

Article

A Qualitative Study on the Role of Social Determinants of Health in Patients with Peripheral Artery Disease

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Abstract: Background: Peripheral arterial disease (PAD) is a growing public health problem due to its high and increasing prevalence worldwide. PAD is responsible for several severe complications that affect the quality of life (QoL) of affected patients. Social determinants of health (SDHs) cover five areas: economic stability, education access, and quality, health care access and quality, neighborhood and built environment, and social and community context. This study aims to investigate SDHs-related outcomes to better understand their potential role in the lives of patients with PAD. Methods: A qualitative study has been conducted using semi-structured interviews to understand the role of SDHs in patients with PAD. Braun and Clarke’s method was used to guide the qualitative analysis of the data. Results: Twenty-seven patients were recruited to receive the interview, including twelve males (44.44%) and fifteen females (55.56%), with a mean age of 63.3 years old (a range of 50–87 years old). SDHs related to the five areas investigated significantly impacted PAD patient diagnosis and outcomes. Conclusions: Our findings suggest that physicians and vascular surgeons should consider SDHs impairments to recognize vulnerable patient populations and tailor treatment methods and follow-up protocols to their specific needs.

Keywords: peripheral arterial disease; qualitative study; social determinants of health; SDH; public health; medical humanities



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1. Introduction

Peripheral arterial disease (PAD) refers to the localization of atherosclerotic plaques in the peripheral circulation, causing arterial stenosis or occlusion in the lower limbs. It may manifest as intermittent claudication, ischemic pain, and chronic wounds. Due to its high prevalence worldwide, PAD is a growing public health problem, yet it is often unrecognized and undertreated [1].

Moreover, patients with PAD experience very high rates of cardiovascular complications and major adverse limb events (MALE), significant walking impairment, increased mobility loss coupled with functional disability, and a poor quality of life [2]. In 2019, the global prevalence of peripheral artery disease was 1.52% among individuals aged 40 years or older. As PAD prevalence sharply increases with age, it rises to 14.91% in those aged 80–84 years. Interestingly, in this age group, prevalence is generally higher in females than in males [1].

Classic cardiovascular disease risk factors associated with PAD include hypertension, dyslipidemia, smoking, coronary heart disease (CHD), ischemic stroke, and diabetes [2]. The presence of this latter condition may also be responsible for several complications such as diabetic foot, which further affect the quality of life (QoL) of affected patients [3].

Several classification systems have been described to stratify PAD; therefore, physicians and researchers dealing with patients with PAD should be familiar with at least the Rutherford classification, which is based on clinical signs and symptoms that can be easily assessed in patients with PAD [4]. PAD clinical manifestations are stratified into six categories to provide the greater breadth required for many clinical research reports. Intermittent claudication (IC) is subdivided into three levels (categories 1–3), ischemic rest pain (IRP) pertains to category 4, and gangrene is divided into two categories (5–6) according to its extent. More specifically, IC refers to pain, discomfort, or weakness in an extremity that occurs consistently with the same amount of walking or equivalent muscle activity in a given patient and is rapidly relieved by cessation of that activity. IRP is severe pain that is not easily controlled with analgesics and is localized in the forefoot and toes; alternatively, it may be present in a more proximal area of the limb. It usually occurs at night or when the patient is lying down, or with the elevation of the limb. Gangrene may be focal where there is still adequate perfusion of the adjacent tissues, or it may be extended with irreversible limb ischemia, which is generally associated with major amputation and consequent limb loss [5]. Limb loss is a life-changing event with important costs to the individual and society, accounting for rehabilitation and prosthetic limb costs [6].

Social determinants of health (SDHs) refer to the conditions in which people are born, grow up, work, live, and age; i.e., they are everyday living conditions and affect people's health, functioning, and QoL. The SDHs cover five areas: economic stability, education access, and quality, health care access and quality, neighborhood and built environment, and social and community context [7]. SDHs play their role through several variables such as access to care, biological factors, behavioral aspects, and physical/built environments. All of these are conceptualized on three levels of analysis, namely, social, community, and interpersonal (caregiver and family) and individual levels. Studying the impacts of SDHs is, in general, difficult due to their peculiar complexity [8]. Research shows that SDHs can effectively influence general health. Numerous studies suggest that SDHs account for between 30 and 55% of health outcomes. Moreover, SDHs have significant associations with critical adverse health outcomes, decision-support systems to alert clinicians of potential risks, and for public policies [9].

While understudied in vascular research, SDHs impact patients with PAD. Although few studies in the vascular literature have examined their impact, all have demonstrated that they play a substantial role in patients with PAD. Given their importance, it is critical to research the impact SDHs have on patients with PAD to improve medical management and surgical outcomes. A patient's SDHs can play an important role in timely diagnosis, appropriate treatment initiation, and effective limb recovery efforts [10].

Thus, the research question of this study is as follows: what is the role of SDHs in patients with PAD?

Therefore, this study aims to investigate SDHs-related outcomes to better understand their potential role in the lives of patients with PAD.

2. Materials and Methods

2.1. Study Design

A qualitative study has been conducted using semi-structured interviews (Supplementary material S1) to understand the role of SDHs in patients with PAD. The research was performed following the Consolidated Criteria for Reporting Qualitative Research (COREQ) checklist [11] (Supplementary material S2).

2.2. Participants and Settings

Participants were subjects aged ≥ 18 years old with clinically diagnosed PAD of ≥ 6 months duration. Patients with PAD should not have any other important comorbidities, such as malignancy, autoimmune diseases, and hematological diseases. To understand how SDHs impact PAD, subjects from all categories of Rutherford classification [5] were included.

Purposive sampling was used to obtain a wide variety of patients' characteristics and hence to ensure a broad range of experiences and thoughts. This technique is widely used in qualitative research to identify information-rich cases [12]. Patients with PAD were referred to the Vascular Surgery Units of two hospitals (Mater Domini University Hospital of Catanzaro and the Federico II University Hospital of Naples). Patients were invited to participate in this study by the physician of the vascular unit and the medical anthropologist, who explained the aims and implications of the study and obtained written informed consent. Demographic information and medical history were collected. First, the vascular surgeons involved classified the patients according to the categories of the Rutherford classification [5]. Recruitment started on 1 March 2022 and continued until data saturation was achieved (on 27 December 2023), particularly when no new information or additional perspectives were observed in the data when more participants were added [13]. All interviews were conducted in Italian.

2.3. Data Collection

Data disclosure was accomplished through semi-structured face-to-face interviews. After the literature study, an interview guide with open-ended questions was created in advance and evaluated by researchers experienced in applying qualitative approaches. Each single interview lasted approximately 50 min and was conducted by the principal researcher (DC), who had specific training on interview techniques. The interviews occurred at the vascular surgery clinic of the Magna Graecia University of Catanzaro and the Federico II University of Naples. The interviews were audio-recorded and transcribed verbatim. Nine interviews were conducted online due to the COVID-19 pandemic.

2.4. Data Analysis

Two authors independently carried out a thematic analysis of the interview. After it was written, the related documents and recordings of all the conversations were exported to Excel for encoding. We used Braun and Clarke's method [14] to guide the qualitative analysis of the data. This method consists of 6 phases: (i) becoming familiar with the interview content and developing a basic perception of the interview content; (ii) generating the initial coding according to the interview content; (iii) searching for themes and identifying the common core themes based on the initial coding through repeated comparison; (iv) reviewing, revising, and refining the themes obtained in the early stage;

(v) defining and naming the themes to obtain more refined core themes that are consistent with the interview data based on the early steps; (vi) writing the report.

2.5. Reflexivity and Methodology Integrity

This study is based on a qualitative methodology that needs careful reflexive openness, clarity, and detail in the reporting of the analytic process, as well as conceptual and design thinking, i.e., the selection of the right theoretically informed framework [15]. The themes identified by the researchers did not exactly correspond to the questions that were put to the participants. Furthermore, the data coding was not conducted in order that we might fit the data into a pre-existing coding frame but was the product of a deep engagement with the data. Indeed, the methodological integrity was assured by our prolonged engagement with the data, allowing for time for reflection; the frequent sharing of the data and the various points of view between the two researchers; continuous comparisons along the different steps of the analysis; and reflections on the research context and the efficacy of the results in the responses to the research questions. We utilized researcher triangulation by involving multiple researchers in data collection and analysis. An experienced researcher, along with two additional authors, contributed to the analysis and interpretation of the data. To enhance validity, data triangulation was performed through multiple interviews. Furthermore, we incorporated peer debriefing, expert project review and discussion, and member checking, enabling participants to review, validate, and confirm the findings.

As for the research team itself, the two researchers were Italian, white, had a medium social economic status, and were without PAD or other cardiovascular complications.

2.6. Ethical Approval

This study was approved by the Institutional Review Board of the Interuniversity Center of Phlebology (CIFL) International Research and Educational Program in Clinical and Experimental Biotechnology (ER.ALL.2018.55A.). Each patient and their parents provided informed written informed consent before the interview, and all participants were informed that the interview content and recordings were confidential and anonymous. Research involving human research participants was performed in accordance with the Declaration of Helsinki.

3. Results

3.1. Characteristics of Participants

In total, 27 patients received the interview in this study, including 12 males (44.44%) and 15 females (55.56%), with a mean age of 63.3 years old (a range of 50–87 years old). The demographic information of participants is shown in Table 1. Among the risk factors for PAD, 55.56% of patients were smokers, 70.37% suffered from dyslipidemia, 62.96% suffered from diabetes, 77.78% suffered from hypertension, and 37.04% suffered from CHD.

Table 1. Characteristics of participants.

Patient	Age	Sex	Rutherford Category	Smoking	Dyslipidemia	Diabetes	Hypertension	Coronary Heart Disease
1	55	M	2	Yes	Yes	No	Yes	No
2	69	M	6	Yes	Yes	No	Yes	Yes
3	62	M	4	Yes	Yes	Yes	No	No
4	60	F	2	No	No	Yes	Yes	No
5	58	F	2	No	No	Yes	Yes	No

Table 1. Cont.

Patient	Age	Sex	Rutherford Category	Smoking	Dyslipidemia	Diabetes	Hypertension	Coronary Heart Disease
6	61	M	3	Yes	Yes	Yes	Yes	Yes
7	76	F	3	Yes	Yes	Yes	Yes	Yes
8	52	M	1	No	No	Yes	Yes	No
9	84	F	6	No	No	Yes	Yes	No
10	83	F	5	No	Yes	No	No	No
11	69	M	3	Yes	Yes	Yes	Yes	Yes
12	78	F	6	No	Yes	No	Yes	No
13	81	F	3	No	Yes	No	Yes	No
14	67	F	2	Yes	Yes	No	No	No
15	82	F	6	No	No	Yes	Yes	No
16	58	M	4	Yes	No	Yes	Yes	Yes
17	51	M	3	Yes	Yes	No	No	No
18	50	M	2	Yes	Yes	No	No	No
19	77	F	2	Yes	Yes	No	Yes	No
20	81	F	3	Yes	Yes	Yes	Yes	Yes
21	74	F	2	No	Yes	Yes	Yes	Yes
22	66	M	5	Yes	Yes	Yes	Yes	Yes
23	57	M	5	Yes	No	Yes	No	No
24	87	F	5	No	No	Yes	Yes	Yes
25	75	F	6	No	Yes	No	Yes	No
26	78	M	6	Yes	Yes	Yes	Yes	Yes
27	81	F	6	No	Yes	Yes	Yes	No

The patients with PAD's demographics characteristics are shown in Table 2 and are arranged according to SDHs domains.

Table 2. Patients with PAD's demographic characteristics according to SDHs domains (N = 27).

SDHs Domain	Characteristics	n%
Social and community context	Ethnicity	
	Caucasians	27 (100%)
	Non-Caucasians	0 (0.0)
	Household size	
	<2	8 (29.63%)
	2	7 (25.93%)
	>2	12 (44.44%)
	Social support communication	
	≤2 times a week	13 (48.15%)
	3 to 5 times a week	8 (29.63%)
	≥5 times a week	6 (22.22%)
	Stress level	
	Very much	20 (74.07%)

Table 2. Cont.

SDHs Domain	Characteristics	n%
Social and community context	Very much	20 (74.07%)
	Quite a bit	5 (18.52%)
	Somewhat	2 (7.41%)
	A little bit	0 (0.0%)
	Not at all	0 (0.0%)
Healthcare access and quality	Lack of access to medicine or healthcare	
	Yes	24 (88.89%)
	No	3 (11.11%)
	Barriers to vascular health	
	Yes	25 (92.59%)
	No	2 (7.41%)
Education access and quality	Education	
	No title	6 (22.22%)
	Primary school	14 (51.85%)
	Secondary school	5 (18.52%)
	Bachelor's degree	0 (0.0%)
	Master's degree	2 (7.41%)
	Ph.D.	0 (0.0%)
Economic stability	Employment status	
	Employed	5 (18.52%)
	Unemployed	4 (14.81%)
	Retired	18 (66.67%)
	Annual household income	
	≤28,000€	26 (96.30%)
	From 28,000.01€ to 50,000€	1 (3.70%)
	>50,000€	0 (0.0%)
	Lack of access to food	
	Yes	2 (7.41%)
	No	25 (92.59%)
	Lack of access to clothing	
	Yes	3 (11.11%)
	No	24 (88.89%)
	Lack of access to utilities	
	Yes	8 (29.63%)
	No	19 (70.37%)
	Lack to access to phone	
	Yes	8 (29.63%)
	No	19 (70.37%)

Table 2. Cont.

SDHs Domain	Characteristics	n%
Neighborhood and built environment	Home	
	Home ownership	5 (18.52%)
	Rental house	22 (81.48%)
	Homeless	0 (0.0%)
	Transportation access consequences	
	Medical appointments or medications	13 (48.15%)
	Non-medical meetings, etc.	14 (51.85%)
	No	0 (0.0%)
	Environmental, physical and emotional safety	
	Yes	5 (18.52%)
	No	22 (81.48%)

3.2. Education Access and Quality

One of the most important SDHs for all 27 patients with PAD interviewed in this study is access to—and the quality of—education. Twenty-five participants emphasized that their level of education is not particularly high, linking it to the onset and progression of PAD. Twenty patients reported that they are utilizing online general health literature to enhance their understanding when formulating questions, which limits the accessibility of these materials.

If you have a good education, you will quickly grasp what the doctors say and what their words mean. Those who have learned how to write things and where to research understand this. I have a limited education, and this is a significant issue. At times, I struggle to explain many of my symptoms, and I believe that if I had a better education, I would be more articulate in describing them. Therefore, absolutely yes, having a higher education is very important for health. (P4)

I'm seeing more medical specialists for PAD today. I rarely went to the doctor before this situation. This encourages me to hear new words, and when I'm studying and trying to understand, I don't think the information found on the Internet is always understandable, and this pushes me to ask a lot of questions during check-ups. (P5)

Twenty patients have also highlighted the benefits of encouraging both unhealthy behavioral patterns and decision-making strategies that can affect their lifestyle.

I think if a person has a good education, they tend to read a lot, so they have a greater awareness of what the right or wrong behavior can be from a health point of view, and they choose a healthier lifestyle. I studied very little, smoked a lot, in short, I was not informed about a lot, and I got sick from PAD and diabetes. (P6)

I think education, lifestyle, and health are very connected. If I had known that many of my actions (for example, eating excessively fatty foods or eating too many sweets) were very harmful, I wouldn't have done it. (P7)

Twenty-two interviewees also highlighted the relationship between education and economic mobility opportunities as factors that impact the health of those with diseases such as PAD.

I think this is true because more educated people usually have better job positions, which results in greater economic availability, for example, to be able to move from one region

to another or from public health facilities to the private sector. For example, I was unemployed and had to wait 1 year to make my first visit to a vascular surgeon because I had no way to go to a private center or office. (P8)

3.3. Healthcare Access and Quality

Twenty-seven interviewees maintained that the incidence and course of diseases such as PAD are determined by access to care. In this context, it was emphasized that the lack of transportation, the limited connection with vascular surgery clinics, and the small number of health facilities have a very significant impact.

Unfortunately, going to the hospital is not easy, not only because of the long waiting list, but also because there is not much chance of getting to a vascular surgeon. Sons are always busy and there is very little transportation, especially for me, who lives in the countryside. All this caused a lot of delays in diagnosis. . . My leg will also be amputated immediately. . . (P9)

The lack of connection and transportation forced me to receive very bad medical treatment before coming here, choosing one of the medical facilities closest to my home! (P10)

The so-called vascular desert that was noted by all 27 interviewees; this refers to the fact that the patient has been identified as living in areas with reduced access to subspecialty-trained vascular surgeons.

If we talk about access to healthcare, I must say that one of the most important problems is linked to the fact that it is very difficult to find a specialist in PAD. The few that are there have long waiting lists, but the PAD does not follow the doctors' times! (P11)

I had to wait a year and a half before I could see the vascular surgeon. . . and when he examined me, there was very little he could do. . . I was told I had lost my leg! (P12)

Furthermore, the vascular desert, as a subtheme of the SDHs concerning access to healthcare, is closely related to another SDH, namely, the socioeconomic status (SES) of the patients.

I wanted to go out of the area for a more urgent vascular surgery visit, the problem is that I can't afford it! I live in a rural area, my income is very low, I'm not ashamed to say this, I made many economic sacrifices to come here today. (P13)

Even visiting a vascular surgeon in my area is a luxury, because there are very few specialists who specialize in PAD, and the waiting list in public hospitals is very long. (P14)

3.4. Social and Community Context

Social isolation and depression, in general, are linked to the consequences of poor health. First, the participants found that many of their dangerous behaviors (excessive smoking, eating lots of sweets, etc.) were related to significant social and community issues.

If I had a son or a wife with me who probably told me not to smoke too much, I probably wouldn't have so many health problems related to my illness. (P1)

It is important to have someone with you when you are healthy, but when you lose your limbs, for example, as in my case, it's essential! If my wife wasn't here, I wouldn't have done anything! (P2)

During the interviews, 13 patients complained of feeling completely abandoned because their families were too busy to take care of them.

Now perhaps there is no more time to take care of parents who have made so many sacrifices for their children! PAD is a condition that requires control, and as happened

to me, it is already causing me to lose one leg and perhaps the other in the future. This scares me. . . I'm still trying to do something independent; my daughter only comes once a week. . . What should I do when I lose both limbs? (P15)

Another theme that arose from 17 participants was related to the fact that there is very little support at the community level; i.e., there is not much support from institutions or friends.

The community? We hardly even talk about it anymore! A while ago, I suggested to the mayor of my town to hold a day to raise awareness about the PAD, and he didn't tell me anything! (P16)

I had to pay for a taxi to get here today. . . And I'm not very good, you know? I don't have children, I don't have a wife, but I thought I had a lot of friends. . . But since I got sick, they've disappeared too! The disease alone becomes even more severe! (P3)

3.5. Neighborhood and Built Environment

All 27 participants demonstrated similar thinking and understanding with respect to the role of the neighborhood and the built environment as factors affecting their health.

Living in rural areas, where I live, there are many important problems, but it is also essential for people suffering from PAD like me to be able to get good air and produce healthy food in every aspect. (P17)

These are certainly essential factors not only for my disease but in general! Neighborhood and environment are the places where each of us lives and gets sick! (P18)

While 22 of the respondents thought they lived in safe areas, they described the significant disparity between safe and unsafe areas.

I live in an area in which there are certainly disparities, also in terms of neighborhood. Not very far from my residential area, there are small neighborhoods where not only is there a lot of poverty but also organized crime. (P19)

If I had lived in a greener area, with more opportunities to breathe good air, etc. I definitely wouldn't have been as bad as I am now! I started not going out anymore for fear that something would happen to me on the street. . . This pushed me to eat and smoke more and more! (P20)

Twenty-two interviewees argued that air and water pollution contribute to the development not only of PAD but also of other diseases such as cancer, particularly among individuals who have a healthy lifestyle. Furthermore, on this topic, 22 interviewees underlined how the quality of air and water had worsened due to fires, the use of pesticides, excessive traffic, etc., introducing greater pollution to less wealthy areas.

Certainly, among the most important environmental considerations are the quality of air, water, and soil. In my opinion, today, more pollution than ever is causing not only medical conditions such as PAD, but also cancer, heart attacks, diabetes, and others. (P21)

I am convinced that the use of all these pesticides, chemicals, and constantly moving planes, is poisoning life on the entire planet! We are all sick from the elderly to newborns!!! (P22)

Again, being rich or poor matters! Polluting actions, use of dangerous substances, etc., they are, in my opinion, more and more frequent in less affluent, if not even more infamous neighborhoods! And this then affects everyone's health. (P23)

3.6. Impact of Economic Stability

The last of the SDHs analyzed concerns economic stability, which has already been mentioned several times. All 27 interviewees agreed that living with PAD plays an important role in economic stability. As mentioned in the previous section, low economic stability was associated with participants having a lack of transportation and adequate access to care. This, as has been highlighted several times, has had devastating consequences for people suffering from PAD.

Money does not bring happiness, but it helps you to live better! PAD is not an isolated disease, I suffer from diabetes, coronary artery disease, and high blood pressure. Even though our health system is open to the public, going for visits, maybe taking additional medications, etc. It has a very high cost that I can barely afford personally. Sometimes I have to choose between my medical conditions, what I can afford to treat, and what I cannot. . . (P24)

Well, if I hadn't had the opportunity to make the first paid visit, I certainly wouldn't have been treated quickly, and I would have already lost my foot! The truth is that the financial dimension has become increasingly impactful, however, in negative terms. If you don't have financial stability, and you go to public health, the waiting lists for a visit to the vascular surgeon are up to a year! (P25)

Thus, from 26 interviews, it emerged that poor economic stability was one of the main causes of lower limb amputation.

I lost my right leg and I didn't have the financial means to go to a private specialist, so there is a risk that the left lower limb will have to be amputated as well. . . When I finally got to the hospital, there was no room for my feet. There's nothing left to do! (P26)

At another center, a vascular surgeon scolded me because it was too late for my toes and they needed to be amputated. . . I felt embarrassed because I wanted to tell him that I was postponing because of my financial impossibility! (P27)

4. Discussion

PAD is an important health concern with significant negative consequences for the QoL of affected patients. The global prevalence is substantially higher in females, especially in older age, despite the higher prevalence of the main risk factors (hypertension, smoking, etc.) in males. This paradoxical situation may, in part, be explained by the effects of menopause, which, for hormonal reasons, is associated with an increased risk of PAD [1,16]. Moreover, females present to the vascular surgeon at older ages than males. The prevalence of PAD is higher in black people than in white people, as is the amputation rate [2]. On the other hand, despite the major prevalence of PAD in females, the burden of PAD measured by disability-adjusted life years (DALYs) seems more significant in males than in females; thus, males experience more disability from PAD than females, and this may be due to a greater risk of complications in males [1].

Limb loss, one of the most important complications for patients with PAD, is often related to persistent pain and decreased QoL, and this highlights the need for physicians to manage the expectations of patients with PAD and to address the most common physical and emotional recovery issues [17].

To the best of our knowledge, this is the first study in Italy to analyze the role of all SDHs in patients with PAD. Previous studies have examined only one or just some of the SDHs in patients with PAD [18,19]. Patients, healthcare professionals, and healthcare providers need to understand and accept the complexity of the role of SDHs in such a disease, involving medical, environmental, social, economic, and psychological factors. Accounting for the relative diversity among the interviewees, they experienced diverse

challenges related to education, access to quality healthcare, accessibility, and exposure to the neighborhood and built environment, as well as social and interpersonal barriers due to their illness. With the experience of PAD, patients develop a certain awareness of the impact of SDHs in their lives, as well as the potential of these determinants to impact treatment and survival plans [19].

Our results are in line with the current literature regarding the relationship between education level and PAD; in fact, individuals with lower education levels are more likely to have PAD, and their understanding of the condition is impacted by their education level. In this regard, Pande and Creager [20] demonstrated how adults in the U.S. with lower incomes and less education are more likely to have PAD. Thus, their findings, in line with ours, indicate that people from lower socioeconomic backgrounds continue to face a higher risk of developing PAD, emphasizing the importance of targeted education and advocacy efforts for these vulnerable groups. Furthermore, current online health literacy materials for PAD limit accessibility and are confusing for patients. Adjusting the readability of the online materials and the providers' communication style to be at or below the sixth-grade level could help combat health disparities in PAD patient education and health literacy [10].

The themes of healthcare access and quality are very interesting because the participants have underlined the highly negative role of the concept of the vascular desert [21]. A care desert, also referred to as a medical desert or "hospital desert," describes a community lacking sufficient access to essential healthcare services, including pharmacies, primary care providers, hospitals, hospital beds, trauma centers, and affordable healthcare facilities [22]. Other types of deserts have been identified, such as food deserts, where residents lack access to affordable, high-quality fresh food; and maternal care deserts, which have limited maternity healthcare services [21]. Research indicates that individuals in rural areas face higher mortality rates from traumatic injuries due to delayed or restricted access to care, particularly when no trauma center is available within a 30-minute radius. Similar disparities exist across various surgical specialties, contributing to differences in health outcomes [23]. As has been highlighted by other studies, those in vascular deserts face higher poverty rates, lower education levels, and limited transportation. They are more likely to be rural, with a higher proportion of elderly residents. Vascular care access and specialist availability significantly impact amputation rates and successful limb salvage. Telemedicine and remote monitoring can improve access to subspecialty care, while community outreach and education can improve the timely diagnosis and referral of patients with PAD [24].

Regarding the role of the social and community context, our results show how their impact is important in a disabling disease like PAD. Although there are few studies on this dimension, social isolation and depression are linked to worse health outcomes, but their impact on PAD is unclear. A recent study shows that depression, fatigue, and lack of social support are associated with hospitalization risk in patients with PAD, with lack of support being more strongly linked to hospitalization compared to coronary heart disease and cerebrovascular disease [25]. Social isolation and loneliness are significant risk factors for many cardiovascular diseases. For example, loneliness has been linked to chronic heart failure, coronary artery disease, and various cardiovascular risk factors [26]. Research has explored the mechanisms behind this phenomenon, suggesting that factors such as unhealthy behaviors, poor sleep quality, and vital exhaustion may play a role [27].

The neighborhood and built environment turned out to be a very sensitive topic among those interviewed, and this is in line with different studies. For example, in recent research, a correlation has been identified between air pollution and PAD; in particular, particulate matter 10 (PM10) was found to be associated with PAD [28]. Furthermore, The American Heart Association suggests that people living in deprived areas face a higher

risk of developing cardiovascular diseases, such as diabetes, obesity, and hypertension, which can lead to cardiovascular events like coronary artery disease and stroke [29]. Urban design factors like walkability and healthy food options are associated with higher blood pressure, diabetes, and metabolic syndrome, while the greenness of a neighborhood is linked to lower rates of type 2 diabetes and related health issues [30].

The impact of economic stability on SDHs in patients with PAD is thought to be particularly important, both directly and indirectly, in responses related to other SDHs; in fact, the economic dimension is considered to be one of the most important SDHs in PAD [31]. Patients with lower SES experience worse outcomes after lower limb amputation, including higher rates of medical complications, mortality, and primary amputation [32]. They also have limited access to preventive health services, transportation, and treatment facilities, which often forces them to choose between two options [33]. Treatment at hospitals with a safety net tends to have higher in-hospital mortality rates, leading to delayed consultations and high comorbidity. Economic instability, often associated with low SES, leads to more advanced disease, less successful surgical revascularization, and worse overall outcomes [34].

The interplay between healthcare policies, systemic barriers, and the SDHs influences of PAD and the disease was also underlined by the interviewees included in this research. Healthcare policies and systemic barriers significantly affect patients with PAD, often exacerbating disparities in diagnosis, treatment, and outcomes [35]. Limited access to preventive care and specialist services due to socioeconomic factors, insurance restrictions, and geographic disparities leads to delayed diagnoses and higher rates of amputations among underserved populations [36]. Policies that fail to prioritize PAD screening and management contribute to worse prognoses, especially among racial minorities and low-income patients [37]. Additionally, financial burdens, such as high out-of-pocket costs and limited reimbursement for advanced interventions, restrict optimal care [38]. Addressing these challenges requires policy reforms to enhance early detection, expand coverage for evidence-based treatments, and reduce healthcare inequities in PAD management [39].

4.1. A Proposed Set of Guidelines for Clinicians on How to Include SDHs and PAD Treatment

Considering the results obtained, we structured an approach to screening, assessing, and addressing SDHs in PAD treatment.

To address the SDHs affecting patients with PAD, a comprehensive, multidisciplinary approach is essential. Screening and assessment of SDHs should be systematically conducted, with clinicians using standardized tools to evaluate key domains. Regarding screening and assessment, the following should be included:

- **Economic Stability:** It is crucial to assess a patient's financial situation, focusing on their ability to afford medications, healthcare visits, and transportation. Identifying barriers related to healthy lifestyle choices, such as access to nutritious food or smoking cessation support, is important. Clinicians should also provide referrals to medication assistance programs and transport services.
- **Healthcare Access and Quality:** Evaluating a patient's insurance status, out-of-pocket expenses, and barriers to seeing a specialist or primary care provider is vital. Clinicians should help patients navigate insurance enrollment, access telemedicine, and identify sliding-scale clinics for affordable care.
- **Neighborhood and Built Environment:** Clinicians should assess if the patient lives in an environment conducive to physical activity. Identifying food deserts and limited access to healthy eating options is critical. Referrals to community fitness programs and food assistance resources can help alleviate these barriers.

- **Social and Community Support:** Understanding a patient's social support system—whether they have family, friends, or caregivers—can impact treatment adherence. Addressing emotional well-being and social isolation is essential, with recommendations for support groups and peer counseling.
- **Health Literacy and Language Barriers:** It is important to assess the patient's understanding of PAD and its treatment. Culturally sensitive, multilingual health education materials should be made available, and visual aids alongside plain language should be used to enhance patient education.

Regarding the barriers identified, targeted interventions should be implemented to address them effectively. In particular, we suggest the following activities:

- **Community Resource Referrals:** Collaboration with local health departments, non-profits, and social workers can connect patients to valuable resources such as food banks, transportation services, and exercise programs.
- **Culturally Tailored Patient Education:** Providing patient education materials in multiple languages, along with demonstrations and visual aids, ensures patients understand their treatment options and the importance of managing PAD.
- **Multidisciplinary Care Coordination:** Effective care requires teamwork. Coordinating care between vascular specialists, nurses, pharmacists, and social workers ensures a holistic approach to PAD management.
- **Follow-Up and Ongoing Support:** Regular follow-up and check-ins can help address new or emerging barriers. Telehealth services can improve accessibility, and encouraging family involvement in PAD management provides continuous support.

In this way, SDHs could be included to try to improve care and access for patients affected by PAD with an integrated vision and capable of providing practical and concrete advice.

4.2. Study Limitation

This study has some limitations. First of all, this research analyzed the impacts of SDHs in patients who came to the previously indicated centers; therefore, attention must be paid to the degree of generalization of the results obtained. Furthermore, our research did not take into account other perspectives such as those of health professionals or caregivers; thus, this study does not provide a comprehensive analysis of how other people around patients with PAD may view the role of SDHs.

Among the most significant types of bias in qualitative research are reflexivity bias, selection bias, response bias, and non-response bias.

Reflexivity bias arises from researchers' inherent subjectivity, which may influence data collection, interpretation, and analysis. While it is difficult to eliminate, acknowledging its presence and implementing strategies such as triangulation, as undertaken in this study, can help minimize its impact, ensuring that research findings accurately reflect participants' perspectives.

Selection bias occurs when research outcomes are distorted due to a non-random or biased selection of participants. To address this, as demonstrated in our study, we transparently documented participant selection criteria, aimed for diversity within the sample, and considered how participant selection might influence the study's conclusions.

Response bias results from participants providing inaccurate or socially desirable responses, either consciously or unconsciously, during data collection. To counter this, we applied triangulation to obtain a more accurate and comprehensive representation of participants' perspectives and experiences.

Non-response bias occurs when study findings are skewed due to individuals choosing not to participate or being unreachable. To mitigate this, we refined data collection methods to minimize the impact of non-response bias on our research findings.

5. Conclusions

Therefore, SDHs significantly impact patient diagnosis and outcomes, particularly for patients with PAD. To address this, physicians and vascular surgeons should recognize vulnerable patient populations and tailor treatment methods and follow-up protocols to their specific needs. This may involve using telemedicine, providing transportation assistance, and improving the vascular education materials' readability. Addressing health inequities requires a systemic approach, involving changes to practice patterns and collaboration with communities.

Supplementary Materials: The following supporting information can be downloaded at <https://www.mdpi.com/article/10.3390/soc15040087/s1>: Supplementary File S1: interview; Supplementary File S2: COREQ (Consolidate Criteria For Reporting Qualitative Research) checklist.

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