
(Pre)diabetes mellitus		2	25
Sleep apnea		1	12.5
Varicose veins		1	12.5
Previous long-term sick leave (yes)		5	33.3

CVD = cardiovascular disease

Table 2. Overview of the quantitative data.

Characteristics of discussing the V@W-Q23 during the real-life consultations[a]	**Mean, SD, min-max**	
Length of the real-life consultation (minutes)	30, 15.3, 13-60	
Moment of first introduction of the V@W-Q23 as a topic (minutes)	8.7, 9.5, 1-30	
Length of discussing items from the V@W-Q23 (minutes)	5.4, 5.3, 0-18	
Share of discussing the V@W-Q23 in consultation (%)	19.8, 18.6, 0-59	
Amount of professionals keeping the V@W-Q23 at hand (n)	9	
Amount of patients keeping the V@W-Q23 at hand (n)	2	
Given grades (0 [worst] -10 [best])[b]	**Mean, SD, min-max**	
Grade for ease of use given by patients	8.3, 0.6, 7-9	
Grade for impact given by patients	7.3, 2.1, 2.5-10	
Grade for ease of use given by professionals	7.9, 0.7, 7-10	
Grade for impact given by professionals	7.2, 1.5, 3-9	
Amount of real-life consultations in which the item was discussed[a]	**n**	**n at professionals' initiative**
Part 1: Work participation*	7	5
Item 1: Do you currently have a contract for paid work?	1	0
Item 2: For how many hours per week do you currently have a contract?	0	.
Item 3: Are you currently performing the job?	2	2
Item 4: How many hours per week do you currently work?	2	1
Item 5: Can you perform all tasks you were used to?	0	.
Item 6: How confident are you that you can return to or remain at work?	2	2
Part 2: Work ability*	8	5
Item 7: Do you feel that you are able to perform work?	2	2
Item 8: Do you feel that you are physically able to perform work?	2	2
Item 9: Do you feel that you are mentally able to perform work?	1	1
Item 10: Do you feel you have enough energy to perform work?	4	2
Part 3: Suitable work*	4	3
Item 11: Does your cardiovascular disease make it difficult to perform your job?	2	2
Item 12: Work fast enough	1	1
Item 13: Finish work on time	1	1
Item 14: Work without mistakes	1	1
Item 15: Done what you are capable of	1	1
Item 16: Handle workload	1	1
Part 4: Work environment*	6	4
Item 17: How much support do you need from the people at your work?	4	4
Item 18: How much support you get from the people at your work?	6	5
Item 19: How well do the people at your work help you adjust your work?	3	2
Part 5: Person-centredness*	3	1
Item 20: How much effort is made to help you understand how your health affects your work situation?	2	2
Item 21: How much effort is made to listen to the things that matter most to you about your health and work situation?	2	2
Item 22: How much effort is made to include what matters most to you in choosing what to do next regarding your health and work situation?	2	2
Part 6: Interdisciplinary communication*	6	5
Item 23: Do you think that your healthcare providers cooperate well when it comes to your work situation?	5	5

a Data from the observations, b Data from the interviews. *Please note: In some cases parts were also discussed more generic during the real-life consultations, without a direct link to a specific item.

Below are the qualitative themes related to the experiences of using the V@W-Q23, the perceived impact of the V@W-Q23, and the barriers and facilitators to its use, along with several illustrative quotes. Additionally, representative quotes for each theme can be found in Table 3.

Experiences with the use of the V@W-Q23

Discussing only a few items is enough – Patients indicated that discussing topics relevant to their work-related problems was of utmost importance to them. On the other hand, professionals prioritised discussing items where patients' responses deviated from their expectations, whether positively or negatively. Healthcare professionals found this strategy of focusing solely on items important to either the patient or the professional to be time-efficient and effective. This approach also seemed to meet patients' needs, as they reported high levels of satisfaction.

> *"So I think it's good the way it went. You fill in [the V@W-Q23] at home, and if something unusual comes up, [the cardiologist] quickly reviews it and can then discuss this item with you."* – Patient 5 at the cardiologist

Usability – From both the perspective of the patients and healthcare professionals, the majority mentioned that the items of the V@W-Q23 were easy to understand. Only one patient reported to find the questions challenging to comprehend. While the majority of patients expressed being satisfied with receiving the V@W-Q23 digitally, the same patient expressed the preference for completing the questionnaire through verbal communication.

Relevance of the content – All participants confirmed that the V@W-Q23 did not contain irrelevant items nor omitted any relevant ones. However, one insurance physician noted that patient-reported information on the patient's work participation is less relevant, because this information from the patient is already registered in their system.

Appropriateness of time investment prior to consultation – All patients expressed satisfaction with the time required to complete the questionnaire. Also the occupational and insurance physicians expressed that the time needed to review the completed V@W-Q23 prior to the consultation fits within their available time. In contrast, some of the cardiologists and practice assistant general practitioners reported that the time required to review the questionnaire prior to the consultation did not align with their time constraints.

Perceived impact of the V@W-Q23

Better understanding of personal circumstances – Patients reported that completing the V@W-Q23 encouraged them to reflect on their work situation, better preparing them for the consultation. Some patients indicated that this moment of reflection was an emotional process as they were still coming to terms with their circumstances. Healthcare professionals from all professions reported that reviewing the patient's results prior to the consultation provided them with new insights regarding the context of the patients work-situation, as signalling uncertainty about returning to work, poor support from the employer, and reporting poor interdisciplinary communication. This better understanding among the professionals was also highlighted by the patients, conveying a sense of being valued.

More focus and awareness to the topic work – Patients and professionals noted an increased focus and awareness on work-related issues during consultations in both cardiology and general practice compared to usual practice.

> *"I am more aware [of the topic work] now. Now I think: oh yes, how do they deal with it at work? Before using the [V@W-Q23] I didn't really think about asking those questions."* – Practice assistant general practitioners

Better structure and more interaction during consultation – Patients and professionals reported an improved structure and engagement during consultation when discussing work-related issues using the V@W-Q23. The occupational physician and cardiologist, who reviewed all items with the patient and discussed any issues encountered, found it valuable to use the V@W-Q23 items as a new framework for work-related conversations. This strategy of using the V@W-Q23 as new structure in consultations also led to more interaction, as reported by patients.

Conversation starter for overlooked work-related topics – The professionals reported that the insight from the V@W-Q23 helped them to already determine what and how to discuss work-related topics, in which patients' answers to the items served as a starting point to ask further questions and delve deeper into these topics. The patients acknowledged that the strategy of professionals using the results as a starting point in conversation, resulted in discussions of work-related topics that were typically not addressed, enhancing the quality of the consultation. Also patients reported that, handing in the V@W-Q23 beforehand, made it easier for them to start a conversation about their work-related challenges.

> *"Filling out the V@W-Q23 has made a difference, because it provides an easier way to address work-related issues. It has given me some support to bring up an important point."* – Patient 11 at the cardiologist

Higher impact for patients on temporary sick leave or experience problems while working – Patients who are currently on (partial) sick leave or experience problems while working reported that the use of the V@W-Q23 had highly impacted their (preparation for) consultation. Patients in stable work conditions experiencing no problems, as well as those not employed and without prospects of employment, reported that the use of the V@W-Q23 had less impacted their (preparation for) consultation. In addition, patients who met with professionals within cardiology and general practice who usually involve work-related topics in their consultation, or those whose V@W-Q23 was overlooked during consultation, did report they did not perceive any impact of the V@W-Q23 during their consultation. Moreover, the professionals noted that the use of the V@W-Q23 had a higher impact on their consultation when the results of the patient showed any deviation from their expectations, merely than only confirming their expectations.

Barriers to the use of the V@W-Q23

Low health literacy of patients – Professionals highlighted that proper completion of the V@W-Q23 may be hindered by low health literacy. Therefore, the professionals highlighted the importance of making the questions as simple as possible and suggested to explain the content of the V@W-Q23 to patient, for example by adding a video explaining the individual items.

Lack of knowledge on the added value – In addition, professionals highlighted that proper completion may be hindered by a lack of knowledge of the patients on the added value of completing the V@W-Q23. Therefore, professionals highlighted the importance of explaining the purpose of the V@W-Q23 to patients, for example in the cover letter. Additionally, a practice assistant general practitioner expressed a lack of knowledge and understanding regarding her own role and patients' expectations in work-focused healthcare, being a barrier to its use.

Limited time – Both professionals and patients emphasised the importance of thorough review of the completed V@W-Q23 by the professional. However, they acknowledged that professionals may not always meet these preparatory demands because of limited time. In addition, limited time was also mentioned as a barrier for the use of the V@W-Q23 during consultation in the practices of cardiology and general practice.

Prioritising the medical aspects over work-related issues – Both patients and professionals reported a barrier for the use of the V@W-Q23 within cardiology and general practice practices, since these practices still prioritise the medical aspects over work-related issues.

Fear that discussing work-related issues will stir up emotions – A cardiologist who did not address the V@W-Q23 during consultation explained that she refrained from doing so because the patient was not employed and had no prospects of employment and, therefore, considered it a too sensitive topic evoking emotions taking too much time.

Fixed rules and regulations – During one real-life consultation in social insurance medicine, the V@W-Q23 was not addressed at all. During this consultation an assessment of the patient's work capacity was performed. This professional explained that, due to strict guidelines for this specific disability benefit assessment, there was no room to discuss the results or provide relevant reintegration advice during the assessment.

> *"While I do find it important to discuss the patient's perspective and offer appropriate work functioning and participation advice, during a claim assessment as part of the Work and Income according to Labour Capacity Act I have to assess the medical status of the patient following strict guidelines, in which discussing the V@W-Q23 does not fit. (..) I believe there is more room to discuss the patient's perspective and offer appropriate participation advice in the Sickness Benefits Act."* – Insurance physician

Too burdensome to complete for every healthcare professional – Patients indicated that completing the V@W-Q23 would be too burdensome for each professional individually.

Facilitators to the use of the V@W-Q23

Broader applicability – Patients with comorbidities reported to struggle answering the items focusing solely on their CVD. As a facilitator for its use, both the patients and professionals suggested that the V@W-Q23 should be made broader applicable to all chronic conditions, so it can add value more generically.

Repeated assessments for monitoring progress – Professionals acknowledged that the V@W-Q23 enables the standardisation of measuring patients' views on their own work-related situation, providing valuable insights into changes over time allowing for better alignment of reintegration strategies. Therefore, repeated measurements for monitoring progress were reported as a facilitator for the impact of the V@W-Q23.

Clearly establish responsibilities – To facilitate a more sustainable use, professionals recommend to clearly establish who is responsible for sending, receiving and processing the V@W-Q23.

> *"That questionnaire also has to be sent [to the patient], when returned it automatically has to end up with the secretary. And they need to schedule 10 minutes before the consultation for [the physician] to review the completed [V@W-Q23] list. That requires some coordination."* – Insurance physician

Optimise design – Professionals proposed a graphical redesign in which all answers are displayed on a single page, visually depicting changes after each completion of the questionnaire, to serve as a visual facilitator. Additionally, a patient suggested that a way to mitigate the time investment required for the questionnaire would be to allow patients to highlight the items they consider most crucial.

Integrate into electronic health records – To facilitate easy access, professionals from the various professions mentioned the need to integrate the results of the V@W-Q23 into electronic health records.

Table 3. Representative quotes of the qualitative data

Theme	Representative quote
Experiences with the use of the V@W-Q23	
Discussing only a few items is enough	"So I think it's good the way it went. [As the patient] you fill in [the V@W-Q23] at home, and if something unusual comes up, [the cardiologist] quickly reviews it and can then discuss this item with you." – Patient, consultation with the cardiologist
Usability	"The [items] were clearly stated, so it wasn't that I had to read a question twice or that I didn't understand it." – Patient, consultation with the occupational physician "[The V@W-Q23] was very clear, and I actually have no points for improvement." – Insurance physician
Relevance of the content	"So I did not see any redundant questions in [the V@W-Q23]." – Patient, consultation with the occupational physician 'I think [the V@W-Q23] provides useful information. Above all, I found it insightful." – Cardiologist "I don't think that the data on [current work participation] needs to be included, because [the Dutch Social Security Institute: the Institute for Employee Benefits Schemes (UWV)] already has that information. We don't need to ask it the patient." – Insurance physician
Appropriateness of time investment prior to consultation	"No, [filling out the V@W-Q23] takes only about fifteen or 25 minutes. For me, it's not burdensome at all. I wouldn't mind filling it out again for every consultation." – Patient, consultation with the occupational physician "Because [the V@W-Q23] takes very little time and we have plenty of time to prepare… [Studying files] is a big part of our job. More than in a general practice, (…) they have one minute to prepare. [In social insurance medicine] we can really go through the files. So no, it really… takes little time and it fits perfectly." – Insurance physician
Perceived impact of the V@W-Q23	
Better understanding of personal circumstances	"First of all, [the V@W-Q23] makes you more aware and helps you reflect on your personal circumstances. (..) It gives you some insight into your personal circumstances. (..) So that you are better prepared for consultation. Because by filling out the [V@W-Q23], you have already thought about these things. And you have thought about what needs to be discussed." – Patient, consultation with the occupational physician "[The V@W-Q23] also gives you a bit of an idea of how [the patient] is positioned in the situation. That provided me with some more information. (..) [The patient] hadn't expressed that so explicitly to me in an earlier consultation, and the [V@W-Q23] brought that out." – Occupational physician
More focus and awareness to the topic work	"There was clearly more interest [in the topic of work] today." – Patient, consultation with the cardiologist "I am more aware [of the topic work] now. Now I think: oh yes, how does [the patient] deal with [his medical condition] at work? Before using the [V@W-Q23] I didn't really think about asking those questions." – Practice assistant general practitioners

Better structure and more interaction during consultation	“In fact, the questions the occupational physician asks [during consultation] should already provide enough information to conclude something [about work capacity], but of course - such a [the V@W-Q23] makes it much more structured.” – Patient, consultation with the occupational physician “[During consultation] there was more interaction between [the occupational physician and me because of the V@W-Q23]. Otherwise, [the occupational physician] has to search for things to know, and now that is somewhat predetermined. (..) By filling out the [V@W-Q23], the conversation is better than the other times. Then it was often more one-sided, more from [the OCs] side.” – Patient, consultation with the occupational physician
Conversation starter for overlooked work-related topics	“I always discuss the patients vision [on their own (future) work capacity]. And [the V@W-Q23] fits very well within [this part of the consultation], because then [insurance physicians] discuss: if the patient thinks he/she can stay at their own work? How it should be adjusted, or if lighter work is possible? So this really aligns very well with [the V@W-Q23]. (..) I can also ask: why is [the answer on the V@W-Q23] a two? Why not a three or what? What [other work] could you do? What do you need? So you could actually… It could really be a good starting point for this discussion.” – Insurance physician “Filling out the V@W-Q23 has made a difference, because it provides an easier way to address work-related issues. It has given me some support to bring up an important point.” – Patient, consultation with the cardiologist
Higher impact for patients on temporary sick leave or experience problems while working	“I think [the impact of the V@W-Q23] depends on the answers you give, and if your answers are very consistently on one side - especially on the high side, that it’s going well - then [the V@W-Q23] doesn’t add much value. Whereas, I think, if it’s on the other side, then [the V@W-Q23] can add a lot of value.” – Patient, consultation with the occupational physician “I am interested in the outliers. (..) I examine [the V@W-Q23] for outliers, more than the results that fall within my expectations, and then I think: why does someone choose, for example, [to answer] ‘not at all’ or ‘fully supported’ [at the work environment question of the V@W-Q23]? And if [the results] are more neutral then I find them less interesting.” – Cardiologist
Barriers to the use of the V@W-Q23	
Low health literacy of patients	“The only thing is that [patients with a low health literacy] really need some further explanation on the items. That might be a point of… I don’t really know what to do with that further. (..) So this is the written questionnaire, but maybe [the items can be explained more] through an additional video.” – Insurance physician
Lack of knowledge on the added value	“Well, in my patient population, I think there will be a large percentage that won’t fill in [the V@W-Q23]. So I think the main barrier will be that patients don’t fill it out since they do not see the added value or they think (..) I don’t feel like it.” – Insurance physician “No, I still don’t quite see my role [in work-focused healthcare].” – Practice assistant general practitioner
Limited time during consultation	“[The V@W-Q23] also takes a lot of time to discuss.” – Patient, consultation with the cardiologist
Prioritising the medical aspects	“For [the cardiologists] [the topic work] not very important or something. (..) They are still too medically focused.” – Patient, consultation with the cardiologist
Fear that discussing work-related issues will stir up emotions	“I think [work] is be a sensitive topic. I think that for people who are sick and would rather work (..) but cannot, (..) if you bring up this emotional topic [the topic work], it can take quite a lot of time.” – Cardiologist
Fixed rules and regulations	“While I do find it important to discuss the patient’s perspective and offer appropriate participation advice, during a claim assessment I have to assess the medical status of the patient following some strict rules, in which discussing the V@W-Q23 does not fit. (..) I believe there is more room to discuss the patient’s perspective and offer appropriate participation advice in the Sickness Benefits Act.” – Insurance physician
Too burdensome to complete for every healthcare professiona	“And in my case, you have so many healthcare providers, you have the cardiologist, physiotherapy, internist. If you have to fill out a questionnaire for all of them, it becomes too much. I can imagine that if you are with one doctor, it is manageable. But I see so many healthcare professionals, that for each time [to fill out] the V@W-Q23, it may not be burdensome but it becomes annoying.” – Patient, consultation with the occupational physician
Facilitators to the use of the V@W-Q23	
Broader applicability	“The [V@W-Q23] question: do you think you still have the energy to work? (..) Then you don’t think: [The fact] that I have less energy, could that also be from that viral infection? Or could it be from those my heart problem? Should I answer that question so that it points to [my heart problems]? That becomes very complicated, I think.” – Patient, consultation with the cardiologist “Yes, I think you could also use [the V@W-Q23], for example, within other patients [populations].” – Practice assistant general practitioner
Repeated assessments for monitoring progress	“With [repeated assessments] you can see if there is any improvement. If I score a 5 now and it becomes a 7 [next time], that would mean I feel more supported [in the work environment]. The occupational physicians can then say, yes, that is an improvement, and if there is a deterioration, you can discuss it with human resource.” – Patient, consultation with the occupational physician
Clearly establish responsibilities	“That questionnaire also has to be sent [to the patient], when returned it automatically has to end up with the secretary. And they need to schedule 10 minutes before the consultation for [the physician] to review the completed [V@W-Q23] list. That requires some coordination.” – Insurance physician
Optimise design	“You can show [the results] with colors and bars. I think that would be very useful to do. (..) So [the professional] can quickly see how to interpret [the results].” – Cardiologist
Integrate into electronic health record	“I already find [the V@W-Q23] easy, but you could ensure that it gets [integrated] into the medical file, (..) that it becomes part of the medical record, so [the professional] can click on it in the file. That’s an added convenience.” – Occupational physician

DISCUSSION

The V@W-Q23, designed to measure work-related outcomes in patients with CVD, was evaluated through user testing in 16 real-life consultations across practices in occupational medicine, social insurance medicine, general practice, and cardiology. The V@W-Q23 was primarily utilised for discussing items of interest to the patient or those that deviated from the professional’s expectations. Interviews indicated that both patients and professionals found the items in the V@W-Q23 to be relevant, easy to understand, and manageable within acceptable time constraints. Patients and professionals reported the impact was beneficial, resulting in better understanding of personal circumstances, increased attention to work-related topics, improved structure of the consultation, enhanced interaction between patient and professional, and an effective conversation starter to discuss work. Its impact was rated higher for patients on temporary sick leave or those facing work-related issues while working. Several barriers were identified to the use of the V@W-Q23, including low health literacy, a lack of knowledge about one's role in work-focused healthcare, time constraints and the prioritisation of medical aspects. To enhance the use and impact of the V@W-Q23, both patients and professionals emphasised the importance of repeating measurements over time, presenting results in a more appealing layout, clearly establish who is responsible for sending, receiving and processing the V@W-Q23, and integrating it into electronic health records. It was also suggested that the V@W-Q23 could be used for other chronic health conditions.

Previous literature suggests that the success of PRO implementation is influenced by its ease of use [21], which is closely linked to its impact [22]. In our study, most patients and professionals found the V@W-Q23 easy to understand, were satisfied with the time required, and reported a positive impact on consultations, suggesting a favourable outlook for future implementation. Completing and reviewing PROs at one's own pace may also contribute to this [23]. However, time constraints, especially noted by cardiologists, remains a barrier for the use of PROs in curative care [21].

In concordance with other studies we found that the V@W-Q23 seems to align with previously reported effects of disease-specific standard sets, as encourage patients to reflect on their own circumstances, helping them to feel better prepared for consultations, and encouraging them to raise their issues [24]. Furthermore, our study revealed that the V@W-Q23 helped facilitate conversations between patients and professionals on work-related topics which are often lacking in the curative sector, despite patients' desire [25]. A key finding in our study was that the impact of using the V@W-Q23 seemed to be higher for those on temporary sick leave or those experiencing problems while working. Patients in stable work conditions and those not employed without employment prospects reported less impact, which aligns with literature suggesting that the perceived value of standard sets is lower when the patient's health status is either too low or too high [21].

Our study suggested that low health literacy might be a barrier to complete the V@W-Q23, a finding supported by earlier experiences that also indicate print literacy and technology literacy can serve as additional barriers to completion [23]. In our study cardiologists particularly preferred a graphical redesign to make reviewing the V@W-Q23 results more easy. For this, inspiration can be drawn from existing standard sets that use colors and images to present results in a visually appealing way [26,27]. Professionals may perceive PROs as intrusive to their clinical practice and critically question how to integrate them effectively [28]. However, we believe that the current shift in healthcare towards a more holistic focus on functioning, along with increased patient involvement, will help change this perception [29].

Although developed for CVD, both professionals and patients recognize significant opportunities in applying the V@W-Q23 more broadly for other health conditions. The decision to generalise the use of the V@W-Q23 for other conditions must be carefully considered and should be further explored. While generic PROMs may lack sensitivity to condition-specific outcomes, limiting their implementation at the individual level, they may offer greater applicability at a systems level, aligning with the great diversity of practices involved in work-focused healthcare [30].

Methodological considerations

A strength of this study is that the V@W-Q23 was used during usual care consultations in various healthcare settings, including four professions, providing real-life insight into its use and impact and ensuring diversity in practices and population. Furthermore, choosing a mixed methods approach, capturing both the perspectives of healthcare professionals and patients, allowed us to gain insight into the VW-Q23's use and impact during consultations. A limitation of this study was the limited amount of user tests conducted within general practice and social insurance medicine which may have impacted the generalisability of findings for these settings which should be further explored.

Implications for practice

If integrating the V@W-Q23 into practice is considered, it needs to be incorporated into existing workflows. However, earlier experiences show that real-life implementation of standard sets remain challenging [31]. Local policy changes and technical integration are important to facilitate their implementation. As a first step, we recommend healthcare professionals could explore the use and potential benefits of the V@W-Q23 in their individual practice. Following the experiences of earlier PROM implementation, training and ongoing support for healthcare professionals may be crucial for effective and consistent use of the V@W-Q23 [31].

Implications for future research

While in the current study the V@W-Q23 was user tested in four professions, many more are involved in work-focused healthcare [11]. Future research should explore its use throughout all practices, to understand its applicability and effectiveness during the full healthcare trajectory. It would also be valuable to study if the use of the V@W-Q23 may contribute to better collaboration and coordination between different professionals. Furthermore, future research should focus on the V@W-Q23's implementation and technical integration into everyday practices. Practical guidelines for PROM implementation can guide this process [31]. Additionally, exploring the V@W-Q23's generalisability beyond cardiovascular issues could broaden its impact [32].

CONCLUSSION

The current study indicates that the use of the V@W-Q23 are experienced mainly positive by both the patients and healthcare professionals. It demonstrates some positive impact during (preparation of) the consultation, resulting in a better conversation about work-related challenges. Managing the barriers and facilitators during further implementation, may improve the V@W-Q23 use and impact.

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SUPPLEMENTARY MATERIALS

Additional file 1: Contains supplementary Materials 1-4

9

General discussion

In this thesis, we aimed to enhance the creation of value for patients in work-focused healthcare by applying the foundational principles of value-based healthcare (VBHC) and human-centred design (HCD). Consequently, we explored how value can be created in social insurance medicine from the perspective of healthcare professionals (Part I), mapped patients' experiences and needs throughout their work-focused healthcare trajectory (Part II), and developed a standard set of work-related outcome measures most important for patients experiencing work participation problems due to cardiovascular diseases (CVD) and evaluated its impact in real-life consultations (Part III).

In this general discussion, we map our research journey and further elaborate on the key findings. We also interpret these findings in relation to the four pillars outlined in The Integrated Care Agreement [1]. Furthermore, we outline implications for patients, healthcare providers and the healthcare system, and offer recommendations for future research.

MAPPING THE RESEARCH JOURNEY AND KEY FINDINGS

In Figure 1, (a selection of the) key findings from each chapter are presented. Throughout this thesis, we have leveraged earlier insights to guide our subsequent research steps. This iterative process is also shown in Figure 1. Our research journey began with an exploration of key enablers for the adoption of VBHC in social insurance medicine (RQ1, Chapter 2). We discovered that these enablers included understanding the meaning of value from both the patient's and the professional's perspectives, as well as identifying the most important work outcomes for patients. Given the positive results and attention for using outcome assessment to drive value creation in the Netherlands, alongside the need to create value bottom-up, we decided to focus our subsequent research steps on these key enablers.

In the different studies, we identified opportunities to create value in social insurance medicine from the perspective of healthcare professionals (Chapter 3) and needs of patients in their work-focused healthcare trajectory (Chapter 4, 5 & 6). The development of a patient-centred work-related outcome set resulted in a minimal set of nine key outcome domains (Chapter 7). To create this set, we formed a working group that included representatives from all relevant stakeholders in the work-focused healthcare trajectory (Chapter 5). We also used the identified needs of patients in work-focused healthcare to create a comprehensive list of outcomes as a starting point for the consensus process (Chapter 4, 5 & 6). Following the development of the outcome set, we evaluated the use of the Value@WORK-Q23 (V@W-Q23) – a 23-item questionnaire designed to measure these key outcome domains (Chapter 8). The results showed that its use positively impacted the experiences of both healthcare professionals and patients, indicating that the questionnaire adds value to the process.

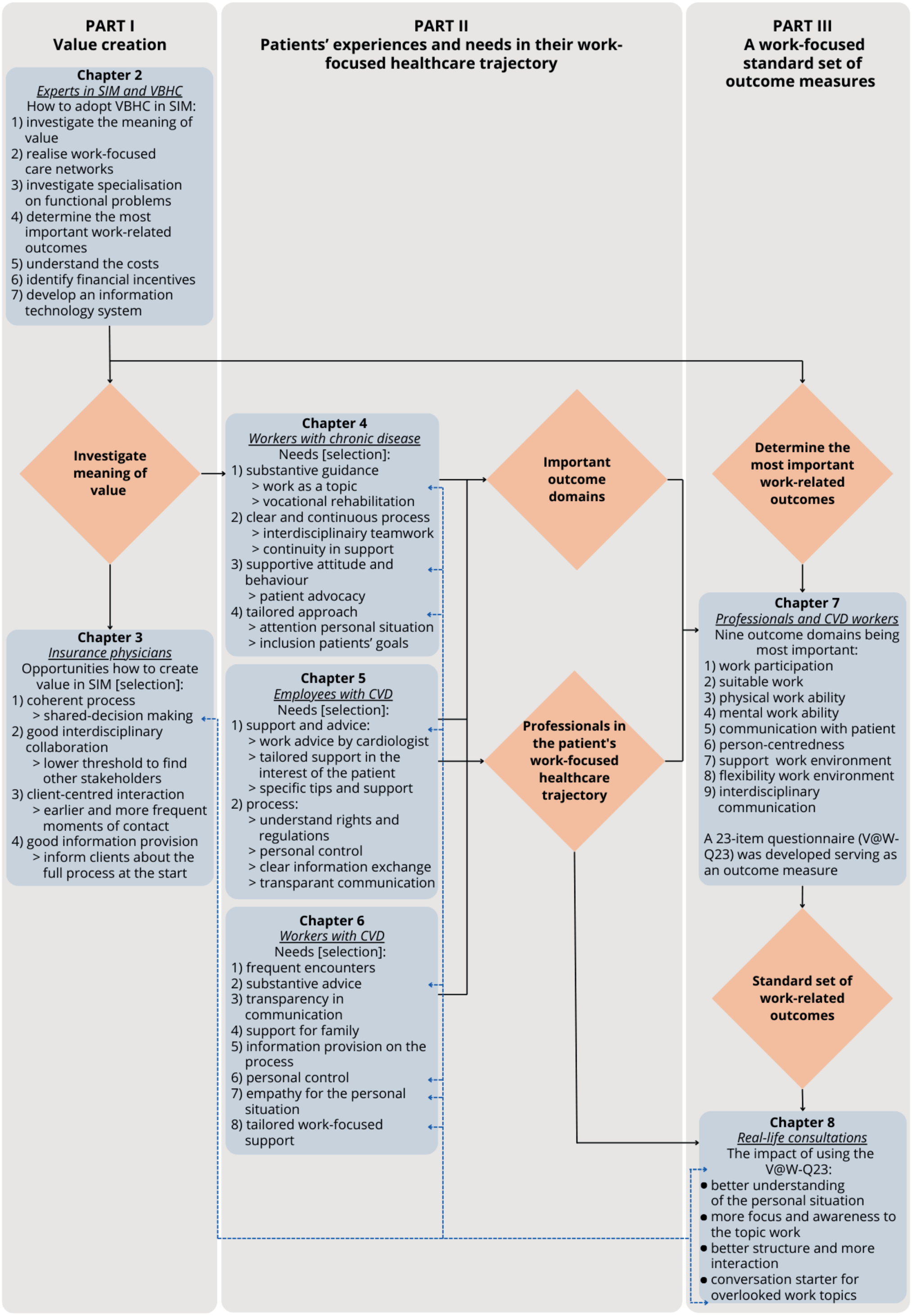

Figure 1. Mapping the research journey and key findings. Legend: Diamond shapes: Insights that guided the subsequent research steps. Blue arrows: impact of the V@W-Q23 aligns with these previously identified needs and values. SIM; social insurance medicine. VBHC; value-based healthcare.

The Integrated Care Agreement includes commitments between the Dutch government and healthcare organisations, aiming to enhance healthcare in the Netherlands and prepare it for future challenges. In 2022, the Integrated Care Agreement established that care should be value-driven, developed collaboratively with and centred around the patient, delivered in the appropriate setting, and focused on health and functioning rather than illness [1]. Below, we discuss the interpretations of our findings with regard to these pillars targeting value creation.

Creating value in work-focused healthcare: A long way to go

The Integrated Care Agreement defines value-driven care as care that is effective, based on scientific evidence, provides added value for the patient and ensures the efficient use of people, resources, and materials [1]. We chose the concept of VBHC as our foundational framework as VBHC aims to create a healthcare system that is more efficient, effective and centred around the well-being of patients [2]. Other concepts, such as Lean and Six Sigma [3], aim to improve healthcare services, primarily focusing on process optimisation rather than directly improving quality of care. In contrast, the VBHC approach addresses the broader challenges posed by increasing healthcare demands, extending beyond mere process optimisation [4-6].

The core principles of VBHC provide a strong foundation for maximising value creation in work-focused healthcare services. Nonetheless, not all VBHC principles are considered suitable for adoption within the context of social insurance medicine (Chapter 2). When comparing the needs of individuals experiencing work-related difficulties due to CVD (Chapters 5 & 6) with those of patients facing similar challenges due to other chronic diseases (Chapter 4), we found that the needs of both groups — including psychological support, information about rights and regulations, transparency in processes, and effective interdisciplinary teamwork — are strikingly similar. This finding suggests that the needs of patients in work-focused healthcare are not specific to a single medical condition. Therefore, specialisation around a single medical condition may not add value in work-focused healthcare, a view supported by social insurance medicine experts who expressed concerns about the feasibility of condition-specific specialisation (Chapter 2).

While the findings suggest that most principles of VBHC can provide a strong foundation to maximise value in work-focused healthcare services (Chapter 2), the question remains: How can value creation be accomplished? Earlier literature highlights that the first steps toward value creation involve understanding the shared health needs of patients and identifying outcome measures to monitor value [7, 8]. However, Chapter 2 shows that further steps include understanding the costs associated with those outcomes, identifying financial incentives that promote value-driven social insurance medicine, and developing an information technology (IT) system for data exchange. In this thesis, we have taken several steps in the right direction, but further action is required to create real value through system changes, such as altering cultural and collaboration structures [9]. We still have a long journey ahead to reach optimal value in work-focused healthcare. However, as VBHC experts emphasised in Chapter 2, it is not necessary to wait for the completion of all principles before adopting VBHC in practice: The first step is simply to get started.

Better meet the patient’s work-related needs: Realistic but complex

This thesis underscores that both patients and professionals recognise opportunities to create value for the patient, by better meeting the patient’s needs in work-focused healthcare. A notable observation when comparing the opportunities to better meet the patient’s needs from the professional’s perspective (Chapter 3) with those expressed by patients (Chapter 4, 5 & 6) is the alignment between the two. For example, both professionals and patients emphasise the importance of effective interdisciplinary collaboration and clear communication throughout the process. This finding suggests that professionals recognise patients’ needs, which strengthens the potential for bottom-up value creation.

However, a full transition to a work-focused healthcare system entirely centred on patient needs cannot be achieved overnight. For instance, staff shortages make it difficult to regularly check in with patients and there is often no one available to provide follow-up support (as outlined in the needs discussed in Chapter 5). Additionally, the fragmentation of the work-focused healthcare systems leads to a lack of coordination, creating difficulties in collaboration and information sharing. Moreover, the various healthcare systems operate under different funding mechanisms, which causes a lack of alignment, limiting the ability to offer personalised, patient-centred care that addresses all aspects of a patient’s life.

Also, it is essential to strike a balance between health- and work-related needs, rather than solely focusing on one of these two. A singular focus on work-related needs can overlook the broader health and personal well-being of the patient, potentially missing or inadequately addressing underlying health issues, which could ultimately hinder long-term success in the workforce. Conversely, focusing exclusively on health needs may overlook the patient’s ability or readiness to work, leading to interventions that improve health but fail to address work participation. Moreover, in the context of work-focused healthcare, the patient's needs must always be considered in relation to the capabilities of the organisation or employer. An intervention based solely on the patient's needs, without considering the specifics of their workplace, can result in a mismatch between what is best for the patient’s health and what is feasible for the employer.

With collective commitment, work-focused healthcare will gradually become more patient-centred. However, given entrenched systems and habits, full alignment is unlikely. We can start with achievable improvements, such as better patient information and more transparent collaboration between healthcare professionals.

Measure patient-centred outcomes: The first step towards value-driven work-focused healthcare

Earlier literature highlights that the first step towards value creation is to identify and measure patient-centred outcomes to monitor value [7, 8]. This need to measure patient-centred outcomes is further underscored by the Integrated Care Agreement, which stresses the importance of care focused on health rather than illness and developed in collaboration with the patient [1]. Empowering patients to actively participate in their healthcare decisions, particularly in complex areas such as work participation and rehabilitation, requires knowledge and guidance from healthcare professionals. However, healthcare professionals in curative care are often focused on treating illness rather than promoting overall health, whereas occupational health physicians report a lack of evidence on the effectiveness of specific interventions for work reintegration (as reported in part I & II of this thesis). As a result, patients do not receive sufficient information to make decisions that align with their preferences, needs and goals. Therefore, measuring patient-centred outcomes are essential in achieving care that prioritises health over illness and is developed in collaboration with the patient.

When comparing the results from user-testing of the V@W-Q23 (Chapter 8), with the identified needs of patients (Part II), it is evident that the V@W-Q23 has the potential to better shape care around the patient’s needs (see blue arrows in Figure 1). For instance, several chapters highlight a clear demand for discussing work-related issues within curative care and rehabilitation. The user tests of the V@W-Q23 demonstrated that its use helps to increase focus and awareness on the topic of work in these settings. Furthermore, both patients and professionals reported a deeper understanding of the patient's personal situation, which aligns with the identified need for a more personalised approach, specific advice and higher levels of empathy. Moreover, the structured format and enhanced interaction facilitated by the V@W-Q23 may encourage a supportive attitude and behaviour of professionals. Additionally, the completion of the V@W-Q23 helps professionals to understand the patient's satisfaction with communication and information exchange. Suggesting that the use of the V@W-Q23 can prompt professionals and care teams to offer more targeted advice and promote shared decision-making. These findings highlight the potential of patient-reported outcomes (PROs) to improve care quality by helping patients raise issues and enabling healthcare professionals to build rapport and guide the care process effectively [10].

Despite the proven potential to personalise care and enhance value, we feel that the focus on implementing the measurement of PROs has diminished in recent years. For instance, the Dutch Patient Federation shared with us that they prioritise other projects, as the real-world implementation of PROs has proven challenging. Primary challenges in implementing PROs are healthcare professionals' challenges in integrating them into daily practice [11] and patients' lack of support in completing questionnaires or understanding the results [12]. However, given that measuring the most important outcomes for patients is essential for transitioning to value-driven care [2], we believe these challenges should not be seen as a reason to scale back efforts but as an opportunity to push forward. A key strategy which proved to help overcome the challenges is training and education for healthcare professionals, helping them to recognise the value of PROs and how to integrate them into daily practice [13]. Moreover, embedding PROs into shared decision-making—where they serve as the foundation for discussions between patients and healthcare providers regarding care strategies—can significantly enhance patient engagement and improve the overall care process [14].

To stimulate the implementation of patient-centred outcomes, we advocate for a more explicit focus on measuring and including the most important outcomes for patients in The Integrated Care Agreement. Currently, the agreement describes monitoring including measuring the effects of efforts on both the health of individuals and the financial and operational sustainability of the healthcare system [1]. However, the agreement does not explicitly state that these outcomes should include those most important to the patient—those that add real value. By sharpening this focus, the agreement could ensure that the outcomes truly reflect what matters most to patients, ultimately guiding their goals to foster more personalised care developed in collaboration with the patient and with a specific focus on health and functioning rather than illness.

Human-centred design: Deepened our understanding of value-driven work-focused healthcare

The three key characteristics of HCD – understanding people, early and continuous stakeholder engagement, and a systems approach [15] – align seamlessly with the goals of The Integrated Care Agreement to develop care together with and around the patient, which takes place in the right setting. Therefore, in this thesis, the key characteristics of HCD were integral in structuring the studies, selecting methods and involving stakeholders. Guided by this philosophy, patient journey mapping was utilised to identify the system and its stakeholders, and to explore innovation opportunities to better meet patient’s needs over time and place. In multiple Chapters, sensitising booklets and preparatory information were used to quickly engage interviewees, thereby gaining deeper insights in their perspectives [16]. Additionally, during the full development process of the standard set, a systems approach was adopted, involving representatives of all stakeholders and conducting user-testing in real-life settings to evaluate users’ experiences.

In line with HCD methodologies [17], this thesis primarily employed qualitative methods to identify patients’ needs and evaluate users’ experiences. This approach contrasts sharply with the more traditional research methodologies used within work-focused healthcare, which often involves randomised controlled trials with large samples and quantitative data. HCD researchers earlier already mentioned that this contrast makes it challenging to convince stakeholders within the healthcare sector of their effectiveness [18]. However, although this thesis represents only a small step towards HCD, it is found to be particularly promising for a system such as work-focused healthcare, given its holistic, systems approach that encompasses the multidisciplinary nature, diverse work processes, and numerous regulations [15]. For example, the patient journey methodology enabled us to look at the entire picture instead of focusing on singular touchpoints, which is necessary to identify innovation opportunities across the full work-focused healthcare system. In addition, Carayon et al. suggested that using the approach of mapping the patient journey can improve outcomes, including outcomes of importance to patients [19]. This philosophy aligns with the current focus in healthcare towards integrated, value-driven delivery of care at the right time and place [20]. Therefore, in line with other healthcare sectors where the added value of these methodologies is increasingly acknowledged, we also believe that these methodologies are valuable for our sector.

We believe that our patient journey mapping study (Chapter 5) contributes to the standardisation of the method in cross-domain and heterogeneous healthcare settings. This is necessary because, although the patient journey technique is increasingly employed in the healthcare domain, there is still a lack of frameworks and standardisation regarding its use context and purpose, analysing techniques, and techniques for mapping and visualising these journeys [21, 22]. Earlier published patient journey maps often featured shorter timelines, were primarily set in hospital environments with a limited number of stakeholders, focused on the journey of a single or homogeneous patient group, and included fewer layers of information in their visualisations [23-25]. Our patient journey map addressed these gaps by offering a more detailed, inclusive approach that considers a wider range of stakeholders, phases, and information layers to better capture the complexity of patient experiences across healthcare settings.

IMPLICATIONS FOR PATIENTS, HEALTHCARE PROFESSIONALS AND THE WORK-FOCUSED HEALTCHARE SYSTEM

This section examines the implications of the findings in this thesis for patients, healthcare professionals and the work-focused healthcare system. It explains how the findings can be applied in real-world settings to advance value creation in work-focused healthcare in a point-by-point manner.

Implications for patients

Enhances patient engagement – In the process of value creation, patients are active participants in their own care journey. Therefore, patient engagement is of great importance. By using the identified needs and the V@W-Q23 as a guide, patients can assess their personal situation and engage in meaningful conversations with healthcare professionals about their work-related challenges. Empowering patients to take an active role in their care process.

Supports self-management – The V@W-Q23 tool enables patients to evaluate their work environments and initiate constructive dialogues with professionals regarding work-related difficulties. This approach strengthens patients' self-management, ensuring their voices are heard and their needs are met.

Improves patient value – Our bottom-up approach, which identified value for patients from both the professionals' and patients' perspectives and the most important outcomes, fosters team readiness and collaboration. This method ensures that the healthcare team is sufficiently involved, and thereby stimulated and willing to address the unique needs of patients, ultimately improving patient value.

Implications for healthcare professionals

Stimulates including work as treatment goal – As identified in the needs assessments, a key step toward value-driven, work-focused healthcare is ensuring professionals discuss work as part of treatment. Patient experiences show that this is often overlooked, particularly by medical specialists, general practitioners and rehabilitation experts. This thesis aims to raise awareness of the importance of prioritising work as a treatment goal.

Provides tools to deliver value-driven work-focused healthcare – Healthcare professionals aim to provide the best care for their patients, but they need practical tools to do so effectively. In this thesis we further delved into some key components of providing VBHC, equipping professionals with tools to deliver value-driven work-focused care. The identified needs can serve as a checklist, guideline or communication tool during consultations, and also the improvement opportunities from the patient-journey study can be directly applied by professionals to create value. Furthermore, despite limited infrastructure, we recommend professionals start using the work-related outcome set at the individual level enhancing understanding of patient situations, work-related topics and patient-provider interactions. Organising for example peer-to-peer discussions can help promote effective use of these tools [26].

Promotes interdisciplinary collaboration – Good interdisciplinary collaboration is found essential to provide value-driven care, yet it remains limited in work-focused healthcare [27]. Our patient-journey map gives healthcare professionals insight into the involvement and roles of other stakeholders in the interdisciplinary team, which may encourage professionals to initiate contact with colleagues more frequently and take up the role as dedicated ambassadors or enthusiastic leaders of interdisciplinary collaboration [28].

Implications for the work-focused healthcare system

Drives the development of policies that support value creation – To drive value-driven work-focused healthcare, policy changes are necessary, shifting away from the volume-based approach to one that prioritises value as the primary goal [1]. By identifying key enablers within social insurance medicine that foster value creation, mapping patient needs in work-focused healthcare and reaching consensus on the most important work-related outcomes, we lay the foundation for policies that stimulate value rather than volume in this sector.

Guides real-world implementation – To effectively implement value-driven care, we believe the work-focused healthcare system can learn from other healthcare domains. Step-by-step approaches to value-driven care, such as from the Amsterdam UMC [28], provide valuable guidance. This step-by-step approach outlines how needs and outcomes should be implemented to strive towards value-driven care. Combining these strategies with the insights on prioritised needs and outcomes from this thesis, we believe a clear framework will emerge for taking concrete steps toward implementation. As outlined in this step-by-step approach, the next step is to also target greater focus on IT infrastructure enabling team collaboration and outcome sharing [28].

Stimulates the integration of value-driven work-focused healthcare in medical education – To embed value-driven, work-focused healthcare in the long term, it is crucial to give both VBHC and work-focused healthcare a prominent place in medical education. In the Netherlands, recent years have already seen major progress in integrating occupational medicine into the undergraduate medical curriculum. However, in line with our findings, physicians-in-training should learn more about creating value in work-focused healthcare. Transitioning to value-based healthcare requires them to adopt a new perspective on their role in multidisciplinary teams, understand value-driven care and prioritise measuring outcomes that matter most to patients [7].

RECOMMENDATIONS FOR FUTURE RESEARCH

This section presents several recommendations for future research to further enhance value creation in work-focused healthcare.

Assess the key enablers in the broader context of work-focused healthcare – We took an important first step towards value creation in social insurance medicine by exploring key enablers for adopting VBHC. However, to achieve value-driven work-focused healthcare, we must identify enablers across all practices involved. While some enablers from social insurance medicine, such as creating work-focused care networks and developing data exchange systems, can be applied broadly, others—such as investigating the meaning of value and specialisation on functional problems—may not. Future research should assess the key enablers for adopting VBHC in the broader context of work-focused healthcare.

Give meaning to the other key VBHC principles – This thesis focused on value creation in work-focused healthcare by addressing patient experiences, needs and outcomes. Additionally, within our Value@WORK project we also explored value creation through collaboration over the last four years (not published yet). However, key VBHC principles, such as measuring costs and integrating value-driven reimbursement, remain unexplored and, therefore, require further research to advance value-driven, work-focused healthcare.

Explore broader applicability of the V@W-Q23 – The V@W-Q23 highlights key work-related outcomes for patients with CVD. However, user-testing revealed that both patients and professionals felt the V@W-Q23 would be more effective if applicable to other chronic diseases. This finding is supported by literature, claiming that disease-specific outcomes may inadvertently create silos between conditions, while value-based healthcare aims to break down silos [29]. Additionally, our research revealed strong interest from other healthcare disciplines in a standardised work-related outcome set. Future research should explore whether the V@W-Q23 can be used for other patient groups with minimal adjustments and integrate it into a wider range of healthcare practices. An earlier student-led pilot study found that patients with various chronic conditions valued current work participation, physical and mental work ability and person-focused care — also included in the CVD standard set, suggesting broader applicability of the V@W-Q23.

Assess V@W-Q23 transferability to international contexts – While most standard sets are developed in an international setting [30], ours was tailored for use in practice within the Netherlands. It remains unclear if this set includes universally important outcomes. Future research should assess its transferability to international contexts and consider developing a global generic standard set to enable global benchmarking and improve consistency in work-related health outcomes.

Evaluate feasibility of the V@W-Q23 – Before implementing the V@W-Q23, its feasibility in terms of patient and administrative burden, workflow logistics, outcome presentation and psychometric properties must be evaluated. To ensure the patient's burden remains manageable throughout their journey, future research should identify the specific moments when the V@W-Q23 provides the most value. Additionally, future research should explore integrating the outcome set into IT systems. Previous studies show that linking outcome data to electronic health records improves usability of outcomes [31], but varying systems across work-focused healthcare domains make workflow optimisation challenging. Furthermore, the V@W-Q23 includes a self-developed item for interdisciplinary communication, as no existing measure was available. Other domains, like person-centredness and work environment support, were adjusted to fit the CVD, work and health context. Future research should validate the content of these measures for relevance, comprehensiveness and comprehensibility [32]. Lastly, defining cut-off values for the outcomes is essential to aid score interpretation, support benchmarking, and enhance their use at both individual and aggregate levels [33].

Test flexible deployment of the V@W-Q23 items – It is proposed that the newly developed outcome set can complement already implemented sets, but adding all 23 items may cause respondent fatigue, decreased motivation and high administrative burden. A flexible approach is needed, allowing outcomes to be added based on the patient's situation. Future research should explore how to implement this flexibility in practice, ensuring relevant outcomes are prioritised.

GENERAL CONCLUSIONS

With this thesis, we have taken the first steps towards understanding how value can be created and defined within work-focused healthcare, and have provided practical approaches to achieve this. Initially, we highlighted opportunities to enhance value within social insurance medicine from the professionals' perspective and mapped the needs of patients in work-focused healthcare. These are critical first steps in shifting from a volume-based approach to one that prioritises value as the optimal goal in work-focused healthcare services. Furthermore, we developed a work-related standard set of outcome measures, crucial for patients experiencing work-participation problems due to CVD. We found that using this V@W-Q23 at an individual level in real-life consultations could create value by providing more focus on the personal situation and improving the structure and quality of work-related discussions during consultations. Initial steps have been taken towards making work-focused healthcare more value-driven, yet there remains a long journey ahead to fully realise its optimal potential. Throughout this journey, all stakeholders – including e.g. healthcare professionals, managers, policymakers and patients – play a pivotal role. Will you join us on our journey to collectively steer towards value-driven work-focused healthcare?

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Appendices

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SUMMARY 'Creating value in work-focused healthcare'

Chapter 1 describes the current challenges in healthcare and a new perspective on illness and health. In the coming years, more people will need healthcare because medical advances have helped them live longer with chronic health conditions. This also means more people will need help to stay in or return to work, especially as people are getting chronic conditions earlier and retiring later. Work-focused healthcare plays an important role. To keep our healthcare system strong and help people stay healthy and autonomous, a movement towards a new perspective on illness and health has been initiated. It is not about what healthcare has to offer or the interests of healthcare providers, but about what people need to function well and independently. The Dutch government's Integrated Care Agreement supports this idea by promoting value-driven care in all aspects and areas of healthcare. Value-driven care includes care that meets patients' needs, takes place in the right setting, and focuses on health rather than illness.

Little is known about how to provide value-driven work-focused healthcare. Therefore, this thesis aims to enhance value creation in work-focused healthcare. Central to this thesis are the concepts of value-based healthcare and human-centred design. Value-based healthcare aims to create the best value for patients by focusing on the health outcomes that matter most to them, compared to the costs needed to achieve these outcomes. Human-centred design aims to create more effective products or services by truly understanding the needs, preferences and experiences of users.

This thesis is structured into three parts, each addressing one research question:

1. How can value be created for patients in social insurance medicine from the professional's perspective?
2. What are the patient's experiences and needs throughout their work-focused healthcare trajectory?
3. Which work-related outcomes are most important for people experiencing work-related difficulties due to cardiovascular disease (CVD), and how does the use of these outcomes impact work-focused healthcare?

Part I. Value creation in social insurance medicine
Since our initial goal was to create value for social insurance medicine, we explored in **Chapter 2** how to adopt the principles of the value-based healthcare concept in this field. Fifteen experts in social insurance medicine or value-based healthcare participated in individual and group interviews. They discussed key enablers for successful adoption. Seven key enablers were identified, including: to understanding what "value" means in the context of social insurance medicine, integrating social insurance medicine into work-focused care networks, and identifying the most important work outcomes for patients. These findings determined the further steps in this research.

To investigate the meaning of "value" in the practice of social insurance medicine, in **Chapter 3** we examined what insurance physicians find valuable in their work. Seven insurance physicians from the Netherlands were interviewed to understand what helps and hinders value creation, and what opportunities they see to add value for their clients during the work disability assessment. We found that insurance physicians find it valuable for their clients to provide a clear and organized assessment process, in which good teamwork with other professionals, strong client-focused interactions, and sufficient information provision is central. This is yet possible because of the flexibility and length of the consultations, the physicians can request information from other disciplines, and the holistic view they adopt on the client's situation. However, they indicate that they cannot always provide optimal valuable care, for example due to a lack of medical information, limited and late contact options, difficulty finding and contacting other professionals, and complex laws and regulations. Therefore, the physicians stated they could add even more value if all medical information would be available before the consultation, communication with other healthcare providers would be better facilitated, if they would be involved earlier in the client's process, and when clients would received more information of the entire process directly at the start.

Part II. Patients' experiences and needs in their work-focused healthcare trajectory
To understand what patients with chronic conditions need in work-focused healthcare, in **Chapter 4** we conducted a qualitative systematic review. 97 studies were included. We identified 17 subthemes, which we grouped into four main themes. The first theme, substantive guidance, included all needs relating to the specific content of work-focused healthcare, for example the presence of psychological support and receiving practical tips were considered very important. The second theme, clear and continuous process, is about making the healthcare process clear and efficient. This included needs as early access to support and transparency in all steps of the process. The third theme, supportive attitude and behaviour, highlights the importance of professionals having a positive and supportive attitude towards patients. Needs such as a trustful relationship and motivational attitude by the professionals were identified. The fourth theme, tailored approach, focuses on providing care that meets individual needs. This includes needs as receiving more disease-specific information related to work and including the patient's own goals.

To delve deeper into the experiences and needs of employees specific with CVD, we interviewed 17 employees with CVD in **Chapter 5**. Using the patient experience journey mapping approach, we visualised an aggregated work-focused healthcare journey with six phases. The first phase, working, is when the first signs of health problems and functional limitations occur. The next two phases, short- and long-term sick leave, represent a period of full sick leave. The last three phases, start, partial and full vocational reintegration, focus on the return-to-work process. For each of these phases we identified the moments of contact within work-focused healthcare, the involved healthcare professionals, and the employees activities, experiences and needs. By analysing these layers of information, we found nine opportunities to better meet the patient's needs, such as emphasising work adjustments prior to the medical intervention, providing personalised advice on handling work limitations, and encouraging employers to create suitable work positions.

In **Chapter 6**, we focused on understanding the experiences and needs of workers with CVD, based on the principles of person-centred care from the Picker Institute. In addition to the 17 interviews from the previous chapter, two more interviews were conducted with self-employed workers. All 19 interviews were analysed to identify common themes, which were then grouped according to the eight Picker Institute's principles. In total, 28 needs were identified. Some examples of these needs include: taking into account the personal situation when determining the start of work-related care, regular contact with the same healthcare professional, receiving clear work-related advice, transparency in the communication between professionals, good information about the healthcare process, possibility for the patient to influence the process, and empathy for personal situations from the professional. The overview of all the identified needs from the perspective of patients can be used to provide input to tailor and improve work-focused healthcare.

Part III. A standard set of key work-related outcomes for patients with CVD

To measure value, it is relevant to know which outcomes are most important. Therefore, in **Chapter 7** we focused on creating a minimal set of work-related outcomes most important for people with CVD. The working group included 6 patients with CVD and 11 healthcare professionals representing different fields in work-focused healthcare in the Netherlands. Through extensive literature searches, meetings and several rounds of voting, consensus was reached on the scope and target population, the most important outcomes, the most suitable outcome measures, and the key case mix factors. Consensus was reached on a 23-item patient-reported questionnaire, which we named the Value@WORK-Q23 (V@W-Q23). The V@W-Q23 measures the nine most important outcomes: (1) work participation, (2) physical work ability, (3) mental work ability, (4) suitable work, (5) support from the work environment, (6) flexibility of the work environment, (7) communication with the patient, (8) person-centredness, and (9) interdisciplinary communication. Additionally, nine case mix factors that could affect these outcomes were identified. These include demographics such as age and gender, disease specifics like the type of the cardiovascular disease, and work conditions like the workload.

In **Chapter 8** we explored how the V@W-Q23 was used in consultations between patients and healthcare professionals in four areas: occupational medicine, social insurance medicine, general practice and cardiology. User testing consisted of three steps: 1) patients completed the V@W-Q23 in the days prior to the consultation, 2) healthcare professionals reviewed the answers, and subsequently 3) the insights could be used during the consultation by both the patient and professional at own discretion. In total, user testing was conducted during 16 real-life consultations, involving 12 different healthcare professionals and 15 patients. Observations and interviews showed that the V@W-Q23 helped discuss important topics for patients, or answers that deviated from the professional's expectations. Both patients and professionals found the V@W-Q23 easy to understand and relevant. It improved understanding of the patient's personal situations, increased focus on work-related issues, and enhanced communication between patients and healthcare professionals. It was especially helpful for patients with temporary work-related problems. Recommendations for better use and impact included repeated measures, attractive presentation of results, applicability to all chronic conditions, and integration into electronic health records. Some barriers included limited time, other priorities and lack of knowledge about roles in work-focused healthcare.

In **Chapter 9**, we mapped the research journey, and we discussed and interpreted the main findings. In the chapter we also explored the implications of these findings for patients, healthcare providers and the healthcare system, and we provided recommendations for future research. The results reveal opportunities to improve the value of social insurance medicine from the perspective of healthcare professionals. It also shows the needs of patients in work-focused healthcare and introduces a work-related set of outcome measures called the V@W-Q23. These are important first steps toward shifting from a volume-based approach to one that focuses on value in work-focused healthcare services. However, there is still a long way to go before achieving a fully value-driven approach in work-focused healthcare.

SAMENVATTING 'Creëren van waarde binnen de arbeidsgerichte zorg'

Hoofdstuk 1 beschrijft de huidige uitdagingen in de gezondheidszorg en een nieuw perspectief op ziekte en gezondheid. In de komende jaren zullen meer mensen zorg nodig hebben, mede doordat medische vooruitgang hen helpt langer te leven met chronische aandoeningen. Dit betekent ook dat meer mensen hulp nodig zullen hebben om aan het werk te blijven of terug te keren naar werk, vooral omdat mensen op jongere leeftijd chronische aandoeningen krijgen en later met pensioen gaan. Arbeidsgerichte zorg speelt hierbij een belangrijke rol. Om ons zorgsysteem sterk te houden en mensen gezond en gelukkig te houden, is een beweging naar een nieuw perspectief op ziekte en gezondheid in gang gezet. Het gaat niet om wat de zorg te bieden heeft of de belangen van zorgverleners, maar om wat mensen nodig hebben om goed en zelfstandig te kunnen functioneren. Het Integraal Zorgakkoord van de Nederlandse overheid steunt dit idee door het stimuleren van waardegedreven zorg in alle gebieden van de gezondheidszorg. Waardegedreven zorg omvat zorg die aansluit bij de behoeften van de patiënt, welke plaatsvindt in de juiste setting en zich richt op gezondheid in plaats van ziekte.

Er is weinig bekend over hoe waardegedreven arbeidsgerichte zorg geleverd wordt. Daarom is het doel van dit proefschrift om de waarde creatie binnen de arbeidsgerichte zorg te ondersteunen. Centraal in dit proefschrift staan de concepten waardegedreven zorg en mensgericht ontwerpen. Waardegedreven zorg streeft ernaar de beste waarde voor patiënten te creëren door te focussen op de gezondheidsresultaten die voor hen het belangrijkst zijn, vergeleken met de kosten die nodig zijn om deze resultaten te bereiken. Mensgericht ontwerpen streeft ernaar effectievere producten of diensten te creëren door de behoeften, voorkeuren en ervaringen van gebruikers goed te doorgronden.

Dit proefschrift is gestructureerd in drie delen, elk gericht op één onderzoeksvraag:

1. Hoe kan waarde gecreëerd worden voor patiënten in de sociale verzekeringsgeneeskunde vanuit het perspectief van de professional?
2. Wat zijn de ervaringen en behoeften van patiënten gedurende hun arbeidsgerichte zorgtraject?
3. Welke werkgerelateerde uitkomsten zijn het belangrijkste voor mensen die door hart- en vaatziekten (HVZ) problemen ervaren in het uitvoeren van werk, en hoe beïnvloedt het gebruik van deze uitkomsten de arbeidsgerichte zorg?

Deel I. Waardecreatie in sociale verzekeringsgeneeskunde

Aangezien ons eerste doel was om waarde te creëren voor de sociale verzekeringsgeneeskunde, hebben we in **hoofdstuk 2** onderzocht hoe de principes van het waardegedreven zorg concept in dit vakgebied kunnen worden toegepast. Vijftien experts in sociale verzekeringsgeneeskunde of waardegedreven zorg namen deel aan individuele en groepsinterviews. Ze bespraken belangrijke factoren die de succesvolle toepassing van waardegedreven zorg in de sociale verzekeringsgeneeskunde mogelijk maken. Er werden zeven belangrijke factoren geïdentificeerd, waaronder: het begrijpen van wat "waarde" betekent in de context van sociale verzekeringsgeneeskunde, het integreren van sociale verzekeringsgeneeskunde in werkgerichte zorgnetwerken, en het identificeren van de belangrijkste werkgerelateerde uitkomsten voor patiënten. Deze bevindingen bepaalden de verdere stappen in dit onderzoek.

Om de betekenis van “waarde” in de praktijk van sociale verzekeringsgeneeskunde in kaart te brengen, hebben we in **hoofdstuk 3** onderzocht wat verzekeringsartsen waardevol vinden in hun werk. Zeven verzekeringsartsen uit Nederland werden geïnterviewd om te begrijpen wat waarde creatie bevordert en belemmert, en welke kansen zij zien om waarde toe te voegen voor hun cliënten tijdens de arbeidsongeschiktheidsbeoordeling. We ontdekten dat verzekeringsartsen het waardevol vinden om hun cliënten een duidelijk en georganiseerd beoordelingsproces te bieden, waarin goed teamwork met andere professionals, sterke cliëntgerichte interacties en voldoende informatievoorziening centraal staat. Dit is al mogelijk door de flexibiliteit en lengte van de consulten, het feit dat artsen informatie van andere disciplines kunnen opvragen en de holistische kijk op de situatie van de cliënt. Ze gaven echter aan dat ze niet altijd optimale waarde kunnen bieden, bijvoorbeeld door gebrek aan medische informatie, beperkte en late contactmogelijkheden, moeite met het vinden en benaderen van andere professionals en complexe wet- en regelgeving. Daarom gaven de artsen aan dat ze nog meer waarde zouden kunnen toevoegen als alle medische informatie al beschikbaar zou zijn vóór het consult, communicatie met andere zorgverleners beter gefaciliteerd zou zijn, ze eerder in het proces van de cliënt betrokken zouden worden, en als cliënten meer informatie over het gehele proces aan het begin zouden ontvangen.

Deel II. Ervaringen en behoeften van patiënten in hun arbeidsgerichte zorgtraject

Om te begrijpen wat patiënten met chronische aandoeningen nodig hebben in arbeidsgerichte zorg, hebben we in **hoofdstuk 4** een kwalitatieve systematische review uitgevoerd. Er werden 97 studies geïncludeerd. We identificeerden 17 subthema’s, die we groepeerden in vier hoofdthema’s. Het eerste thema, inhoudelijke begeleiding, omvat alle behoeften met betrekking tot de specifieke inhoud van arbeidsgerichte zorg, bijvoorbeeld de aanwezigheid van psychologische ondersteuning en het ontvangen van praktische tips, die als zeer belangrijk werden ervaren. Het tweede thema, een duidelijk en continu proces, gaat over het duidelijk en efficiënt maken van het zorgproces. Dit omvat behoeften zoals vroegtijdige toegang tot ondersteuning en transparantie in alle stappen van het proces. Het derde thema, ondersteunende houding en gedrag, benadrukt het belang van een positieve en ondersteunende houding van professionals tegenover patiënten. Behoeften zoals een relatie gebaseerd op vertrouwen en een motiverende houding van professionals werden geïdentificeerd. Het vierde thema, maatwerk, richt zich op het bieden van zorg die voldoet aan individuele behoeften. Dit omvat behoeften zoals het ontvangen van meer ziektespecifieke informatie met betrekking tot werk en het meenemen van de persoonlijke doelen van de patiënt.

Om dieper in te gaan op de ervaringen en behoeften van werknemers met HVZ, interviewden we in **hoofdstuk 5** 17 werknemers met HVZ. Gebruikmakend van de 'patient experience journey mapping' benadering visualiseerden we het arbeidsgerichte zorgtraject bestaande uit zes fasen. De eerste fase, werken, is wanneer de eerste tekenen van gezondheidsproblemen en functionele beperkingen zich voordoen. De volgende twee fasen, korte en lange termijn ziekteverlof, vertegenwoordigen een periode van volledig ziekteverlof. De laatste drie fasen, start, gedeeltelijke en volledige werkhervatting, richten zich op het terugkeerproces naar werk. Voor elke fase identificeerden we de momenten van contact met arbeidsgerichte zorg, betrokken zorgprofessionals, activiteiten, ervaringen en behoeften van de werknemer. Door deze lagen van informatie te analyseren, vonden we negen mogelijkheden om beter aan de behoeften van de patiënt te voldoen, zoals het benadrukken van werkaanpassingen voorafgaand aan medische interventies, het geven van gepersonaliseerd advies over het omgaan met arbeidsbeperkingen en het aanmoedigen van werkgevers om geschikte werkposities te creëren.

In **hoofdstuk 6** richtten we ons op het begrijpen van de ervaringen en behoeften van werknemers met HVZ, gebaseerd op de principes van persoonsgerichte zorg van het Picker Instituut. Naast de 17 interviews uit het vorige hoofdstuk werden twee extra interviews gehouden met zelfstandige werknemers. Alle 19 interviews werden geanalyseerd om gemeenschappelijke thema's te identificeren, die vervolgens werden gegroepeerd volgens de acht principes van het Picker Instituut. In totaal werden 28 behoeften geïdentificeerd. Enkele voorbeelden hiervan zijn: het rekening houden met de persoonlijke situatie bij het bepalen van de start van arbeidsgerichte zorg, regelmatig contact met dezelfde zorgverlener, het ontvangen van duidelijke werkgerelateerde adviezen, transparantie in de communicatie tussen professionals, goede informatie over het zorgproces, de mogelijkheid voor de patiënt om het proces te beïnvloeden, en empathie voor persoonlijke situaties van de professional. Het overzicht van alle geïdentificeerde behoeften vanuit het perspectief van de patiënt kan worden gebruikt om arbeidsgerichte zorg op maat aan te bieden en te verbeteren.

Deel III. Een standaard set van belangrijke werkgerelateerde uitkomsten voor patiënten met HVZ

Om waarde te meten, is het relevant te weten welke uitkomsten het belangrijkst zijn. In **hoofdstuk 7** richtten we ons daarom op het creëren van een minimale set van werkgerelateerde uitkomsten die het belangrijkst zijn voor mensen met HVZ. De werkgroep bestond uit 6 patiënten met HVZ en 11 zorgprofessionals die verschillende gebieden van arbeidsgerichte zorg in Nederland vertegenwoordigden. Door uitgebreide literatuuronderzoeken, bijeenkomsten en verschillende stemrondes werd consensus bereikt over de reikwijdte en doelpopulatie, de belangrijkste uitkomsten, de meest geschikte uitkomstmaten en de belangrijke case-mix factoren. Er werd consensus bereikt over een vragenlijst van 23 items die door patiënten wordt ingevuld, de Value@WORK-Q23 (V@W-Q23). De V@W-Q23 meet de negen belangrijkste uitkomsten: (1) werkparticipatie, (2) fysiek werkvermogen, (3) mentaal werkvermogen, (4) geschikt werk, (5) steun vanuit de werkomgeving, (6) flexibiliteit van de werkomgeving, (7) communicatie met de patiënt, (8) persoonsgerichtheid, en (9) interdisciplinaire communicatie. Daarnaast werden negen case mix factoren geïdentificeerd die de uitkomsten kunnen beïnvloeden. Deze omvatten demografische gegevens zoals leeftijd en geslacht, ziektespecifieke factoren zoals het type hart- en vaatziekte, en werkomstandigheden zoals de werkbelasting.

In **hoofdstuk 8** onderzochten we hoe de V@W-Q23 werd gebruikt tijdens consultaties tussen patiënten en zorgprofessionals in vier gebieden: bedrijfsgeneeskunde, sociale verzekeringsgeneeskunde, huisartsgeneeskunde en cardiologie. Het gebruikersonderzoek bestond uit drie stappen: 1) patiënten vulden de V@W-Q23 in de dagen voorafgaand aan het consult in, 2) zorgprofessionals bekeken de antwoorden, en vervolgens 3) konden de inzichten tijdens het consult door zowel de patiënt als de professional naar eigen inzicht worden gebruikt. In totaal werd het gebruikersonderzoek uitgevoerd tijdens 16 consulten, met 12 verschillende zorgprofessionals en 15 patiënten. Observaties en interviews toonden aan dat de V@W-Q23 hielp om belangrijke onderwerpen voor patiënten te bespreken, of antwoorden die afweken van de verwachtingen van de professional. Zowel patiënten als professionals vonden de V@W-Q23 gemakkelijk te begrijpen en relevant. Het verbeterde het inzicht in de persoonlijke situatie van de patiënt, verhoogde de focus op werkgerelateerde problemen en verbeterde de communicatie tussen patiënten en zorgprofessionals. Het was vooral nuttig voor patiënten met tijdelijke werkgerelateerde problemen. Aanbevelingen voor beter gebruik en impact waren onder andere herhaalde metingen, een aantrekkelijke presentatie van de resultaten, toepasbaarheid op alle chronische aandoeningen en integratie in elektronische gezondheidsdossiers. Enkele barrières waren beperkte tijd, andere prioriteiten en gebrek aan kennis over rollen binnen de arbeidsgerichte zorg.

In **hoofdstuk 9** hebben we het onderzoeksproces in kaart gebracht en hebben we de belangrijkste bevindingen besproken en geïnterpreteerd. In het hoofdstuk hebben we ook de implicaties van deze bevindingen voor patiënten, zorgverleners en het zorgsysteem verkend, en geven we aanbevelingen voor toekomstig onderzoek. De resultaten van dit proefschrift laten mogelijkheden zien om de waarde van sociale verzekeringsgeneeskunde te verbeteren vanuit het perspectief van zorgprofessionals. Het toont ook de behoeften van patiënten in arbeidsgerichte zorg en introduceert een werkgerelateerde set uitkomstmaten, genaamd de V@W-Q23. Dit zijn belangrijke eerste stappen in de verschuiving van een volume-gebaseerde benadering naar een benadering die zich richt op waarde in arbeidsgerichte zorg. Er is echter nog een lange weg te gaan voordat een volledig op waarde gerichte benadering van arbeidsgerichte zorg gerealiseerd is.

ABOUT THE AUTHOR

Marije Hagendijk was born on the 26th of April 1996 in Rotterdam, the Netherlands. After completing her secondary education in Barendrecht, she began her bachelor's degree in Human Movement Sciences at the Vrije Universiteit Amsterdam in 2014. Upon completing this degree in 2017, she moved to Groningen to continue her studies with a master's degree in Human Movement Sciences, specialising in Healthy Ageing & Rehabilitation. In 2018, she started a master's in Business Administration with a focus on Health, which she completed in 2019 with a thesis on the cost-effectiveness of an orphan drug at the Department of Health Sciences at the University Medical Center Groningen (UMCG). In 2020, she completed her master's in Human Movement Sciences, which included a research internship within the Heart-ROCQ study at the UMCG, investigating the effects of a preoperative rehabilitation programme on the pre- and postoperative muscle strength of patients undergoing elective open-heart surgery.

In September 2020, Marije began her PhD at the Department of Public and Occupational Health at Amsterdam UMC, within the Value@WORK research project. The aim of her PhD project was to create value in work-focused healthcare, by identifying the opportunities to create value and developing a standard set of work-related outcomes most important for patients with cardiovascular diseases. Marije conducted several studies, which resulted in publications in both national and international journals. She presented her work at various (inter)national conferences. In addition to her research, she undertook courses to further develop her scientific skills, taught classes to various groups of students, and supervised Bachelor's thesis students. In 2024, Marije obtained her University Teaching Qualification. During the first two years of her PhD, she was involved in the activity committee and since 2023, she is a member of the Green Team at the department, which focuses on promoting sustainability within the department.

Since completing her PhD in December 2024, Marije has continued working at the Department of Public and Occupational Health. As a postdoctoral researcher, she continued to contribute to the Value@WORK project. In addition, since January 2025, she has been involved in a project exploring the influence of intersectionality on job retention among employees with chronic conditions. On October 1, she will say goodbye to the Amsterdam UMC to continue her academic career as a senior researcher at the Hanze University of Applied Sciences in Groningen.

PORTFOLIO

Name PhD student: Marije Hagendijk

PhD period: September 2020 – December 2024

Name PhD supervisors: prof. dr. S.J. van der Burg-Vermeulen, prof. dr. P. van der Wees, dr. J.L. Hoving, dr. ir. M. Melles.

	Year	**Workload (ECTS)**
1. PhD training		
Graduate school courses		
AMC World of science	2020	0.7
Qualitative Health Research	2020	1.9
Writing a scientific article	2021	1.5
Clinical epidemiology: Systematic Reviews	2021	0.7
Peer to peer group coaching	2021 & 2022	1.0
Research Data Management	2021	0.2
Oral presenting in English	2021	0.8
Basic Course Legislation and Organisation for Clinical Investigators (BROK)	2022	1.5
Other courses and workshops		
UvA Teaching & Learing Centre		
- University Teaching Qualification (In Dutch: Basiskwalificatie Onderwijs, BKO)	2022- 2024	5.0
- Workshop: 'Feedback: sleutel tot leren'	2024	0.2
- Workshop ChatGPT: kan, wil en (hoe) moet ik daar iets mee in mijn onderwijs?	2024	0.2
ASAP		
- Workshop: Print your Thesis	2023	0.1
- Workshop: Pimp my FAIR data	2023	0.1
External workshops		
- MAXQDA online workshop	2021	0.1
(Inter)national conferences		
Oral presentations		
International Conference on Healthcare Systems Ergonomics and Patient Safety, Delft	2022	2.5
Dutch International Congress on Insurance Medicine, Almere (2)	2023 & 2024	2.0
KCVG Muntendam insurance medicine symposium, Amsterdam	2022	1.0
European Union of Medicine in Assurance and Social Security Congress, Strasbourg, France	2023	2.5

	Year	Workload (ECTS)
Care days, Eindhoven	2023	1.0
Science day of the Social Medical Affairs department, Den Haag	2023	0.2
Expertise meeting Dutch Association for Occupational and Company Physiotherapists, Amersfoort	2023	0.2
Annual meeting Cochrane Insurance Medicine, Groningen	2023	0.2
Quarterly meeting of the Dutch Research Center for Insurance Medicine, Amsterdam	2021	0.2
National Network for Chronically Ill and Work, online	2022	0.2
Poster presentations		
Value-based healthcare conference, ICHOM, Amsterdam	2024	2.0
Annual Congress of the Netherlands Society of Occupational Medicine, Papendal (3)	2022- 2024	3.0
Amsterdam Public Health (APH) meeting (3)	2022, 2023 & 2024	1.5
International Congress on Occupational Health, online & Marrakech, Morocco (2)	2021 & 2023	4.0
Researchday Instituut Gak (2)	2022 & 2024	1.0
Pitch video for the researchday Instituut Gak, Amsterdam	2023	0.3
Attended conferences without presentation		
Conference on Outcomes-Oriented Care, The Hague	2022	0.6
Work conference of the Dutch Research Center for Insurance Medicine, Almere (3)	2022, 2023 & 2024	1.0
Heijermans lecture, Amsterdam	2024	0.2
KCVG Muntendam insurance medicine symposium, Amsterdam (2)	2023 & 2024	0.6
APH junified, Amsterdam (2)	2023 & 2024	0.6
Other meetings		
Progress visits Instituut Gak (4)	2021- 2024	0.4
PhD ceremony's (9)	2022- 2024	0.5
POH Heidag (2)	2022- 2023	0.6
Meeting department Public and Occupational Health (12)	2020- 2024	0.3
Research meeting Section 6 Amsterdam UMC (8)	2020 – 2023	0.3
Research meeting Section 5 Amsterdam UMC (8)	2023- 2024	0.3
Quarterly meeting of the Dutch Research Center for Insurance Medicine (8)	2021 – 2024	0.6
Other activities		
Chair of the junior meeting, Public and Occupational Health Department, section 5 and 6.	2023-2024	0.5

	Year	Workload (ECTS)
Activity committee member, Public and Occupational Health Department, section 6.	2021-2023	0.5
Green Team member, Public and Occupational Health Department	2023-2024	0.5
Speaker in a podcast for the Dutch Social Security Agency	2022	0.1
Writers retreat APH Societal Participation and Health	2023	0.8
2. Teaching		
Lecturing		
VU Health@Work – 3rd year health sciences students	2022-2023 & 2023-2024	1.0
Academische Vorming Journal club – 2nd year medical students (UvA)	2022-2023 & 2023-2024	0.8
Academische Vorming PICO – 1th year medical students (UvA)	2020-2021 & 2021-2022	0.8
Value-based healthcare symposium – master medical students (VU)	2022	0.2
Patient journey mapping – master students industrial design (TU Delft)	2022	0.2
Social insurance medicine – Optional for 2nd and 3rd year students (University of Utrecht)	2022	0.2
Scientific research- Insurance physicians in training (NSPOH)	2022 & 2023	0.4
Supervising		
Two students during their bachelor thesis – 3rd year medical students	2021	1.0
Two students during their bachelor thesis – 3rd year health sciences students	2023	2.0
Tutoring and mentoring		
Mentor in 'Introduction into Research' – 1st year medical students	2022-2023 & 2023-2024	1.5
Total (28 hours = 1 ECTS)		**52.8**

LIST OF PUBLICATIONS

International publications in this thesis

Hagendijk ME, Zipfel N, Oomen FJ, Hoving JL, Van Der Wees PJ, Hulshof CT, Çölkesen EB, Melles M & Van Der Burg-Vermeulen SJ. Work-focused healthcare from the perspective of employees living with cardiovascular disease: a patient experience journey mapping study. BMC Public Health. 2023; 23(1), 1765.

Hagendijk ME, Zipfel N, Melles M, van der Wees PJ, Hulshof CT, Zwaan E, van der Burg-Vermeulen SJ & Hoving JL. Patients' Needs Regarding Work-Focused Healthcare: A Qualitative Evidence Synthesis. J Occup Rehabil. 2024; 1-19.

Hagendijk ME, Zipfel N, Melles M, van der Wees PJ, Hulshof CT, Çölkesen EB, Hoving JL & van der Burg-Vermeulen SJ. Towards person-centred work-focused healthcare for people with cardiovascular disease: a qualitative exploration of patients' experiences and needs. Disability and Rehabilitation. 2024; 47 (1): 1-13.

Hagendijk ME, Tan Z, Melles M, Hoving JL, van der Burg-Vermeulen SJ & Zipfel N. Adding value for clients during work disability assessments: A qualitative exploration from the perspective of medical examiners. Work. 2024; 79 (2): 775-788.

Hagendijk ME, Zipfel N, van der Wees PJ, Melles M, Hoving JL & van der Burg-Vermeulen SJ. Value-based healthcare for social insurance medicine: key enablers for adoption in practice. BMJ Open Qual. 2024; 13 (4): e002878

Hagendijk ME, Zipfel N, Hoving JL, Melles M, van der Wees PJ & van der Burg-Vermeulen SJ. Development of a standard set of key work-related outcomes for use in practice for patients with cardiovascular disease: a modified Delphi study. JPRO. 2024; 8 (1): 147

Submitted articles for publication in this thesis

Hagendijk ME, Zipfel N, Hoving JL, Melles M, Jansen LP, van der Wees PJ & van der Burg-Vermeulen SJ. Use and impact of the Value@WORK-Q23: Insights from user testing of a standard set of key work-related outcomes for patients with cardiovascular diseases in real-life consultations. Submitted.

Other international publications

Ravinskaya M, Verbeek JH, Langendam M, Daams JG, Hulshof CT, Madan I, Verstappen SMM, **Hagendijk ME** & Hoving JL. Extensive variability of work participation outcomes measured in randomized controlled trials: a systematic review. J Clin Epidemiol. 2022; 142, 60-99.

Hagendijk ME, van der Schans S, Boersma C, Postma MJ & van der Pol S. Economic evaluation of orphan drug Lutetium-Octreotate vs. Octreotide long-acting release for patients with an advanced midgut neuroendocrine tumour in the Netherlands. Eur J Health Econ. 2021; 22: 991-999.

National publications

Hagendijk ME, Zipfel N, Van der Burg-Vermeulen SJ. Arbeidsgerichte zorg vanuit patiëntperspectief. Tijdschr Bedrijfs Verzekeringsgeneeskd. 2024; 32 (1): 25-27

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All co-authors contributed to the design of the studies in which they were involved, as well as to data collection, data analysis, or interpretation of the data. The first draft of the manuscripts were written by Marije Hagendijk. All co-authors contributed by reading and revising the manuscripts. In Chapters 3 and 5, Zhouwen Tan and Floor Oomen were responsible for the design of the figures.

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Lilian: Om echt waarde toe te voegen moet je helemaal geen boekje schrijven zoals ik, maar doen wat jij samen met Leon doet.

Stefan: Blij dat ik jou op deze belangrijke dag letterlijk naast mij heb staan. Ik wacht natuurlijk nog wel op een verwijzing naar één van mijn artikelen.

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