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Patients' experiences living with claudication and healthcare professionals' perspectives of managing the condition: A qualitative study

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Background: Peripheral artery disease (PAD) and claudication significantly affects mobility, leading to disability and reduced participation in daily activities. Regular physical activity improves walking capacity, quality of life, and reduces cardiovascular risk, yet many individuals with claudication remain inactive, worsening disease outcomes. Existing interventions have struggled to promote sustained increases in physical activity. To develop more effective strategies, it is essential to understand the lived experiences of individuals with PAD and claudication and the perspectives of healthcare professionals involved in their management.
Objective: To explore the lived experience of people with claudication and healthcare professionals who care for people with claudication.
Methods: Using a phenomenological approach, a qualitative study was conducted involving six participants who were purposively recruited from the vascular clinics of two NHS Scotland Health Boards. Three people with claudication and three healthcare professionals participated in focus group discussions of their experiences living with, and providing care for people living with claudication. The transcribed texts from the focus group discussions were analysed thematically. The study was approved by the Glasgow Caledonian University's ethics committee and the NHS Research Ethics Committee.
Results: There were overlapping themes that emerged from the patients' and healthcare professionals' groups including the need for appropriate patient education/information sources, and perceptions of disparity in the availability of healthcare services/resources. Other themes from the patients' included experience of reduction in their overall health status and quality of life, and the negative impact of comorbidities. Other themes from the healthcare professionals' included heterogeneity in patients' clinical presentation requiring tailored approaches, unrealistic patients' expectations, and emphasis on the positive impact of exercise programmes on patients' outcomes.
Conclusions: The findings underscored the complexity of managing PAD and claudication, highlighting the need for a nuanced approach that integrates personalised care, improved patient education, and improving the availability of healthcare services for patients with PAD and claudication. Interventions aimed at

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strengthening patient education and awareness of the condition and its management from the point of diagnosis, alongside strategies to address barriers to physical activity, are crucial for improving patient care and outcomes.

Social media abstract: there is need to improve patient education, and improve availability of healthcare services for patients with PAD/Claudication @GCU @UoS

Introduction

Claudication, a common symptom of peripheral artery disease (PAD), is characterized by severe pain, cramping or discomfort in the lower extremities; especially in the calf muscles and less commonly the thigh and buttock muscles.[1] The pain typically does not occur at rest, is reproducible with mild exertion such as walking, does not improve while continuing to walk, and is usually relieved within approximately 10 minutes of rest.[2] PAD significantly impairs mobility, quality of life, life expectancy, and emotional well-being, affecting over 232 million people globally.[3] Reports from population studies indicate that about 20% of individuals aged over 60 years have some level of PAD,[4] and about 20% of individuals between the age 55 and 75 years in the UK have evidence of PAD.[5]

Patients living with claudication often describe feelings of frustration, isolation, and helplessness, as the pain and mobility impairments limit their ability to perform activities of daily living and engage in social activities.[6] These experiences are further complicated by variability in symptom progression, treatment responses, and other personal factors.[6] The impact of the reduced walking and functional capacity sometimes mean that patients with claudication would need help from family or formal caregivers, which could cause a feeling of being a burden to others.[7] Claudication is associated with anxiety and depression, and a complete loss of independence.[8]

The primary goals of treatment for patients living with claudication are to provide symptom relief (especially, pain reduction), improve quality of life, improve independence, and prevent the progression of the vascular disease and cardiovascular complications.[9] Current management strategies for claudication emphasize risk factor modification, and supervised exercise programmes (SEPs), which typically involve structured, clinician-led walking exercise (most commonly treadmill-based) performed at least two to three times per week over a period of 8–12 weeks, with exercise intensity guided by claudication symptoms and progression tailored to the individual.[10–12] However, none of the management options are without limitations. Risk factor modifications such as smoking cessation, and control of blood sugar and lipid profile levels are beneficial in slowing the progression of PAD, however, they usually do not result in an immediate improvement in the disabling claudication symptoms.[13,14] SEPs have been evidenced to improve mean walking distance by approximately 290 metres (951 feet) and quality of life, with a moderate-to-large effect size (0.63), indicating a clinically meaningful improvement in quality of life,[10] and has been recommended as a first-line therapy for managing claudication in clinical guidelines globally.[11,12] Despite the reported benefits of SEPs, they are not widely available for patients with claudication within the National Health Service (NHS) in the United Kingdom (UK),[15] and where they do exist, there is usually poor uptake and high attrition rates ($\leq$50%).[16] As a result of the lack of availability of SEPs within the UK NHS, healthcare professionals often provide basic walking advice in the form of "go home and walk", which has been evidenced to have limited efficacy in improving physical activity (PA) in patients with claudication.[17,18] Hence, patients with claudication often resort to self-help to manage their condition, such as self-directed lifestyle modifications, activity pacing, and reliance on informal information sources and peer support outside formal healthcare pathways.[19]

A number of studies have explored how patients experience living with claudication with a focus on symptom presentation and limitations caused by the condition.[7,20,21] However, the existing studies did not explore how people with PAD self-manage and what affects engagement with PA. Therefore, more studies are needed to fully understand how patients with claudication handle problems caused by the condition and what impacts the physical activity behaviour of patients with claudication. Furthermore, the National Institute for Health and Care Excellence (NICE) recommended the need for more studies to further uncover patients' attitudes, beliefs, and knowledge of PAD and the types of interventions that might translate to improved outcomes for patients with claudication.[22] Such studies are critical in the development of complex interventions to improve physical activity behaviour of patients with claudication.[23]

Healthcare professionals, who play a central role in managing patients with claudication, face unique challenges in supporting these patients, as they must navigate complex patient needs, managing expectations, and barriers to adherence.[19] For example, patients usually perceive surgical procedures as a 'silver bullet' and are often disappointed when they are told otherwise.[6,24] Healthcare professionals are also challenged by the ideal of balancing general clinical guidelines with the need for individualized care, often in the context of limited resources or systemic constraints (for example unavailability of services and staff).[25] Hence, understanding healthcare professionals' perspectives on caring for patients with claudication may further inform improvements in practice and policy. None of the existing studies of patients' lived experience have explored healthcare professionals' experiences of managing patients with claudication.

This qualitative study aims to explore patients' lived experiences with claudication and healthcare professionals' perspectives on managing the condition. By examining the dual perspectives of patients and healthcare providers, this study seeks to deepen the understanding of the challenges and needs associated with claudication, ultimately guiding strategies to improve care, enhance patient outcomes, and promote a more holistic approach to managing this debilitating condition.

Methods

Design

This study used a phenomenological qualitative approach to explore patients' lived experiences with claudication and healthcare professionals' perspectives on managing the condition. The Consolidated Criteria for Reporting of Qualitative Research (COREQ) guidelines was followed for the reporting of the study[26] (Supplementary Material 1). This study is the first phase of a three-phased project (the CREATE study- **C**o-c**RE**ating physical **A**ctivity interventions for in**T**ermitt**E**nt claudication) aiming to co-create an intervention that will facilitate improvement in the physical activity

behaviour of patients with claudication. While this first phase focused on patients' lived experiences and healthcare professionals' perspectives of managing claudication, the second phase will focus on exploring the barriers and facilitators to PA in patients with claudication and mapping them to relevant behaviour change theories. Finally, the third phase of the project will aim to leverage the identified barriers and facilitators to co-create (involving patients, healthcare professionals and academics) an intervention for improving PA in patients with claudication.

Sample and recruitment

The inclusion criteria were patients aged ≥18 years with a diagnosis of claudication that had been established and documented during routine NHS care, and subsequently self-reported by participants at the time of recruitment; and healthcare professionals (vascular surgeons, and physiotherapists) with experience of managing people with claudication. All patient diagnoses were made by qualified healthcare professionals as part of standard clinical care, based on clinical assessment and relevant diagnostic investigations (e.g., ankle-brachial pressure index and/or vascular imaging where indicated). Vascular surgeons and physiotherapists were purposively included to capture complementary perspectives across the claudication care pathway, reflecting differences in clinical roles, training, and responsibilities in the management of PAD and claudication. Exclusion criteria were people without PAD, or with asymptomatic PAD, and individuals with cognitive impairment(s) that limited their ability to provide informed consent or follow the study procedure. These were determined through screening from referring clinicians and through pre-session phone or video call conversations with the researcher. Six participants (three patients and three healthcare professionals) participated in the study, and the data retrieved was sufficient in providing new insights and understanding of the phenomenon of interest,[27,28] which was the goal of this study phase.

The recruitment was purposively conducted with the help of two site investigators (one for each health board) who were healthcare professionals (a vascular surgeon and a physiotherapist) involved in the care provision for the patients at the vascular clinics of two NHS Scotland Health Boards. The snowballing technique was also used to increase the number of participants, as recruited participants were asked to invite other patients who also met the study inclusion criteria. Patients recruited in vascular clinics signed printed consent forms, while patients recruited via snowballing were sent consent forms via email, which they signed and returned before they were involved in the study.

Ethical considerations

The study was approved by the Glasgow Caledonian University's ethics committee (HLS/PSWAHS/22/096) and the NHS Research Ethics Committee (23/WS/0069). All participants signed written informed consent before they were involved in the study.

Research team

The research team consisted of three male physiotherapists (two Senior Lecturers with PhDs and one PhD candidate) and a female physical activity research expert (a Senior Research Fellow with PhD). The research team are experienced researchers with relevant training in qualitative research methods. The focus group discussion on the participants' experiences of living with or managing claudication was conducted by three members of the research team (a female Senior Research Fellow, a male Senior Lecturer, and a male PhD student). A relationship was established prior to the study, as the PhD candidate organised upskilling sessions for the participants to discuss the research aims and how to use Zoom conferencing software. The trustworthiness of the data was enhanced through debriefing sessions organized after the focus group discussion and during the data analysis phase.

Table 1
Topic guide for focus group discussion.

For the patients' breakout group:
1. Please tell us about your experience living with living with claudication.
Prompts:
- How would you describe the kind of pain you feel?
- How does it affect your mobility?
- How does it affect your activities of daily living/daily life?
- How does it affect your social life?
- How does it affect your mental health?
2. What challenges do you face because of claudication?
Prompts:
- Does it affect your finances?
- Are there things that were important to you that you have lost as a result?
3. How do you cope with it?
Prompts:
- What coping mechanisms work best for you?
- How do you manage the pain that claudication causes?
- Are there support groups/charities that have helped you and how did they help you?
For the healthcare professionals' breakout group:
1. Please tell us about your experience managing people with claudication.
Prompts:
- How do patients respond to the news of their PAD/Claudication diagnosis?
- What symptom dynamics have you seen in patients with claudication?
- What management has the best outcomes from your experience?
- What are the success rates of vascular surgeries?
- Are all patients with claudication eligible for vascular surgery?
2. What challenges do you face?
Prompts:
- Are there challenges with adherence?
- Are there limitations in the service delivery?
- Do you think you have/had all the necessary tools to effectively manage patients with claudication?
- What would be your recommendation for a more efficient management?

Data collection

A focus group discussion was conducted online using the Zoom Video Communications. An engagement with a Participant and Public Involvement (PPI) group comprising of patients with PAD and claudication, and healthcare professionals (vascular surgeons and physiotherapists) during the ideation stage of the project informed the choice of using an online method. The main rationale for the online method was to limit travel costs and to take into consideration the work engagements of healthcare professionals. The focus group session lasted for two hours and was recorded by three researchers (EA, CS, PD). A breakout session was arranged to separate the participants into groups; a) patients with claudication, and b) healthcare professionals, and one researcher per group was assigned to facilitate the discussions. The purpose of the separation was to manage the impact of the unequal power dynamics and to create a safe space to encourage more free expression. A general discussion with all the participants was conducted to summarize and discuss points emerging from the breakout sessions. The topic guide for the focus group discussion is presented in Table 1. The topic guide was designed to support, rather than direct, discussion. Open-ended questions were used initially to allow participants to

describe their experiences in their own words. Prompts were only used when necessary to encourage elaboration or clarification and were not intended to suggest that specific problems or experiences were present. The topic guide was pilot tested with academics who are experienced in qualitative research prior to the study to ensure that it elicits rich data considering the small sample size.[29] Only the facilitators had access to the topic guide, and they used it to moderate the breakout sessions. The session lasted for 2 hours in total, the breakout discussions lasting 40 minutes in each breakout group. The video conferencing software facilitated a verbatim transcription and audio and visual recording of the sessions. The recordings were used to check the accuracy of the transcription by one researcher (IA).

Data analysis

A thematic analysis was conducted to analyse the transcribed focus group data. Braun and Clarke's six stages of thematic analysis was used, providing a rigorous and systematic framework for identifying and interpreting patterns of meaning within the data.[30] For familiarization, the transcripts were read and re-read multiple times by two researchers (EMA, CS) to get immersed in the data. During this stage, initial notes were made in a reflective journal, and broad ideas were documented for potential patterns. The data was systematically coded by the same two researchers independently using NVivo qualitative data indexing package (NVivo 12). Initial codes were generated inductively, based on recurring topics, phrases, and ideas that emerged from the data. The coding feature in NVivo facilitated the organization of these codes into a structured framework, ensuring transparency and consistency. The initial codes were then examined for overarching patterns. Codes were grouped into clusters representing broader themes, using Nvivo's node hierarchy to categorize related data. At this stage, potential themes were identified and organized to reflect the relationships between them. Memos were created in Nvivo to document the rationale behind thematic groupings and connections. Themes were reviewed and refined to ensure they accurately captured the underlying meaning of the data. A third researcher (OE) read the transcripts independently and reviewed the generated thematic framework. Considerations was given to each theme individually and how the themes aligned with each other, the research questions and overarching narrative. Agreement was reached on the key themes and subthemes.

To enhance the credibility of the findings, member checking was conducted by providing each participant with summary of the themes and draft report of the findings and asking them to review for accuracy. Participants were invited to provide feedback on whether the interpretations accurately reflected their experiences and perspectives. Any discrepancies identified were discussed with the participants to clarify their meaning, and necessary adjustments were made to the analysis based on their feedback.

Results

A total of 16 patients living with claudication and 6 healthcare professionals (4 vascular surgeons and 2 physiotherapists) were purposively recruited and consented to participate in the study, however, 13 patients and 3 healthcare professionals did not participate in this stage of the study. Reasons for not participating for patients included family bereavement (2 patients), deteriorating health status (2 patients), could not commit to the time (2 patients), did not respond when contacted (3 patients), did not attend (3 patients), and illness of relative (1 patient). For the three healthcare professionals, the reasons for not participating was their unavailability due to clinic duties. Therefore, a total of six participants ($N = 6$), comprised of three (50%) patients with a diagnosis of claudication and three (50%) healthcare professionals (two vascular surgeons, and a physiotherapist) participated in this stage of the study. The patient group were 100% female ($n = 3$), 100% White ($n = 3$), with a mean age of 65.5 ± 6.36 years and duration of claudication symptoms ranging from 2 to 18 years. The healthcare professionals' group ($n = 3$) were 67% male ($n = 2$), 100% White ($n = 3$), with a mean age of 49.3 ± 14.29 years, and 7 to 35 years of experience managing patients with PAD and claudication. The healthcare professionals included two consultant vascular surgeons and one senior physiotherapist, all of whom had extensive experience in the assessment and management of patients with PAD and claudication.

The findings are presented taking cognizance of the two overarching research aims: patients' experiences of living with claudication, and healthcare professionals' experiences of managing patients with claudication. Four main themes emerged from the patients' group, while five main themes emerged from the healthcare professionals' group. The overriding intersecting themes that emerged from both groups were perceived disparity in accessing healthcare and other resources, and the need for educational resources for patients with claudication (See Fig. 1).

Patients' experiences of living with claudication

The following themes emerged from the analysis of the patients' focus group discussion: a) Reduction in overall health status and quality of life; b) Multimorbidity alongside PAD/claudication worsen outcomes; c) Perceptions of disparity and unavailability of healthcare services/resources; d) Need for appropriate patient education and other information sources. See Table 2 for the initial (open) codes that informed the themes.

Reduction in overall health status and quality of life

Participants narrated that they experienced a steady decline in their overall health status and quality of life due to the negative impact of claudication. They highlighted that the condition negatively impacted both their physical health and Mental/Emotional health.

Physical impact

Participants consistently described how living with claudication profoundly diminished their health status and overall quality of life. Most participants reported that the pain and discomfort associated with claudication significantly restricted their mobility and daily activities. Even short walks became very challenging due to pain, and that the amount of pain they feel when they attempt walking is demotivating, leading to a lack of interest in any activity that would precipitate the pain. One participant shared, *"Every time I hear advice such as 'take yourself out for a brisk walk', I could put my fingers down my throat and throw up. I haven't been able to have a brisk walk for over a decade. So the benefits that you would expect from just going for a walk at lunchtime, you don't have that. And being able to do it isn't a reward in itself, because in order to make it work at all, you're either spending more time stopping than you are walking or you're walking in pain" (P2).*

Participants expressed that the mobility limitations caused by claudication mean that sometimes they would have to depend on others to perform simple tasks. For example, one participant stated, *"I find that there are things I want to do, and I think I can do them, and I try and do them, and it ends up disastrous, and I'm*

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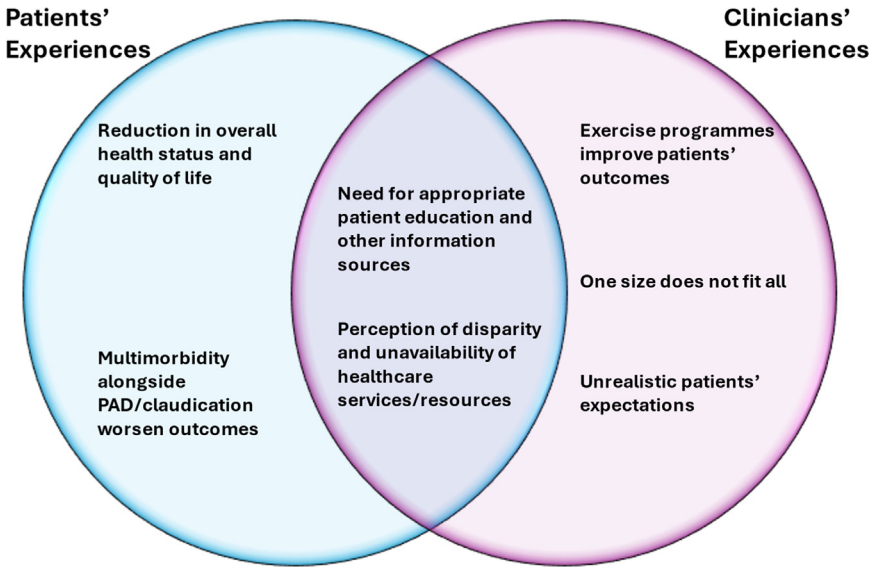

Fig. 1. Main themes from the focus group discussion on patients' lived experiences and healthcare professionals' perspectives of managing claudication.

Table 2
Initial (open) codes underpinning the development of themes on patients' experiences of living with claudication.

Theme 1: Reduction in overall health status and quality of life	Theme 2: Multimorbidity alongside PAD/claudication worsen outcomes	Theme 3: Perceptions of disparity and unavailability of healthcare services/resources	Theme 4: Need for appropriate patient education and other information sources
• Mobility limitations • Fatigue • Pain • Reduced ADLs • Reduced walking capacity • Reduced finances • Mental health issues • Feeling isolated	• Issues with co-morbidities • Individual Differences in Presentation • Other conditions limit walking	• Long waiting List • Poor availability of healthcare professionals • No available Charity • Poor Access to Resources • Delayed Diagnosis • Poor MDT Communication	• Poor patient education • Social media peer supports • Differences in medical opinion

Key: ADL: activities of daily living; MDT: multidisciplinary team; PAD: peripheral artery disease

shouting at my husband to come and get me down a 2-step ladder because I just can't move" (P1).

Fatigue is another limiting factor that impacted patients' physical capability, as participants reported that they get exhausted while attempting to perform their activities of daily living. One participant stated, *"Most days, I just haven't got an ounce of energy, and I just stay, and I just want to sit there, and I do just sit there, and I know I shouldn't. I know I should get up and try and do something"* (P3).

Mental and emotional impact

Chronic conditions can have profound emotional effects, such as depression, grief over lost capabilities, and changes in identity.[31] Participants reported a sense of loss and struggle with mental health, particularly when facing limitations imposed by their condition. One participant remarked, *"I get very inhibited about having any travel; I get inhibited about having to be in a wheelchair and mentally grieving for the person that I was, the job that I did, and the credibility I had, to now be this person in the wheelchair that's on the other side of the stick, and that has taken a massive toll mentally"* (P1). Another participant reiterating the impact on mental health and how it is linked to their physical limitations stated, *"The condition is a real mood flattener, not just because of all of the associations with it. I mean, even if you didn't think about it at all, physiologically it prevents you from getting those endorphins that people would expect to enjoy from just going for a walk"* (P2).

Multimorbidity alongside PAD/claudication worsen outcomes

Participants frequently reported that coexisting health conditions associated with PAD and claudication significantly worsened their overall experiences and outcomes. These comorbidities compounded the physical, emotional, and social burdens of living with claudication, creating a complex interplay of challenges that magnified the impact of their condition. Participants expressed that the presence of other conditions alongside PAD and claudication makes it difficult for them to adhere to the 'walk, walk, walk' advice provided, due to the mobility limitations that claudication causes: "*my main problem at the moment is kidney failure. I've got lupus, so I've got other problems as well, as the PAD and with the kidney failure and the fatigue and everything else that comes with it, walk, walk, walk, is no longer applicable, and I'm moving around mostly outside. If I go anywhere, I'm in a wheelchair, and it's extremely difficult to walk, walk, walk if you're in a wheelchair*" (P1). Another participant shared, "I've just been told this week that I'm very anaemic, and that has been affecting my energy and ability to walk. I've also been diabetic for 16 years now" (P3).

Participants also expressed frustration over lack of communication from the different specialisms involved which contributed to their confusion and stress: "*I see about five or six different consul-*

tants for different things. I've just got 2 letters, one from the renal and one from endocrinology, which is diabetes. I've got dermatology. They've just wrote to me. I've got vascular surgery, and I was with cardiology. I'm trying to think, there's about 6 consultants altogether. And nobody talks to anybody" (P1).

Perceptions of disparity and unavailability of healthcare services/resources

Participants reported significant challenges in accessing timely and appropriate healthcare for claudication, highlighting perceived disparities and delays in obtaining diagnoses, treatments, and support. These experiences were shaped by systemic barriers, healthcare provider attitudes, and a lack of accessible resources. Participants described prolonged periods of uncertainty and frustration before receiving a diagnosis: "*Of course, if they had looked when I had the diagnosis of the heart disease, they would have found it, and it would have been really useful for me to have known that at that time because I might have targeted my exercise program a bit better. It is not that hard to put a cuff on someone, and if you know that people with vascular disease are more likely to have another vascular disease. I mean, they check vascular patients for heart disease; why don't they check heart disease patients for vascular? It's no big deal*" (P2).

Participants also criticized the delay in getting treatment until it is too late: "*We have to wait till we're in critical limb ischaemia or have an unhealing wound before we actually get an intervention below the knee, for example. And quite a lot of the time, by the time patients get to see the vascular surgeon, unfortunately, it's been too late, and they've ended up with an amputation. Well, I've been waiting four months. He said he would put me in for his clinic, and I've been waiting for four months for the letter to say I'm on the clinic. So I don't know how long it's going to take to actually see the consultant, but every single night my feet are freezing. They're blue, and I can barely move them because they're so swollen*" (P1).

Participants also experience difficulties accessing resources, as claudication symptoms are not physically obvious, hence, they are usually misjudged as being ok. "*I'm applying for my blue badge, and I look perfectly alright. Yep, and possibly pass their walking test, but that's not the reality of me actually trying to shop or catch a train or anything like that. And so in order to have this, I have to be seen to be ill. I am ill!*" (P1).

Need for appropriate patient education and other information sources

Participants consistently highlighted the lack of accessible, tailored education and information about PAD/claudication and its management. This gap left them feeling uninformed and ill-equipped to understand or address their condition, often leading to frustration, confusion, and missed opportunities for improving their quality of life. A participant shared, "*I think there's not enough education. One of the other patients happened to say 'what is PAD?' and to me, that sums it up in a short sentence. Nobody out there knows, if you ask them, what is PAD? I practically guarantee, 90% of them will say, 'I don't know'… And I think we need more education in the community and by the health boards, and to let people know what peripheral vascular disease is. So the symptoms can be recognised earlier, and the patients don't present when they're already in CLI*" (P1).

Participants believed that educational tools could go a long way in empowering them to manage the condition, as patients do not retain a lot of information they are given during appointments. For example, a participant stated, "*I mean simple leaflets; just give. It's all about communication with the patients, and it's not that the surgeons aren't communicating, but when a patient is extremely nervous and sitting in front of a consultant getting a diagnosis, the amount that they actually retain mentally is very little. And unless they're taking copious notes, they don't remember everything you've said, and if you had a leaflet that you could just put in the reception room/waiting room that they can lift on the way out the door, that's a major step forward*" (P1).

There was also a feeling that the NHS should work towards improving public awareness about PAD/claudication considering its prevalence in the UK: "*But the NHS in itself needs to communicate with the public. It's the second biggest killer in Scotland, apart from small-cell lung cancer. And I think England's not far behind us. And why do we not talk about it? Why aren't there advertisements about it to try and avoid it when you're younger instead of treating it when you get older?*" (P2). Participants also believed that there are missed opportunities to disseminate information about findings from research studies about the effectiveness of exercise and walking, which would have been of benefit to them at the early stage of their condition. A participant shared, "*I couldn't believe when I saw all the studies that have been done about exercise and walking at a point when an intervention would make a difference. We weren't telling anybody"* (P2).

Peer support, particularly through social media, was highlighted as a valuable resource. Participants noted that online communities provided crucial support and information, often surpassing traditional NHS resources. Participants expressed that they have had to depend on social media as their primary source of information and that they do not mind the risk of getting health information from social media sources. For example, a participant stated, "*I have had more support from social media than I've had from the NHS in relation to this disease. That's the reality. I mean, that's the truth*" (P1). Another participant added, "*some people might think it's not appropriate, or you might be given the wrong information or the wrong advice. But this is my risk to take. We're talking about walking here. How bad could it be? So, it's my risk to decide whether or not I would try this or that the next time, but it's been of more assistance to me and has got me from a 6-minute walk with constant pain to half an hour walk relatively pain-free, just being with people on social media for peer support. Just making myself get on the treadmill and mark up those steps and people posting up what they did, what they saw that day on their walk, the dogs they patted, things that happened*" (P2). Participants also believed that social media is currently their only source of information and that there are experts in the social media space they use including expert patients who share valuable information outside the NHS: "*I think this social media support is a huge part of mentally being able to cope with PAD on your own. And yes, there are experts on there. There are doctors in there. There are interventionist surgeons, weight loss management, and nutritionists. There's everything that we require for information. But at the moment it is pretty much the only source of information. Outwith the NHS*" (P1). Another participant added, "*But it was; it really takes away off the NHS because it allows people to share this information. And it's good information. It's not crackpot stuff, you know. It's patient experience. A lot of these people are expert patients*" (P2).

Healthcare professionals' experiences of caring for patients living with claudication

The following themes emerged from the analysis of the healthcare professionals' focus group discussion: a) Exercise programmes improve patients' outcomes; b) Perceptions of disparity and unavailability of healthcare services/resources; c) One size does not fit all; d) Unrealistic patients' expectations; e)

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Table 3
Initial (open) codes underpinning the development of themes from healthcare professionals' experiences of managing patients with claudication.

Theme 1: Exercise programmes improve patients' outcomes	Theme 2: Perceptions of disparity and unavailability of healthcare services/resources	Theme 3: One size does not fit all	Theme 4: Unrealistic patients' expectations	Theme 5: Need for appropriate patient education and other information sources
• Positive outcome with goal-directed exercise regimen • Potentials of technology for exercise • Positive outcome with combined approach	• Disparity in funding allocations • Lack of supervised exercise programmes • Variance in services	• Need for individualized approaches • Issues with comorbidities	• Unrealistic Patients' Expectations • Wrong information from GPs • Need for role description	• Patient education helps • Issues with self confidence • Motivational factors help

Key: GP: general practitioner (doctor).

Need for appropriate patient education and other information sources. See Table 3 for the initial (open) codes that informed the themes.

Exercise programmes improve patients' outcomes

Healthcare professionals consistently reported that structured exercise programmes (e.g., walking on treadmill) significantly improve outcomes for patients living with claudication. They highlighted that goal-directed exercise programmes can improve circulation and reduce symptoms. A healthcare professional stated, "*I think people that adopt exercise like walking have the best results especially the patients that can incorporate that into their routine. So I have a cohort of patients that use a treadmill three times a week, and they've got into this established routine where they walk on the treadmill with a goal in their mind of a maximum distance they want to walk part of the routine, and they're the patients that have the biggest improvement in the walking distance*" (HCP1). Considering the challenges of limited access to supervised exercise programmes within the NHS, healthcare professionals believe that educational tools with specific information on how patients should exercise could be good alternative: "*Because there isn't this easy access to supervised exercise programs, that's where things like illustrations, podcasts, videos, etc. will come in useful in terms of patient education to direct patients towards what specific exercises can make these patients better*" (HCP2).

Perceptions of disparity and unavailability of healthcare services/resources

Healthcare professionals highlighted the unavailability of services and resources as a significant barrier to providing optimal care for patients with claudication. For example, supervised exercise may not be accessible to everyone, including people with claudication. Many reported limited access to supervised exercise programmes, despite their well-documented benefits in managing symptoms and improving quality of life. A participant stated, "In the context of limited resources and also geography, not everyone has access to physiotherapy-led supervised exercise programmes or what are prone to help with this condition" (HCP1).

There is a perceived disparity in resources allocated to PAD and claudication compared to other conditions like cancer and cardiac conditions, despite similar patient needs, as other healthcare professionals have a perception that PAD/claudication is self-inflicted, hence, not deserving of resources. A participant noted, "*I think at the risk of sounding deeply political about it, I think it's because the patient group is not regarded as deserving. And well, it's also the fact that it's self-inflicted, from what I've heard from healthcare professionals in other areas you know. Patients have been perceived judgmentally as not deserving of resources because they have a self-inflicted condition. Just to point out that that's not my view; it's the view I've heard expressed as a reason for resource denial*" (HCP2). Another participant added, "*And in an ideal world, all these patients would go into supervised exercise programmes. But we discussed about that there just isn't the resources for that. It's not a cancer. There's a perception that it's self-inflicted by cigarette smokers, which is not true. But for that reason, there isn't the release of resources that there is with other conditions*" (HCP1). Reiterating the perceived disparity, another participant added, *"Supervised exercise is already funded for cardiac rehab patients as well. So, the evidence is all there as well. So, it is sometimes quite frustrating, that there doesn't seem to be as much, yet, for this patient group"* (HCP3).

Furthermore, the participants stated that the services available for patients with PAD/claudication across the NHS health boards are inconsistent. For example, some health boards have community-based claudication clinics led by specialist nurses and physiotherapists who triage patients, conservatively manage patients with presentations that do not require surgical interventions and only refer patients who meet some criteria to the vascular surgeons; whereas, in some health boards, all patients with claudication symptoms are referred to vascular surgeons, hence, causing unnecessary delays/waiting. One participant that works in a health board where nurse/physiotherapist-led claudication clinic are available explained, "*the vast majority of patients with claudication don't even reach our radar as vascular surgeons, because it's not something that is managed, until it is managed; whereas across the country, vascular surgeons, are spending a lot of time seeing claudicants, and we're not the right people to manage them; we're not best equipped for that, so it's been fantastic for us. And it means we can focus on the pathology that we are more likely to treat, as in people who are at more risk of losing their legs rather than people who need advice and risk factor modification, and well-trained nurses or physiotherapists are much better at doing that than vascular surgeons*" (HCP1).

One size does not fit all

Healthcare professionals emphasized that a one-size-fits-all approach was ineffective in managing patients with claudication, as each patient presented with unique challenges, preferences, and circumstances. Many reported that tailoring interventions to the individual was essential for achieving positive outcomes. One healthcare professional noted, "*Let me just emphasise one of the points I made about the individualised approach. I think it's really important, and the patients are not homogeneous ones. They're a very disparate group*" (HCP2). Considering how patients differ in their presentation, the healthcare professionals stated that graded interventions that will be tailored to each patient are needed as opposed to a one-size-fits-all intervention. A healthcare professional shared, "*I think that's why I spoke about toolbox at the start, because I don't imagine a single intervention, I imagine that you're going to*

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have a bunch of interventions; you know, or you're going to have graded interventions depending on who you are going to be seeing" (HCP1).

Furthermore, the healthcare professionals suggested that things specific to each patient could be used as motivational factors to encourage physical activity: "*Also using their motivational factors or buy-in, for example, if they've got grandkids, and if they bring that up, they want to take care of their grandkids. All these other things that can help get them engaging and exercising*" (HCP3).

Unrealistic patients' expectations

Healthcare professionals frequently encountered unrealistic expectations among patients living with claudication, which posed challenges to effective management. Participants noted that many patients anticipated quick or complete resolution of symptoms, often underestimating the chronic and progressive nature of the condition. One participant explained, "*And a lot of it is managing expectations. I think patients are sometimes looking for a magic cure. They want something that's going to make it better right away, whereas in reality that isn't the case. It's hard work, it's time... But in many cases, you're never going to be the way you were when you were at your best*" (HCP1). Participants believe that the unrealistic expectations also hinder patients' motivation to take up recommended exercise regimen: "*I think that there's a lot of frustration from patients, cause you'll describe an exercise regime to them already in the claudication clinic and that it takes time for things to get better. But they expect that in a few weeks or months, they're going to be walking better, whereas that effect is going to take a lot longer*" (HCP3).

Participants also believed that General Practitioners (GPs) contribute to this unrealistic patients' expectations due to the information they give to patients. For example, a participant stated, "*I think primary care also has an element of responsibility, because the majority of referrals we get are from primary care and it's the GPs that are often saying to patients that you've got claudication it's OK I'll sort that out, or we'll fix that. We'll refer you onto the vascular team. And then, we'll get referrals, we will triage them to the claudication programme and then patients will attend the claudication programme expecting they're going to see a vascular surgeon. So, it comes back to the expectations*" (HCP1).

Need for appropriate patient education and other information sources

Healthcare professionals emphasized the critical role of patient education in achieving better outcomes for individuals living with claudication. Many highlighted that informed patients were more likely to engage in prescribed management strategies, such as exercise therapy and lifestyle modifications. One healthcare professional shared, "*Everything in my historical experience is that education, as mentioned, is a great key, and I always found there was a bit of a win if I could get the patient to begin to understand some of the physiology that we're talking about here, in particular the evolution of our collateral blood supply and the idea that it's a dynamic thing that you can do things that will actually help to develop that collateral blood supply and that's something we're working on. So it's about empowering people to some extent to feel that they can actually influence their leg*" (HCP2). Healthcare professionals also opined that patient education also helps to reassure patients that it is safe to exercise even with the leg pain, as some patients think that they are causing more harm walking with the pain. A healthcare professional stated, "*And that's important because you'll have these patients who will often have ischaemic heart disease, and they're told if you get chest pain, stop what you're doing, and then they're getting leg pain on exertion, and you're telling them to walk through and to push through it. So, it's the message. Empowering these patients, it's really important*" (HCP1).

Discussion

This qualitative study explored the experiences of people living with claudication and the experiences of healthcare professionals who care for them. By identifying key themes, our findings provide a nuanced understanding of the challenges faced by both groups, highlighting areas for improvement in patient care and resource allocation. Consistent with the findings from similar studies,[6,20,21] patients frequently reported significant reductions in their health status and overall quality of life due to claudication. These limitations were not only physical but also psychological, with many individuals describing feelings of frustration, anxiety, grief, and isolation as a result of their restricted mobility. These findings underscore the need for a multidisciplinary approach that encompasses both physical and mental health support for patients with PAD and claudication. Patients also noted that the presence of co-existing conditions compound their challenges. Co-existing conditions can amplify the physical symptoms of claudication, exacerbate functional limitations, and increase the burden of managing multiple health issues simultaneously. Furthermore, patients believed that the different specialisms involved in their care did not communicate with each other, which contributed to their feelings of frustration. This highlights the need for coordinated care pathways that address the broader health profiles of patients rather than focusing exclusively on claudication, as well as the need for a better interdisciplinary communication. Poor interdisciplinary communication have been linked with negative health outcomes,[32] hence, the need for actions to improve interdisciplinary communications.

Patients expressed concerns about inequities in accessing healthcare services and resources for managing claudication. Long waiting times for specialist referrals, delay in getting diagnosis and treatment were recurring themes, which is similar to the findings from a systematic review on patients experiences of PAD/claudication.[6] These issues could impact on patients' trust and satisfaction with healthcare systems. Consistent with findings from other qualitative studies on patients' experiences of claudication,[20,33] patients expressed a lack of accessible, and comprehensible information about their condition at the time of diagnosis and during routine appointments. Many patients relied on inconsistent or non-evidence-based information sources such as social media for information. Patients also asserted that there is need for the NHS to invest in creating awareness about PAD/claudication and the benefits of lifestyle changes such as physical activity and smoking cessation as a primary prevention strategy considering the prevalence of PAD in the UK. These findings underscore the importance of developing tailored educational interventions to enhance patients' understanding and engagement in their care.

From the healthcare professionals' perspective, they highlighted the benefits of SEPs in improving patients' symptoms and functional capacity. Despite these benefits, access to SEPs remains limited in many healthcare settings, often due to resource constraints according to findings from a scoping review.[25] Similar to the patients' view, the healthcare professionals expressed a disparity in resource allocation for PAD/claudication management compared to other conditions. The healthcare professionals highlighted that a major contributor to the disparity might be the perception that the patient group are not deserving of resources due to an inaccurate perception that the condition is self-inflicted. This finding sheds light to the ongoing, unresolved debate on whether patients with 'self-inflicted' illnesses should receive lower priority in access

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to healthcare resources.[34] Despite that there is not yet an existing consensus on the debate, it appears that there is an unconscious bias in decision-making regarding resource allocation for conditions that are considered 'self-inflicted', which leads to unequal treatment of already vulnerable populations: 'the unlucky sick'.[35] Hence, there is need for relevant stakeholders to work towards bringing a resolution to this debate considering the rebuttals, and ensuring equitable access to healthcare resources.

Healthcare professionals emphasized the heterogeneity of patients with PAD and the need for individualized interventions. Variations in patients' symptoms, comorbidities, and other personal circumstances necessitate flexible approaches to treatment. Standardized approaches such as the 'walk, walk, walk' advise provided to patients often fail to accommodate these differences, underscoring the importance of shared decision-making and patient-centered interventions. Furthermore, healthcare professionals identified managing patients' expectations as a significant challenge. Similar to findings from a systematic review,[6] healthcare professionals expressed that some patients held unrealistic beliefs about the outcomes of surgical or medical interventions, often expecting immediate and complete symptom relief. This underscores the need for healthcare professionals to engage in transparent, empathetic communication and patient education that sets realistic goals and empowers patients to take an active role in their care. Healthcare professionals emphasized that informed patients were more likely to adhere to prescribed interventions and achieve better outcomes. The prescribed intervention should be tailored to each patient's needs, and the information about the intervention, how it should feel, intended outcomes and timescales are needed for best outcomes. Education initiatives focusing on the nature of PAD/claudication, the role of exercise, and the long-term benefits of lifestyle modifications were seen as critical. Findings from this study and other similar qualitative studies[6,20] highlight that patients are enthusiastic about structured educational interventions. Hence, structured educational interventions, delivered through diverse modalities such as group sessions, digital platforms, and printed materials, could significantly enhance patients' adherence to prescribed interventions and self-management of their condition.

The shared emphasis on education by both patients and healthcare professionals suggests a critical area for intervention. Addressing gaps in patient knowledge, while ensuring that healthcare professionals are equipped with the resources and time to provide education, could improve both experiences and outcomes. Similarly, the findings highlight the need for systemic reforms, including equitable access to services, the expansion of SEPs, and the development of interdisciplinary care pathways that consider the holistic needs of patients. Additionally, aligning patients' and healthcare professionals' expectations through clear communication and shared decision-making is vital. This alignment can be supported by developing patient-centric informational materials and training healthcare professionals in communication strategies that foster realistic goal-setting.

Study limitations

Although this study used a rigorous qualitative methodology to provide valuable insights into the lived experiences of patients and healthcare professionals, certain limitations must be acknowledged. The small sample size, while adequate for qualitative research, may not capture the full diversity of experiences. For example, the inclusion of only three patients, all of whom were female, limits the transferability of the findings and precludes any gender-based comparisons. Furthermore, the small number of healthcare professionals involved, comprising two consultant vascular surgeons and one senior physiotherapist, may limit the transferability of the healthcare professional perspectives presented, as experiences may vary according to professional background, role, and scope of practice. Additionally, participants were drawn from a specific geographic region, also potentially limiting the transferability of findings to other healthcare settings. As such, the results should be interpreted as exploratory insights into lived experience rather than as representative of all individuals with claudication. However, this study is the first phase of a larger, multiphase project (the CREATE study) intended to co-create a patient-centred intervention. The insights gained from this initial phase are sufficient and are being used to inform more targeted inquiry and intervention development in subsequent phases, which will involve larger and more diverse participant groups. As with all qualitative studies, the use of prompts may have influenced the direction of discussion; however, care was taken to prioritise participants' spontaneous accounts, and prompts were used only when relevant to expand on issues already raised. Furthermore, the participants knew that the ultimate goal of all phases of the research was to develop an intervention, which might have influenced their narrations. Future research should aim to explore these themes in larger, more diverse populations, including a broader range of healthcare professionals involved in claudication management, particularly physiotherapists and nurse practitioners who frequently deliver or prescribe exercise-based therapies, to capture a more comprehensive and representative range of clinical perspectives.

Conclusion

The study highlighted the experiences of patients living with PAD/claudication and the perspectives of healthcare professionals managing the condition. The intersecting themes from both the patients and healthcare professionals highlighted the need for interventions to address issues related to patient education and resource limitations. Concerted efforts should be made towards developing a comprehensive educational resource where patients can be directed to at the point of diagnosis for information about the condition, the treatment strategies specific to them, the goal of the treatment, how the treatment should feel, and timescales to achieve better outcomes. Furthermore, efforts should be made towards ensuring equitable allocation of healthcare resources to provide patients with PAD/claudication services such as SEPs within the NHS. Also, efforts should be made towards improving interdisciplinary collaborations, and training of healthcare professionals to facilitate a more effective communication strategies that would help manage patients' expectations.

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Supplementary materials

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