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Experiences and perceptions of employees and healthcare professionals on a multidisciplinary program for the secondary prevention of low back pain

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Low back pain (LBP) can lead to disability and sick leave, impacting work participation and overall health. Given the complex and multifactorial nature of LBP, Belgium's Federal Agency for Occupational Risks (FEDRIS) promotes a secondary prevention strategy for LBP among workers engaged in ergonomically demanding tasks. This strategy includes multidisciplinary-based rehabilitation (MBR) and an optional workplace intervention. This paper explored the experiences and perceptions of employees and healthcare professionals (HCPs) regarding the secondary prevention program with a focus on the MBR component, aiming to identify its strengths, challenges, and potential solutions. A multicenter qualitative design involving six semistructured focus groups was employed. The participants included 15 employees who attended the program because of LBP and 24 HCPs involved in its delivery. The data were analyzed via thematic analysis. Three major themes were identified: *functional and work-related outcomes*, *content-related factors*, and *duration and continuation*. Positive outcomes included improvements in pain, function, and return to work (RTW), with workplace adaptations and ergonomic guidance playing key roles. Success factors such as education, exercise therapy, motivation, and social interaction were highlighted. However, challenges were identified, including limited communication between centers and employers, insufficient psychological support, and a lack of follow-up to sustain the program's effects. This qualitative evaluation highlights that person-centered, biopsychosocial approaches—encompassing individualized education, ergonomic adaptations, and psychological support—are crucial for optimizing the FEDRIS MBR program's long-term impact on LBP and RTW outcomes. Consistency in staffing, structured follow-up, and systematic prescreening are key areas for improvement. Although limited by a small sample size and retrospective design, these findings pinpoint actionable refinements that future longitudinal studies can explore to ensure sustained, cost-effective rehabilitation benefits.

Keywords Low back pain, Multidisciplinary rehabilitation, Return to work, Qualitative research, Focus groups, Secondary prevention

Abbreviations

LBP	Low back pain
YLD	Years lived with disability
NIHDI	National Institute for Health and Disability Insurance
MBR	Multidisciplinary-based rehabilitation
FEDRIS	Federal Agency for Occupational Risks

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RTW	Return to work
HCPs	Healthcare professionals

Low back pain (LBP) is a prevalent and persistent health issue that imposes significant burdens on healthcare systems and economies worldwide[1–3]. Despite a slight decline in age-standardized rates over the past three decades, LBP remains the leading cause of years lived with disability (YLD) globally[3]. It is the most common cause of medically certified sick leave and early retirement in Europe[4]and accounts for more lost workdays than any other musculoskeletal condition in the United States[5]. Belgium is among the most affected countries within Europe, with LBP contributing to 13.1% of the nation's overall disease burden, making it one of the top three factors reducing quality of life[6]. Additionally, musculoskeletal disorders, particularly LBP, are the most common work-related health issues across Europe[7]. In Belgium, LBP accounts for 11.9% of long-term sick leave, with 5% of the workforce unable to return to work indefinitely[8].

While many cases of acute LBP resolve with minimal intervention[9], a significant portion progresses to chronicity, leading to increased medical and socioeconomic costs[1,10,11]. The assessment and treatment of both acute and chronic LBP require a biopsychosocial approach, which is strongly recommended in national and international guidelines[12–16]. Psychological factors (such as behaviors, beliefs, distress, depression, anxiety, and fear) and social factors (including financial, family, and work-related issues) have been shown to influence patient outcomes[17]and are linked to the persistence of pain and disability[14,18]. Moreover,psychosocial factors such as unemployment and catastrophizing are strong prognostic indicators of long-term disability in both acute/subacute and chronic LBP patients in primary care[19], underscoring the need for multidimensional assessment and management strategies. Between 1990 and 2020, nearly 40% of YLD due to LBP was attributed to risk factors such as smoking, obesity, and occupational ergonomic hazards such as repetitive movements and heavy load handling[3]. These findings emphasize the importance of comprehensive, multidisciplinary approaches that address both medical and workplace risk factors.

In response to the growing public health challenge of LBP, the Belgian National Institute for Health and Disability Insurance (NIHDI) introduced a multidisciplinary-based rehabilitation (MBR) program into the Belgian nomenclature in 2004. This program brings together specialists in physical medicine, physiotherapy, occupational therapy, and psychology, allowing participants to attend up to 36 two-hour sessions over six months[20]. These sessions include functional and psychosocial evaluations, spinal health education (e.g., anatomy and pain education), occupational therapy, and individualized or group exercise programs. The program has been implemented in approximately 100 hospitals and rehabilitation centers nationwide. On average, 320,000 sessions are reimbursed annually, with an annual cost of 21.7 million euros (written communication with NIHDI). One study from a specific center reported positive outcomes, including reduced pain, improved function, and decreased kinesiophobia; however, this study lacked control comparisons and long-term follow-up[21].

The FEDRIS secondary prevention program

In 2007, the Belgian Federal Agency for Occupational Risks (FEDRIS) introduced a secondary prevention program for LBP in employees in ergonomically demanding jobs[22]. This secondary prevention aims to mitigate LBP progression, prevent recurrences, facilitate return to work (RTW), and enhance collaboration between curative and preventive services[23,24]. This program builds on the formerly explained existing national MBR program[20] by supplementing the NIHDI coverage and additionally offering an optional workplace intervention. The inclusion criteria for this program can be found in Table 1.

The FEDRIS approach aligns with evidence-based RTW models, such as the Sherbrooke model, which integrates workplace collaboration with rehabilitation to support early and sustainable RTW[25]. Systematic reviews have validated the Sherbrooke model as an effective strategy for improving RTW rates, reducing pain, and enhancing functional outcomes in workers with subacute LBP[26–28]. The use of a biopsychosocial approach outperforms standard medical care in preventing long-term work disability.

Objectives

Despite enrolling approximately 1,000 employees per year in Belgium (FEDRIS written communication), the program remains insufficiently evaluated. To address this gap, the present study is part of a broader research project aimed at providing a thorough quantitative and qualitative evaluation of the FEDRIS secondary prevention strategy. This qualitative study explored the experiences and perceptions of employees who joined

Employment sector	Private sector or provincial or local government agency
Health supervision	Occupational physician
Exposure	Back-straining work: ergonomic strain, lifting loads, or whole-body vibration
Pathology	1. Nonspecific LBP with or without sciatica 2. Lower back surgery
Duration of work disability	At least four weeks and no longer than six months If the duration does not meet the criteria, an employee who has been incapacitated for at least one week can apply if the total duration of work disability due to LBP amounts to at least four weeks in the year preceding the application.

Table 1. Eligibility criteria for applying for the secondary prevention program with reimbursement from FEDRIS. FEDRIS: Federal Agency for Occupational Risks, LBP: low back pain.

the program due to LBP, as well as the healthcare professionals (HCPs) involved, with the aim of identifying strengths, challenges, and potential solutions. A separate study[29], currently under revision, focuses on the workplace intervention component, whereas this article specifically examines the MBR component. The ultimate goal is to provide insights that will inform strategies for optimizing the program's content, implementation, and overall impact.

Materials and methods

Study design

For this qualitative study, a multicenter design with semistructured focus group discussions and inductive thematic analysis was employed. The multicenter design allowed for a comprehensive understanding across diverse settings in Belgium. A qualitative approach was chosen to gain in-depth insights into personal and professional experiences with the program, which could not be captured through quantitative measures alone. Ethical approval was obtained from the Independent Ethical Committee of Ghent University Hospital on February 28, 2022 (Reference Number: BC-10945). All participants provided written informed consent prior to participation. The reporting of our findings adheres to the Consolidated Criteria for Reporting Qualitative Research (COREQ)[30], with a completed checklist provided in supplementary file 1.

Participants

Two distinct participant groups were recruited: (1) employees eligible for FEDRIS reimbursement who participated in the FEDRIS program between 2015 and 2019 and (2) HCPs directly involved in delivering the program.

Employees were recruited via a maximum variation sampling strategy[31] from 11 rehabilitation centers and hospitals that offered the program. The selection criteria for these centers included geographical proximity, the number of FEDRIS-reimbursed participants, and diversity in institution type (i.e., university hospitals, general hospitals, and rehabilitation centers). Letters were sent to a cohort of 300 employees, with follow-up contacts made for those expressing interest in participating.

HCPs were recruited from six centers with the highest number of program participants. The criterion sampling strategy included three subgroups: (1) HCPs actively delivering the MBR program (e.g., specialists in physical medicine and rehabilitation, physiotherapists, occupational therapists, and psychologists); (2) occupational physicians who referred at least five employees to the program between 2015 and 2019; and (3) external ergonomic prevention advisors with experience in additional workplace intervention. Nonresponders were recontacted after one month.

Rather than strictly adhering to a data saturation model, the study followed a pragmatic approach, aiming to gather sufficient data to address the research questions[32]. After the final focus group, few new insights emerged, suggesting that the data collection adequately met the research objectives.

Data collection and reflexivity

To maintain consistency and minimize potential bias, the interviewers followed a preapproved semistructured discussion guide (see supplementary file 2). This guide was developed by the research team in consultation with an expert panel involved in the development of the FEDRIS program and various HCPs. Key discussion topics included the program's impact on pain, disability, mental health, quality of life, RTW, and daily life. The guide was pilot tested, with iterative refinements based on feedback from the Department of Rehabilitation Sciences. Open-ended questions were designed to explore the experiences and perceptions of employees and HCPs involved in the MBR program.

The data were collected through six focus group discussions held between April 2022 and April 2023. The focus groups were divided into three types: two employee-only groups, two HCP-only groups, and two mixed groups (including both employees and HCPs). Each group type included one Dutch-speaking group and one French-speaking group. The employee-only groups aimed to foster solidarity among participants, whereas the HCP-only groups facilitated interdisciplinary dialog among professionals. The mixed groups promoted interaction between employees and HCPs, with no direct relationships between participants, encouraging candid discussions. To ensure clarity, all focus group participants are collectively referred to as *participants* in the findings. The term *employee* is used specifically for employees who followed the program because of LBP and participated in the focus groups, whereas *patient* is used when HCPs refer to those patients who followed the program under their care.

The Dutch-speaking groups were conducted at Ghent University Hospital, moderated by LBe (female, PhD student, physiotherapist), with GHL (female, MSc in medicine) as the observer. The French-speaking groups were held in Namur and Hainaut, moderated by DR (female, professor in occupational medicine), with MM (female, MSc in occupational medicine) and/or CD (male, professor, and physiotherapist) as observers. The moderators had no prior contact with the participants. All the facilitators were properly trained in conducting focus groups, ensuring consistency and methodological rigor. DR and CD had prior experience in qualitative research, alongside over 30 years of clinical experience working with individuals with musculoskeletal disorders, including LBP. LBe, GHL, and MM underwent training in qualitative research and focus group facilitation as part of their academic and research activities and were guided by an expert in qualitative research (DVdV). The observers (GHL and MM) were introduced as independent researchers with no direct involvement in patient care, ensuring that they were perceived as neutral observers rather than authority figures. To minimize bias, the moderators remained aware of their professional backgrounds and potential influences on discussions, including assumptions about rehabilitation, question framing, and authority bias. They maintained neutrality by strictly adhering to a preapproved interview guide, using open-ended questioning techniques, and engaging in ongoing reflexivity throughout the research process.

Prior to the focus group discussion, the participants completed a brief demographic survey, received detailed information about the study's procedures, and provided written informed consent. The focus group discussions, which lasted between 1 h 18 min and 2 h, were pseudonymized, securely stored, and transcribed verbatim from field notes, audio, and video recordings. French transcripts were translated into Dutch, with cross-referencing by MM to ensure translation accuracy.

Data analysis

The analysis followed Braun and Clarke's six-step thematic analysis method[33,34], which uses an inductive, semantic, and realist approach to remain close to the data. This allowed codes to be identified directly from the data without the constraints of a preexisting coding frame, with the assumption that participants' responses reflected their lived realities.

To ensure familiarization with the data, three authors (LBe, GHL, and MM) independently read the transcripts, keeping the research questions in mind. Each generated an initial set of codes, which were then compared in subsequent meetings. High qualitative intercoder agreement was observed, and any discrepancies were resolved through discussion.

LBe collated the codes into potential categories, working iteratively with all coauthors to refine them through multiple meetings. Regular cross-referencing of the coded data with the original transcripts ensured fidelity to participants' responses. Analyst triangulation was conducted, with all the authors—including the experts not involved in the initial coding—contributing to the definition of the themes. Themes were generated from the surface meaning of participants' responses, with reflection on their broader significance during the discussion phase. NVivo software was used to manage and organize the qualitative data throughout the analysis (Lumivero (2022-23), *NVivo* (Version R 1.7–14), www.lumivero.com).

An example of the coding process and theme development is provided in Fig. 1.

Rigor and validation

Methodological rigor was ensured through multiple strategies, including data triangulation, intercoder reliability checks, and continuous discussions among the research team. Triangulation was conducted across participant types (employees and HCPs) and different data collection points (focus groups, field notes, and demographic surveys), ensuring robustness in the analysis and interpretation of the data. Validation was provided by the three researchers directly involved in the thematic analysis (LBe, GHL, and MM) and experts not involved in the initial coding process but experts in qualitative research (DVdV), the FEDRIS program (LBr, CD), and LBP (TW, CD). This external validation process enhanced the credibility of the findings. Participant feedback was solicited after the initial themes were formed to ensure accurate interpretation of the results. All identified categories and themes were sent to participants via email for review. While most participants did not suggest changes, two HCPs provided feedback, proposing minor wording adjustments to clarify certain statements. These refinements primarily involved specifying the generalizability of functional improvements, the role of ergonomic advice in job retention, and the factors contributing to relapses. This feedback process helped validate the findings and ensured that the themes accurately reflected participants' perceptions[35].

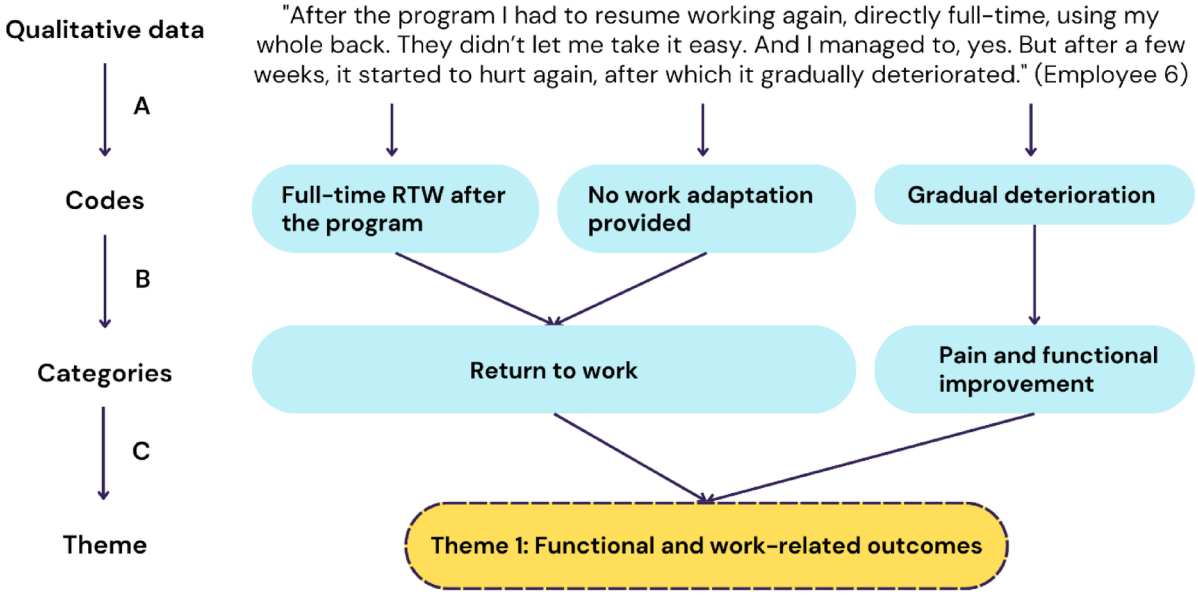

Fig. 1. Example of theme identification through coding and the formation of categories. (**A**) Initial and focused coding to help make sense of the data; (**B**) Making connections between codes; (**C**) Development of themes.

Findings

The study included 39 participants—24 HCPs and 15 employees—across six focus groups. Demographically, the sample comprised 14 males (aged 27–66) and 25 females (aged 31–69). HCPs had an average of 15 years of professional experience delivering the MBR program, with a minimum of 5 years. The participant characteristics are summarized in Table 2.

The analysis led to the development of five overarching themes: "Functional and work-related outcomes," "Content-related influencing factors," "Duration and continuation," "Practicalities," and "Workplace intervention." Given the scope and richness of the data, the present article focuses on the first three themes. The theme "Workplace intervention" was excluded for a separate article (currently under review)[29], and "Practicalities" was directly communicated to FEDRIS.

Theme 1: functional and work-related outcomes

This theme explores how employees and HCPs perceive the effects of the program in two subthemes: (1) pain and functional improvement and (2) RTW. Employees reported varying degrees of pain relief and functional improvement, whereas HCPs generally reported positive trends. RTW outcomes were mixed, largely depending on workplace adaptations, job demands, and employer flexibility. HCPs emphasized the importance of early RTW to improve reintegration chances and called for better communication between rehabilitation centers and employers.

Subtheme 1: pain and functional improvement

Employees reported diverse experiences with pain relief and functional improvement, ranging from substantial benefits to no change or worsening conditions. **HCPs** observed mainly positive outcomes in terms of their patients' LBP reduction and improved functional ability. However, they acknowledged the challenge of assessing the program's impact on pain alone because of various influencing factors in patients' lives.

> *"We have very good results; the employees, in general, are very satisfied. Now we cannot promise that they will not have back pain anymore, that would be magic." (HCP 6).*
>
> *"if they qualify and they go through with it, it is very clear, very positive" (HCP 3). - "Yes, I think 80% very good." (HCP 2).*

	HCPs		Employees		Mixed group	
	Dutch	French	Dutch	French	Dutch	French
Amount (*n*)	(*n* = 5)	(*n* = 12)	(*n* = 8)	(*n* = 4)	(*n* = 4)	(*n* = 6)
Mean age	39,4	45,5	56,5	55,8	47,3	47,2
(Min–max)	(31–58)	(27–60)	(51–69)	(47–66)	(46–49)	(35–55)
Gender	F = 2, M = 3	F = 9, M = 3	F = 5, M = 3	F = 2, M = 2	F = 2, M = 2	F = 5, M = 1
Occupations HCPs						
MPR	3	3				
Occupational physician	2	4				1
Occupational therapist		1				1
Physiotherapist		3			1	1
Psychologist		1				
External prevention adviser					3	
HCPs mean years of experience	13	20	-	-	9,5	19
(Min–max)	(5–31)	(5–30)			(7–10)	(5–30)
Occupations employees						
Nurse (or nursing assistant)			5			1
Handyperson			1			
Laborer			1			
Clerk			1			
Early childhood assistant				1		
Firefighter				1		
Technician				1		
Family aide				1		
Caregiver						1
Driver - Delivery						1

Table 2. Sociodemographic data of the participants (*n* = 39). HCP: healthcare professional; n: number; min: minimum; max: maximum; M: male; F: female; MPR: physical medicine and rehabilitation physician.

Subtheme 2: return to work

The experiences regarding RTW were diverse among **employees**. Some successfully continued in their (part-time) occupation with the help of workplace adaptations and ergonomic tips from the program. Others faced challenges with physically demanding jobs and lacked suitable workplace accommodations, leading them to consider reducing work hours or changing jobs. For some employees, ceasing work altogether was not a feasible option because of financial concerns.

> *"I've been lucky in the sense that I received more office work, a customized office chair, and that I only seldom have to help out in healthcare. It makes an enormous difference, so I did receive that benefit. Because of this adaptation, it's going very well at the moment." (Employee 3) - "Similar for me. I also had a progressive return. My supervisor told me I could indicate if I had difficult patients, and they try to adjust the schedule. It doesn't always work, but I can bring it up. I also set my own limits, saying what I can and can't do, and someone else steps in if needed." (Employee 5).*

> *"There are few possibilities for adapted work in my occupation. (.) if I can't hold on, then I have two options: either reducing work hours, because I still work full-time, or finding another job, there is no other choice. It's not easy for me, however, because ultimately, I enjoy my occupation." (Employee 8).*

HCPs stress the importance of early RTW, as they believe that reintegration chances decrease with prolonged absence. They observed the reintegration of their patients, ranging from returning to the same job to finding an adapted job or changing careers. Most are perceived to return with a progressive RTW plan.

> *"The concern is also that the longer the patient remains inactive, the more difficult it is to return to work. We know that with chronicity, once the patient has been off work for more than six months, it is much more difficult to return to work." (HCP 18).*

HCPs within the centers noted that prescreening for comorbidities could identify patients unlikely to RTW, whereas occupational physicians confirmed that enrollment in the FEDRIS program was based solely on work absence and "LBP" but acknowledged the potential value of broader medical assessments on their part. Furthermore, HCPs attempt to address work difficulties effectively but emphasize that to provide appropriate rehabilitation that prepares employees for their specific job roles upon return, there is a need for improved communication between centers and employers. Successful integration is perceived to depend on factors such as ongoing pain, employer willingness and ability to adapt work options, depending on job type and enterprise size, personal issues, and work-related skills.

> *"We know that some chronic pain cases or complex back problems try the program, but success doesn't always mean returning to work. It may improve daily life, but for young people with more recent back issues, it works very well—they all improve." (HCP 2) - "It's important to assess whether a patient is a good candidate for the program. Anyone can join, but for those with chronic back failure or 'failed back surgery,' struggling for years with low motivation, the success rate is lower. That's why our dropout rate is relatively low—we prescreen patients. If they're still in too much pain, we first refer them for pain relief or mobilization before starting the full program. It adds a delay, but helps ensure the right selection." (HCP 5).*

Theme 2: Content-related influencing factors

This theme examines how different aspects of the program's content influence its perceived effectiveness. Employees and HCPs agreed that a multidisciplinary biopsychosocial approach was key to successful rehabilitation. Theoretical education and practical exercises helped reduce movement-related fears, whereas group therapy provided motivation and support. However, opinions on individual guidance, psychological interventions, and exercise therapy have varied.

Subtheme 1: importance of a combined theoretical and practical approach

The multidisciplinary approach, which combines theoretical lessons and practical exercises and addresses multiple biopsychosocial factors, was deemed crucial for effective treatment by **both employees and HCPs**. Educating patients on pain mechanisms, muscle strengthening, and physical activity was seen as essential in reducing movement-related fear and anxiety. This, in turn, is believed to contribute to long-term management and prevention of relapse. The use of small and simple methods to educate patients was emphasized, enabling them to be more reassured and manage their health more effectively once they leave the healthcare setting (further discussed in Theme 3).

> *"We are talking more and more about a biopsychosocial approach, saying that there is more to it than treating the back as a body part. I think we have to go beyond that. And that's part of the success of the program too." (HCP 18).*

Subtheme 2: exercise therapy – Individual guidance, group sessions, and motivational aspects

Employees valued physical therapy for its efficacy in augmenting core stability, fortifying trunk musculature, and mitigating lumbar discomfort. However, challenges arose for some employees who struggled with difficult floor exercises, leading to exacerbated pain and subsequent frustration. In contrast, relaxation exercises received positive evaluations for their manageability and enjoyment. Group sessions were highly valued by employees, who felt that the shared experiences of others with LBP alleviated feelings of isolation and fostered a sense of community, which enhanced motivation and satisfaction.

"I thought I was alone at first. When I saw that more people suffer from back pain as well, from different occupations and different ages, my eyes opened up. So, I thought, I'm not alone, I have to move forward." (Employee 4).

"That's something really interesting. Even with different pathologies and levels, or mixing young and older patients, it's not an issue. The group effect really benefits rehabilitation—I see a big advantage in it." (HCP 18) - "And as a patient?" (Moderator) - "The ideal is a group. We were 8 to 12 people, with a rotation of newcomers and those finishing. We pushed each other, especially those with lower motivation. Even the physiotherapists let us support one another." (Employee 15) - "In a group, people focus less on their pain. Alone, they tend to dwell on it. But in a group, they talk, reassure each other, and realize others struggle too. I think that's valuable." (HCP 18).

However, disparate views regarding the sufficiency of guidance and feedback while utilizing exercise equipment were expressed; one **employee** reported feelings of isolation and a need for better support, whereas others expressed satisfaction with individualized instruction and extended one-on-one sessions. The **HCPs**, on the other hand, emphasized the importance of monitoring progress, setting goals, and experiencing the benefits of the exercises to increase motivation. To bolster this, in some centers, a system was instituted wherein participants kept a progress journal, identifying motivation as a pivotal determinant of program success.

"Feedback came too late. I was using exercise equipment incorrectly, which they only told me after four weeks. Someone was in the room, though continuously preoccupied with a phone or computer." (Employee 8).

"Everyone needs to have a goal. I think it's important to be able to tell yourself that you're making progress." (HCP 18).

Subtheme 3: psychosocial interventions

The **employees** held varying perceptions of the psychologist's role in the treatment program. While some acknowledged its positive impact on their mental health, others deemed one-on-one psychological consultations unnecessary. One employee even noted its absence from the program. Nonetheless, several employees desired more extended psychological support during their rehabilitation, believing that it would have significantly aided their recovery. Psychologists primarily led group sessions focused on addressing pain beliefs and coping strategies while also assessing patients for potential individualized psychological care. However, patients requiring psychological follow-up are often responsible for requesting individual consultations. **HCPs** recognize the critical role of psychosocial components in the rehabilitation of LBP patients even more and consider the program's psychological component to be limited. To address comorbidities and risk factors for chronicity, HCPs recommend increasing the number of psychological consultations.

"Yes, we have a psychologist who systematically sees patients, but that's it. We don't intervene professionally. Occupational therapists focus on the spinal economy, provide advice, and address individual questions. However, we do not work in the field. As therapists, we stop at the medical aspect, but I think we should go beyond that." (HCP 18) - "I agree. During physiotherapy, I saw people with very different mental states, some much lower than others. Psychological support could be valuable." (Employee 14).

Subtheme 4: occupational therapy – ergonomic tips and tricks

The ergonomic tips and tricks that were taught during the program were particularly memorable for the **employees**. Despite having some prior knowledge, the employees gained new insights into proper positioning, adapting movements, and avoiding activities that were considered valuable for their daily lives and work. **HCPs** emphasized the importance of professional gestures during the sessions and noted that the program helped participants become more attuned to their bodies and gain confidence in their daily activities. Some centers went beyond the standard program by integrating specific workshops on pain management, ergonomics, and activities of daily living.

"I actually do find ergonomics the most interesting of all parts. Although we have a component of ergonomic work in our education, it still provides a good refresher and a whole lot of tips." (Employee 8).

"You know it's incurable, but with the tips and tricks, you can learn how to deal with it. And you do learn about the tools that could help some people." (Employee 3).

Theme 3: duration and continuation

Employees and HCPs identified the 36-session format as a mixed experience, with some finding it sufficient, whereas others advocated a longer duration. Multiple dropout factors, such as balancing work and rehabilitation, limited therapist–patient connections, and socioeconomic barriers, were cited. Both groups agreed on the importance of ongoing support—such as booster sessions—to maintain long-term benefits and address unmet needs after program completion.

Subtheme 1: adequacy of program length and reasons for dropout

Opinions among **employees** and **HCPs** varied regarding the adequacy of the 36 sessions: some advocated extending its duration, particularly for occupational therapy integration, whereas others found it sufficient. Two **employees** from the French-speaking focus groups discontinued the FEDRIS secondary prevention program—one due to job resumption and the other due to dissatisfaction with the lack of structured guidance and supervision from therapists. Other employees cited the time commitment and logistical challenges, particularly when balancing work responsibilities and travel to the center. Conversely, **HCPs** identified additional dropout

factors, including a lack of connection with therapists, the perception that attendance was merely a sick leave obligation, and broader work-life balance difficulties. They observed that individuals from lower socioeconomic backgrounds often faced greater challenges in adhering to the program because of practical and financial constraints. HCPs expressed a commitment to enhancing program customization to reduce attrition rates.

> *"I have to admit that I followed it four years ago now and I realize that I would have needed more sessions [occupational therapy] to integrate the right reflexes." (Employee 12).*

Subtheme 2: continuation after program completion

Employees expressed concerns about the lack of structured support postprogram. Although some continued exercising independently, financial constraints limited others from seeking further guidance. Upon program completion, some participants received an exercise booklet and educational materials. **HCPs** recommended the use of questionnaires to assess retention and areas for improvement, stressing the importance of continuous physical activity and self-care. They also reported that some employees enrolled in consolidation sessions—one hour per week, partially covered by NIHDI—received positive feedback. However, some employees were unaware of this option. Both groups suggested implementing booster sessions, ranging from two to five sessions per year, to maintain program benefits over time.

> *"Some patients continue with the consolidation sessions." (HCP 10) - "Yes, approximately 71% of them [in their center]." (HCP 13) - "So they remain in care since the 36 sessions must be completed within six months, followed by the 104 sessions." (HCP 10) - "For the 104 sessions, there's no set duration. Patients can choose, and experience shows that coming once a week for an hour is a smart choice. It helps maintain physical condition, and anything extra is a bonus. I think it's great because it sustains the benefits over time." (HCP 13) - "Yes, and it also allows us to focus on aspects that weren't fully addressed after the initial 36 sessions." (HCP 17).*

Discussion

Main findings

This qualitative study explored the experiences and perceptions of employees and HCPs regarding the MBR component of the secondary prevention program for LBP, which is partially reimbursed by FEDRIS. Three overarching themes were discussed, interpreted, and compared with the findings of previous research. A summary of these themes and their clinical implications, on the basis of the program's strengths, challenges, and suggested solutions, is presented in Fig. 2.

Functional and work-related outcomes

The short- and medium-term benefits of MBR programs in reducing pain and disability are well documented[36,37]. However, the diverging perceptions in our findings highlight that employees and HCPs may experience long-term efficacy differently, mirroring the literature's ongoing debate about the sustainability of these benefits[38,39]. This discrepancy can stem from varied enrollment timelines—HCPs participated while actively involved in the program, whereas employees completed it between 2015 and 2019. Subjective biases also play a role, as HCPs might unintentionally overestimate effectiveness, whereas dissatisfied employees may have been more inclined to participate in our focus groups. Importantly, the FEDRIS program, designed as a secondary prevention measure for LBP, is available only to those who are already incapacitated. As a result, many participants may be managing chronic conditions by the time they enroll, potentially affecting long-term outcomes.

Interpreting these observations through a biopsychosocial lens underscores the interplay of biological, psychological, and social factors shaping long-term efficacy. As revealed in a recent concept analysis[40], crucial attributes of BPS rehabilitation for chronic LBP include personalization, self-management, participation, and goal setting—all of which affect how individuals perceive success in both personal and professional spheres[40]. Indeed, high expectations of a "pain-free" existence, rather than emphasizing functional restoration, can hinder progress[41–43]. Promoting realistic goals—such as incremental work adjustments, ergonomic adaptations, or lifestyle modifications—better aligns with a person-centered approach, wherein each patient's unique capabilities, values, and work demands are taken into account. These nuanced findings also validate the importance of "lifestyle modifications" in sustaining benefits, particularly when employees confront the physical demands of daily life. Many patients distinguish between general activity and "medical exercise" intended solely for pain relief[44–46]. Psychological factors, such as fear of movement, may also be amplified by a single-minded focus on pain rather than broader health outcomes[47,48]. HCPs thus play a pivotal role in reframing rehabilitation, steering patients toward comprehensive functional goals and holistic well-being[49,50].

Work reintegration likewise depends on a biopsychosocial approach to accommodate each individual's occupational challenges. Our findings confirm that ergonomic advice, work-specific exercises, gradual RTW, and feasible job adaptations promote successful RTW among both employees and HCPs[36,51,52]. The literature supports these findings and highlights barriers to RTW, such as persistent pain, lack of employer flexibility, and personal issues, such as somatic symptoms, fatigue, and an inability to meet work demands[9,53,54]. In addition, employees in physically demanding roles face particular hurdles if employers are unwilling or unable to adapt, sometimes requiring reduced hours or career changes due to financial constraints. The "physical health paradox" suggests that even physically demanding jobs may not protect against declining work ability[55–57]. This aligns with evidence identifying biomechanical risks for chronicity[58], underscoring the need for targeted workplace interventions—especially in heavy labor settings. A person-centered, collaborative method that engages employees, employers, and HCPs can foster realistic, supportive reintegration plans[58]. While this study briefly

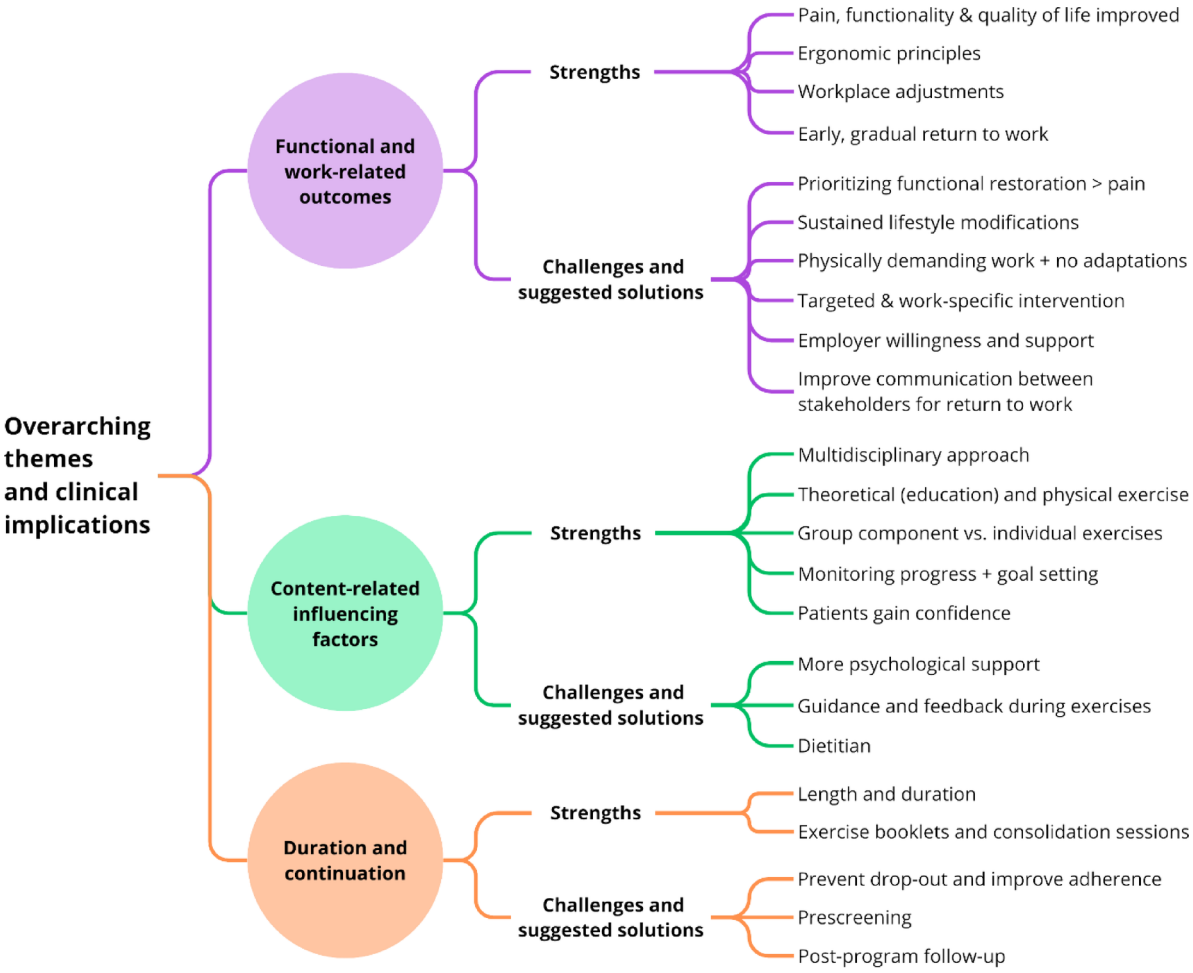

Fig. 2. Summary of overarching themes and clinical implications from discussion.

addresses these aspects, the complexities and significance of these coordinated efforts are discussed in greater depth in a separate article (under review[29]), which focuses on the theme of "Workplace intervention."

Content-related influencing factors

Our analysis reaffirms the core tenets of a biopsychosocial model for LBP management[12–16], wherein both employees and HCPs agree that individualized care, group exercises, and targeted education help address the multidimensional nature of LBP. Consistent with a recent concept analysis[40], psychological support—including cognitive-behavioral interventions and counseling—has proven central to mitigating unhelpful pain beliefs and facilitating self-efficacy. Similarly, employees value group formats for the social support and shared experiences they provide[59–66]. However, the varying intensities of physical exercise and the inconsistent quality of real-time feedback highlight the tension between "one-size-fits-all" protocols and genuinely person-centered or individually tailored programs[67–69].

Promoting participation and self-management can help resolve this tension, especially by offering flexible, patient-directed goals and graded exercises that align with personal values[67–69]. Additionally, education on LBP physiology, stress management, and ergonomics has been shown to empower patients in self-management[41,70–72]. In this study, employees who appreciated ergonomic training often highlighted practical, work-relevant exercises that bridged clinical instruction with real-world demands. In contrast to HCPs, some employees are less convinced of the need for psychological interventions—emphasizing the importance of early and clear education on the role psychosocial factors play in the persistence of pain[58]. When these yellow flags remain unaddressed, the path to long-term RTW can be derailed by fear avoidance, depression, or unhelpful pain attributions[73,74].

While the FEDRIS program mandates a multidisciplinary team—including a physician, physiotherapists, occupational therapists, a psychologist, and an ergonomist—variability in staffing and resource allocation across centers may affect care consistency, as FEDRIS sets only basic personnel and infrastructure standards without defining optimal staffing levels or individualized care provisions. Tailoring the number and expertise of HCPs according to each patient's complexity may help ensure that group sessions, individual exercises, and psychological counseling coalesce into a coherent whole. Standardizing certain aspects (e.g., minimal staffing requirements or baseline assessments) while still allowing site-specific flexibility can improve care consistency

without undermining person-centered delivery. Our results highlight employees' desire for more consistent guidance, validating calls for clearer policy guidelines about HCP-to-patient ratios and resources.

Duration and continuation

Our findings suggest that neither employees nor HCPs reached a consensus on the "ideal" program length—reflecting both personal preferences and the broader debate in the literature[37]. However, extended programs can align with effective MBR interventions that surpass a threshold for meaningful impact[37]. This resonates with a biopsychosocial concept analysis, which underscores the importance of regular follow-up and guidance for maintaining benefits[40,75]. Accordingly, we observed that employees would value postprogram support more strongly. Some centers have already begun implementing successful strategies, such as providing exercise booklets and offering consolidation sessions. These structured consolidation sessions or booster sessions may sustain self-management skills and reinforce new psychosocial coping strategies[59,65,76–78].

Finally, given the resource-intensive nature of MBR and its varied accessibility, HCPs agree that improving program adherence and reducing dropout rates are essential. This can be achieved by accommodating patients' work and personal commitments, strengthening the therapist–patient relationship, and using prescreening or prediction models to identify factors linked to MBR success. Although prescreening has only been briefly addressed, it appears to be partially implemented in some centers; nevertheless, all HCPs concurred—consistent with the literature—that systematic prescreening could foster more efficient, personalized rehabilitation and healthcare[13,79]. Drawing on insights from Dhondt et al.[80], it appears prudent to tailor interventions on the basis of pretreatment screening of factors such as posture-related symptom aggravation, pain duration, or fears related to LBP. For example, patients reporting posture-induced pain might benefit from an increased focus on ergonomics, whereas those with persistent pain, misconceptions, or fear avoidance may require pain neuroscience education and cognitive behavioral strategies[80]. In cases of severe fear-related disability or sleep disturbances, additional support from psychological or sleep medicine specialists is recommended[80]. Furthermore, telerehabilitation may also offer a solution to mitigate time constraints and expand access, particularly for lower socioeconomic groups[81]. Finally, cost-effectiveness emerges as a significant question, warranting further inquiry into economic and long-term outcomes.

Methodological considerations

A primary strength of this study is its in depth, first-time qualitative evaluation of the MBR component in the FEDRIS secondary prevention program for LBP. By capturing the perspectives of both Dutch- and French-speaking participants across various rehabilitation centers and occupations, we obtained rich and context-specific insights. Although certain HCP groups (e.g., occupational and rehabilitation physicians) were overrepresented, this reflects the composition of the program's multidisciplinary teams and offers direct, practice-oriented findings that can inform future policy and implementation.

Despite these strengths, there are notable limitations. Selection bias may have arisen from the voluntary nature of participation, potentially underrepresenting diverse employee viewpoints. Of the 300 employees invited, only 42 expressed interest, and only 15 ultimately participated due to logistical barriers (e.g., availability, travel, last-minute cancellations). Furthermore, recall bias is a concern, as some employees completed the FEDRIS program up to eight years prior to data collection (April 2022–April 2023). This extended timeframe may have affected specific memories regarding pain, functional capacity, and RTW experiences, although many participants provided detailed accounts that were likely reinforced by ongoing LBP-related challenges.

While the sample was diverse linguistically and institutionally, certain stakeholders (e.g., health insurers, FEDRIS officials) were not included, limiting a more comprehensive overview. In addition, we employed a thematic structure that facilitated clarity yet may not fully capture the interconnectedness of participants' experiences. Although we highlighted links between content-related factors, functional outcomes, and RTW, separating these themes inevitably simplified some interdependencies. Moreover, the present article focuses on three overarching themes, whereas "Practicalities" and "Workplace intervention" are addressed separately. This multifaceted approach allows for deeper exploration of each theme but may prevent a fully integrated view of the broader rehabilitation experience.

We opted for a data-driven (inductive) thematic analysis, aiming to stay as close as possible to participants' accounts and minimize the influence of preexisting knowledge or interpretations[33]. Although reflexive thematic analysis might have offered a more interpretive angle, we prioritized low inference reporting to represent participants' voices faithfully. Our interdisciplinary team inevitably brought varying professional lenses to the analysis, but this also enriched the interpretive scope.

While statistical generalizability is not the goal of qualitative studies[82], this research offers valuable, transferable insights into an MBR program's strengths, challenges, and potential solutions. It forms part of a larger initiative assessing FEDRIS's secondary prevention strategy for LBP, with a view toward informing healthcare practices and policy. Future prospective or longitudinal research could mitigate recall bias, capture real-time experiences, and facilitate more robust participant engagement. By further refining methodological approaches and incorporating additional stakeholders, subsequent studies can deepen our understanding of how to optimize the MBR component and ultimately enhance its long-term effectiveness.

Conclusion

This qualitative evaluation highlights both the strengths and challenges of the MBR component in FEDRIS's secondary prevention program for LBP. The participants specifically valued group-based, education and graded exercises but underscored the need for systematic follow-up and prescreening to optimize long-term outcomes. In particular, person-centered strategies—including individualized education, ergonomic guidance, and psychological support—were perceived as pivotal for improving RTW success and quality of life. However,

variations in staffing, follow-up procedures, and postprogram support signal a broader need for consistency and structured care pathways. In alignment with biopsychosocial and person-centered principles, future efforts should incorporate flexible treatment pathways, enhanced postprogram support, and longitudinal or prospective designs to ensure sustained, cost-effective benefits for individuals with LBP.

Data availability

The datasets used and/or analysed during the current study available from the corresponding author on reasonable request.

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Author contributions

LBe, TMW, DR, CD, DVdV, and LBr contributed to the original design of the study. LBe, GHL, MM, DR, and CD collected the data. LBe, GHL, and MM participated in the data analysis, and all the authors contributed to the data interpretation. LBe, as the first author, wrote the initial draft of the manuscript with contributions from GHL and MM. DVdV, a health researcher with extensive experience in qualitative research, mentored LBe through the analysis and write-up of this project. All the authors contributed to the interpretation of the results and critically revised the manuscript for important intellectual content. All the authors have read and approved the final manuscript.

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Declarations

Competing interests

The authors declare no competing interests.

Consent for publication

Not applicable.

Ethics approval and consent to participate

All procedures followed were in accordance with the ethical standards of the responsible committee on human experimentation (institutional and national) and with the Helsinki Declaration of 1975, as revised in 2000. The independent Ethical Committee of the Ghent University Hospital granted approval on the 28 th of February 2022 (Reference Number BC-10945). Informed consent was obtained from all included participants.

Additional information

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