ORIGINAL ARTICLE

WHAT DO PATIENTS KNOW ABOUT PERIPHERAL ARTERIAL DISEASE? A KNOWLEDGE QUESTIONNAIRE

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Abstract

Introduction: *The lack of knowledge about Peripheral Arterial Disease (PAD) is worryingly high as it triggers and maintains behaviors of denial, indifference, and non-adherence to therapeutics. Therefore, the aim of this study was to build and assess the reliability and validity of a knowledge questionnaire about PAD (Peripheral Arterial Disease Knowledge Questionnaire - PADKQ).*

Materials and methods: *A longitudinal study was carried out with two evaluations that included a sample of patients with PAD and Intermittent Claudication, with no history of surgical interventions, in follow-up at the vascular surgery consultation. The PADKQ was applied to 114 patients (85% men, with a mean age of 65 years, SD=7.2). Sociodemographic and clinical data were collected from clinical records, and physical activity level (International Physical Activity Questionnaire - IPAQ) and walking impairment (Walking Impairment Questionnaire - WIQ) were evaluated through questionnaires. A 2nd evaluation session took place two weeks after the 1st evaluation session where an educational intervention was performed. Internal consistency, temporal stability, content validity, and convergent validity were performed*

Results: *The sample related results have reflected the good reliability (kr-20=0.775) and validity properties of the PADKQ. This sample showed a high level of knowledge about PAD (10.96 points, SD=3.28, from 0 to 16 possible points), which increased significantly from moment 1 to moment 2 (t= -7.457, p<.001). Only half of the sample considered the disease to be serious and identified smoking habits as one of the risk factors. Patients with higher education were the most physically active.*

Conclusion: *The PADKQ proved to be a useful, brief, and easy-to-use instrument in health contexts to identify patients' level of knowledge about PAD. Education about PAD increases patients' knowledge about the disease and the greater the knowledge about PAD, the greater the practice of physical activity.*

Keywords: *Peripheral Arterial Disease; Knowledge; Questionnaire; Physical activity; Therapeutic adherence.*

INTRODUCTION

Bro Health Literacy concerns individuals' knowledge, motivation, and skills to access, understand, evaluate, and apply information to form judgments and make decisions about their health care, disease prevention, and health promotion, as well as maintaining and improving their quality of life [1–3]. Individuals with limitations and/or low levels of health literacy have difficulties understanding health information, following medical instructions, and using health services inappropriately, resulting in worse physical and mental health, higher hospitalization rates, and limited life expectancy [2–4]. In a recent study, it was found that in Portugal, 61% of the population had a level of general health literacy considered problematic or inadequate[5]. Disease education sessions, when supported by a visual tool, are an effective approach to increasing disease knowledge, treatment, and procedures about the

Table 1 **Sample sociodemographic characteristics (N=114)**

		n (%)
Gender	Male	97 (85.1)
Professional status	Active/unemployed	43 (37.7)
	Retired	71 (62.3)
Marital status	With spouse	80 (70.2)
	Without spouse	34 (29.8)
IPAQ	Low activity levels	81 (71.0)
	Moderate/high activity levels	33 (29.0)
		M(SD)
Age (years)		64.68 (7.3)
Education (years)		6.36 (3.8)

Note: IPAQ: International Physical Activity Questionnaire; n(%): number (percentage); M(SD): Mean(Standard Deviation)

disease [6–8].

Studies show that one of the main causes of non-adherence to the treatment of Peripheral Artery Disease (PAD) is the low knowledge and awareness of the severity of the disease, not only among patients but also among non-specialist physicians[9–11]. In addition, the absence of beliefs about the effectiveness of interventions and their positive impact on the course of the disease, the presence of unrealistic expectations regarding treatment and medical-surgical interventions, can significantly contribute to non-adherence to the recommended treatment [3,12].

The first study that focused on assessing the level of knowledge about PAD (The National PAD Public Awareness Survey) was carried out in the United States in 2006 and revealed that 75% of respondents were unaware of the disease, the other 25% had minimal information[13]. In a study by Lovel et al., 13% of the evaluated patients considered standing for long periods of time as a risk factor for developing PAD, and 6% considered cold baths as a way to limit the deterioration of PAD. These authors suggested that information about PAD should be systematically tracked during patient education [14] as it strongly influences their self-care behavior. Recently, a systematic review brought together 27 studies that assessed knowledge and awareness of PAD not only in the general public but also in non-specialist healthcare professionals [15]. The results emphasize the low level of knowledge and understanding of PAD in all groups studied.

Therefore, it is essential to systematically educate patients about their disease and treatment, with the aim of increasing awareness and knowledge about PAD. For this, it is important that health professionals simply and quickly identify where the gaps are and assess the individual needs of patients, in order to adapt the educational intervention.

After extensive literature review we were only able to identify the existence of one questionnaire that assessed knowledge about PAD. The questionnaire found included several items which were not appropriate to our purpose of evaluating general knowledge of patients [16]. Thus, our study aimed to assess patients' level of knowledge about PAD by constructing and studying the reliability and validity of a knowledge questionnaire on PAD, pioneer in Portugal.

METHODS

A longitudinal study was carried out with two evaluation moments that included a sample of patients with diagnosis of PAD with Intermittent Claudication (Fontaine II or Rutherford 1-3), with no history of surgical interventions. The sample was collected for convenience and identified through the list of scheduled appointments of patients being followed up at the Angiology and Vascular Surgery Consultation of the Centro Hospitalar Universitário do Porto (CHUPorto). Between January and December 2020, 158 patients with PAD and IC were contacted by telephone and invited to participate in the study. Of these, 144 patients agreed to participate in the study and 114 completed the first evaluation. Of these only 73 completed the second evaluation.

After obtaining oral consent by telephone, a face-to-face clinical evaluation was scheduled between

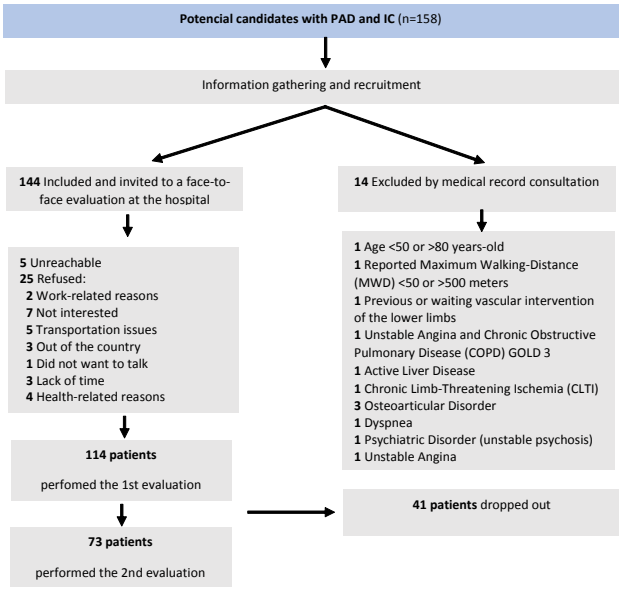

Figure 1 *Study`s flowchart*

Table 2 **Sample clinical characteristics (N=114)**

Presence of	n (%)
Hypertension	98 (86.0)
Cholesterol	100 (87.7)
Obesity (BMI>30)	30 (26.3)
Diabetes Mellitus type 2	50 (43.9)
Smoking History (active or former)	104 (91.2)
Cerebrovascular Disease (Stroke, TIA)	15 (13.2)
Ischemic Heart Disease	33 (28.9)
Chronic Obstructive Pulmonary Disease	24 (21.1)
Heart Failure	9 (7.9)
Chronic Renal Disease	5 (4.4)
Osteoarticular Disease	33 (28.9)
Neurologic Disease	1 (0.9)
Liver Disease	9 (7.9)
Surgical History	89 (78.1)
Medication	n(%)
Acetylsalicylic Acid (ASA)	85 (74.6)
Clopidogrel	25 (21.9)
Statins	100 (87.7)
Pentoxifylline	24 (21.1)
Insulin	12 (10.5)
Cilostazol	26 (22.8)
NOACs	16 (14.0)
Warfarin	5 (4.4)
Oral antidiabetic agents	46 (40.4)
Beta-blockers	32 (28.1)
Antihypertensive agents	83 (72.8)
Others	73 (64.0)
	M(SD)
Distance walked until pain (meters)	263.2(304.3)
For how long you have had this complaint? (years)	3.1(3.5)
Sitting time per day (minutes)	423.7(212.1)

Note: BMI: Body Mass Index; NOACs: Novel oral anticoagulants; TIA: Transient Ischemic Attack; n(%): number (percentage); M(SD): Mean(Standard deviation)

February 9 and March 31, 2021. In the 1st evaluation session, the participants signed an informed consent form, and were informed about the objectives of the study; in an interview format they were then evaluated using a questionnaire that tested their knowledge about PAD. After the evaluation, a brief educational intervention was carried out with a booklet on PAD. The second evaluation was performed 2 weeks after the first session, and the same assessment instrument was used. This study was approved by the Department of Education, Training, and Research of CHUPorto, on October 22, 2019 (reference no. 184/2020, of May 7, 2020) (reference 069-DEFI/068-CES).

Sociodemographic and clinical characterization

The sample consists of 114 patients with Peripheral Arterial Disease and Intermittent Claudication. Sociodemographic and clinical data are presented in Tables 1 and 2.

Building and validation of the PAD knowledge questionnaire (PADKQ)

The process of creating the questionnaire of knowledge about PAD took place over four phases: Phase I: design and construction of the PADKQ; Phase II: analysis of the interobserver evaluation; Phase III: pilot test in a sample of patients with PAD and construction of the final version of PADKQ; and Phase IV: analysis of the reliability and validity of the questionnaire.

Then, the content validity of the instrument was developed from a semantic analysis where observers (professionals in the area: vascular surgeons and nurses) were requested to verify and evaluate the content of the items, i.e. if the items were adequate and adapted to the population (Supplementary Material 1). Items that did not obtain a minimum agreement of 0.80 between observers and were evaluated with a content validity index lower than 0.80 were redone.[17]

The third phase included an empirical procedure involving the application of the instrument to a sample of patients with PAD (pilot study). Each patient answered questions regarding the clarity and degree of intelligibility of each item. The items that did not generate questions, doubts, or comments were considered clear and understandable by patients. This small pilot study resulted in the third and final version of PADKQ.

The last phase (phase IV) involved the analysis of the reliability and validity of the questionnaire.

Instruments

The evaluation consisted of a set of questionnaires that evaluated the sociodemographic and clinical data of patients, walking impairment, practice of physical activity, and knowledge about PAD.

Walking impairment was assessed by the Walking Impairment Questionnaire (WIQ) [18] which assesses the ability to move in three domains: distance (distances that the patient can walk), speed (the speed that the patient can walk), and stairs (number of stairs that the patient can climb without stopping), on a 5-points Likert scale ("0=none, 1=slight, 2=any, 3=quite, and 4=many"). Distance consists of 7 items with a score ranging from 0 to 28, and higher results correspond to a greater distance traveled; speed has 4 items with a score ranging from 0 to 16, and higher values indicate greater speed; the

Table 3 **Analysis of the 16 items according to the Kuder-Richardson 20 criterion (N=114)**

No.	Item Peripheral Arterial Disease ….	Item corrected Total correlation	Kuder Richardson to withdraw the item
1	1. It's a disease that affects the arteries of the legs	0.327	0.766
2	2. It's a disease that clogs the arteries of the legs	0.429	0.760
3	4. This disease is chronic (forever)	0.279	0.772
4	5. This disease can put the legs at risk	0.509	0.750
5	6. This disease. at first. does not give symptoms	0.282	0.771
6	9. This disease may cause leg pain during the night	0.399	0.761
7	10. This disease. if you let it go. can cause leg/foot wounds that do not take long to heal	0.407	0.760
8	13. High blood pressures and high cholesterol also aggravate this disease	0.422	0.759
9	14. Those who have diabetes may be more likely to have this disease	0.465	0.755
10	16. Being overweight influences this disease	0.346	0.765
11	17. People with this disease have a higher risk of heart attack or cerebral thrombosis (stroke)	0.367	0.764
12	18. This disease. if left untreated. can lead to amputation of the legs	0.398	0.761
13	19. This disease. if left untreated. may cause more limitations in walking	0.359	0.767
14	20. If you go on regular walks. the symptoms of this disease may improve	0.241	0.772
15	22. Medication for diabetes. blood pressure. and high cholesterol helps control this disease	0.315	0.767
16	23. In some cases. surgery is required to improve symptoms and prevent amputation	0.420	0.759

dimension ability to climb stairs contains 3 items with a score ranging from 0 to 12, with higher results indicating greater ability to climb stairs.

The International Physical Activity Questionnaire (IPAQ) [19,20] was used to evaluate moderate to vigorous self-reported physical activity and sedentary behavior through 4 items. Scores range from 0 to undefined minutes of physical activity per week and higher results correspond to a greater amount of physical activity performed. Results can be reported in categories (low, moderate, or high activity levels) or as a continuous variable (METs minutes per week). MET minutes represent the amount of energy spent to perform physical activity.

The Peripheral Arterial Disease Knowledge Questionnaire (PADKQ) aims to assess patients' knowledge of the disease and was built and based on the Leventhal Self-Regulation Model [21]. This model assumes that the individual makes an interpretation of symptoms (cognitive representation), then develops strategies to adapt to the disease (coping), and, finally, evaluates the effectiveness of the strategies implemented, which triggers an emotional response. The first section consists of a question that assesses the level of severity of the disease with an answer scale ranging from 1 to 5, where 1 is "Nothing Serious" and 5 is "Very Serious". The second section of the questionnaire consists of 16 items that focus on general knowledge about PAD, knowledge about the symptoms of PAD, risk factors, complications, and knowledge about how to control the disease/treatment, quoted through the following response options: "False-0", "True-1" or "I don't know-3". The 3rd section consists of a qualitative item that assesses the cause of the disease. The questionnaire has a score ranging from 0 to 16 points (the highest level of knowledge about PAD) (The questionnaire is freely accessible as supplementary material 2).

Data analysis

The analyses were made through the Statistical Package for the Social Sciences (SPSS) version 26.0. Descriptive analyses were performed, and frequencies and percentages were calculated in nominal and/or categorical variables, and means and standard deviation, in the continuous variables. The items of the questionnaire were initially coded from 1 to 3, in order to describe the three categories of response (true, false, or do not know) and then recoded into 1 (true) and 0 (false or do not know). Internal consistency was analyzed using the Kuder-Richardson coefficient (KR-20, with a conventionally adequate value of $kr \geq 0.70$) [22]. The mean inter-item correlation should be greater than 0.30 [23]. Stability was evaluated through the retest test. The degree of agreement among observers was measured through the

scores obtained by each of the observers in completing the questionnaire. Content validity was studied through a qualitative evaluation of a group of experts and the Content Validity Index (CVI varies between >.80 and >.90) was calculated.[17] Convergent validity was tested by the correlation between PADKQ, IPAQ, and WIQ. T-tests were performed for independent samples and a T-test for paired samples to characterize the level of knowledge about PAD according to sociodemographic and clinical characteristics and to calculate the difference in the level of knowledge about PAD between the first and the second evaluations. Pearson's correlation coefficient was used to evaluate the association between continuous variables (PADKQ score, WIQ scores: distance, speed and climb stairs and IPAQ scores: low, moderate, and vigorous level of physical activity). Although the scale does not follow a normal distribution, as the correlation test for variables with normal distribution (Pearson) presented the same result as the correlation test for variables with non-normal distribution (Spearmen), we chose to present the results of the correlation of Pearson.

Table 4 **Peripheral Arterial Disease Knowledge Questionnaire - PADKQ Section 1. What is the severity of your illness?**

Severity categories	1st evaluation (n=114) n (%)	2nd evaluation (n=73) n (%)
Nothing serious	1(0.9)	1(0.9)
Slightly serious	27(17.5)	2(2.8)
Moderately serious	23(20.2)	8(11.1)
Serious	52(45.6)	36(50.0)
Very serious	16(14.0)	25(34.7)
Don't know	2(1.8)	0

Note: n(%): number (percentage);

RESULTS

Content validation

After evaluation by the panel of experts, all domains of the questionnaire obtained a Content Validity Index (CVI) above 0.80, concerning the construction of the items, the theoretical content, and semantics. Items with suggestions for improvements were discussed and changed.

Internal consistency

The internal consistency of the 1st version of PADKQ with 23 items evaluated by the kr-20 coefficient was 0.756 pointing to an adequate consistency. The

Table 5 **Peripheral Arterial Disease Knowledge Questionnaire (PADKQ) Section 2. Analysis of the frequency of responses to the 16 items (N=114)**

Item	Yes n(%)	No n(%)	I don't know n(%)
1 It's a disease that affects the arteries of the legs	98(86.0)	2(1.8)	14(12.3)
2 It's a disease that clogs the arteries of the legs	99(86.8)	3(2.6)	12(10.5)
3 This disease is chronic (forever)	47(41.2)	26(22.8)	41(36.0)
4 This disease can put the legs at risk	76(66.7)	10(8.8)	28(24.6)
5 This disease, at first, does not give symptoms	41(36.0)	15(13.2)	58(50.9)
6 This disease can cause pain in the legs during the night	55(48.2)	14(12.3)	45(39.5)
7 This disease, if you let it go, can cause leg/foot wounds that do not take long to heal	69(60.5)	14(12.3)	31(27.2)
8 High blood pressures and high cholesterol also aggravate this disease	84(73.7)	2(1.8)	28(24.6)
9 Those who have diabetes may be more likely to have this disease	85(74.6)	7(6.1)	22(19.3)
10 Being overweight influences this disease	74(64.9)	11(9.6)	29(25.4)
11 People with this disease have a higher risk of heart attack or cerebral thrombosis (stroke)	62(54.4)	4(3.5)	48(42.1)
12 This disease, if left untreated. can lead to amputation of the legs	92(80.7)	3(2.6)	19(16.7)
13 This disease, if left untreated. may cause more limitations in walking	108(94.7)	1(0.9)	5(4.4)
14 If you go on regular walks the symptoms of this disease may improve	102(89.5)	4(3.5)	8(7.0)
15 Medication for diabetes, blood pressure, and cholesterol helps control this disease	102(89.5)	----	12(10.5)
16 In some cases, surgery is required to improve symptoms and prevent amputation	60(52.6)	3(2.6)	51(44.7)

Note: n(%): number(percentage)

Table 6 **Peripheral Arterial Disease Knowledge Questionnaire (PADKQ) Section 3. In your opinion. what is the cause of the disease?**

Categories	Percentage	Examples of causes
I don't know	14.9%	
It is hereditary/family history	8.1%	
It's genetic	0.9%	
Too much sport	0.9%	
Sedentary lifestyle and lack of physical activity	4.5%	
Causes associated with sociodemographic characteristics	1.8%	Age, old age
Association with other diseases:		
	0.9%	HTA
	3.6%	Diabetes
	0.9%	Cholesterol
Causes associated with other diseases	16.2%	Previous heart attacks
		Low back problems
		Consequences of stroke
		Pancreas disease
		Bone problems
		Ringing in the ears
		Contractures in the joint of the feet
Artery defect	3.6%	Continuation of the varicose veins problem
		Thick blood
		Fat in veins
		The blood does not have enough O2 to circulate in the veins
		Having varicose veins
		Blood problems
		Crooked arteries
Triggered by professional activity	9%	Tired because of overworking
		Work: long hours or sitting; the left leg (where there is the pain) is the clutch leg and brake of vehicles; lifting heavy weights; stepping on the pedal for a lifetime; having spent too much time on the knees;
Causes associated with lifestyle		
Tobacco	36.3%	Abuses (to health) made in life
Tobacco and alcohol	9%	Not taking care of one's health: not going to the doctor
Feeding	3.6%	Not taking the prescribed medication

Table 7 **Differences in Peripheral Arterial Disease Knowledge Questionnaire (PADKQ) before and after the intervention (n=73)**

	Min-Max	M(SD)	T-test(df)
PADKQ before intervention (1st evaluation)	2-16	11.12(3.0)	-7.457(72) ***
PADKQ after intervention (2nd evaluation)	10-16	13.94(1.9)	

*Note: Min: Minimum; Max: Maximum; M(SD): Mean(Standard Deviation); df: degrees of freedom; ***p<.001*

items that presented a low mean correlation coefficient (<0.30) were removed (3, 7, 8, 11, 12, 15, and 21 from the 1st version) and the 2nd version of the PADKQ was 16 items with an internal consistency value of kr-20= 0.775 (Table 3). However, this version of 16 items remained with 3 items with a correlation below 0.30 due to the clinical significance of its content (concept of chronicity, asymptomatic, and walking as a therapeutic measure).

Characterization of patients' knowledge of PAD

Regarding the severity of the disease (section 1), half of the sample considers the disease "serious". Table 4 presents the results.

The study sample presented an average PADKQ score of 10.96 points (SD=3.28), from 0 to 16 possible points indicating a good level of knowledge about PAD. In addition, half of the sample scored above 14 points. However, several items were classified as "False" and "I don't know". Table 5 shows the frequency of responses to section two items. Table 6 presents the answers to the question in section 3: What causes(s) the disease?

Time analysis

A brief educational intervention was carried out using a visual tool to provide information on PAD. The level of knowledge of patients increased by about 4 points from moment 1 to moment 2 (table 7). The retest test of the questionnaire revealed a positive and significant correlation with the two-week interval (r=.387, p=.013).

Convergent validity

The PADKQ presents convergent validity with the dimension that evaluates the moderate physical activity of the IPAQ (r=.222, p=.018) and with the dimension capacity to climb stairs of the WIQ (r=.216, p=.021).

DISCUSSION

In this study, an instrument was built to evaluate knowledge about PAD. This instrument presented good reliability and validity properties, attesting to its usefulness and efficacy to be used in primary health care and hospitals with vascular surgery consultation.

This sample showed a high level of knowledge about PAD (M=10.96 points, SD=3.28) with half of the sample scoring above 14 points (ranging from 0 to 16). After a brief personalized educational intervention using a visual tool, the level of knowledge increased. However, it is important to highlight that, even so, some items were identified with information classified as "False" or, as "I don't know", which indicates that the information presented in these items needs to be discussed and clarified. Regarding the perception of disease, almost half of the sample considered the disease to be serious, but about 38% of the sample considered the disease moderately serious or not very serious. The review by Bridgwood et al. [15] reports that 25% of patients rated the disease as an "innocent condition", 61% as relatively serious, and only 5% considered the disease serious.

Regarding the causes of the disease, 15% of patients reported not knowing. A large percentage (36.3%) identified smoking as one of the causes of the disease, as well as other lifestyle behaviors (alcohol consumption and diet). However, other causes have been reported, including causes associated with sociodemographic characteristics such as age or old age; characteristics and requirements of the professional activity (highlighting the external locus of control of these patients); and characteristics of the veins (suggesting a lack of basic knowledge of anatomy and disease). Thus, these results emphasize the need to provide, discuss and clarify erroneous beliefs with patients in a personalized way to increase knowledge and awareness of PAD [13,24].

The level of knowledge about the causes and risk factors for PAD varies from study to study [25–27] but there is consensus that a lack of knowledge is more common in older patients with a low socioeconomic level and low income [13,24]. In this study, patients with a higher level of knowledge about PAD had a higher level of education, as observed in other studies [10,15]. In addition, moderately active patients are also more knowledgeable about PAD. No further differences were found in the level of knowledge taking into account the other sociodemographic and

clinical characteristics.

The results are in line with the incentives of the NICE Guidelines Committee [28] that support the need to plan, implement and study interventions that can influence and contribute to adherence to behavioral change, increasing knowledge about the disease, which, consequently, will promote the control of risk factors associated with the disease/therapeutic course and, above all, will promote attitudes, behaviors, and clinical outcomes.

IMPLICATIONS

The Health Literacy Action Plan (Plano de Ação para a Literacia em Saúde 2019-2021)[29] was considered one of the priorities of health policies that aim to integrate care and the centrality of the citizen in the National Health Service in Portugal (Order No. 6.429/2017). The health system thus, plays a key role in health literacy, being at the forefront of the development and implementation of strategies that increase the quality of information, disseminate knowledge, and promote the communication skills of professionals. Therefore, in the first place, it is essential to increase the quality of information on health and disease. The use of a questionnaire that assesses the level of knowledge about a disease is a way of increasing and disseminating information that promotes discussion on the subject, challenges erroneous beliefs, and gives the patient the opportunity to question health professionals; second, disseminating information and knowledge through educational campaigns implemented in the waiting rooms of health services [30] is a low-cost option. This underestimated context allows the use of audiovisual media that promote awareness and knowledge about the disease and its management [31]; and third, fostering professionals` communication skills is essential to maintain a constructive and educational conversation with patients. Discussion and information sharing should be patient-centered, tailored to their needs, values, and preferences, using clear, simple, and non-technical language. The health professional as a facilitator of the therapeutic relationship must have a cordial attitude (get up, smile, welcome), establish eye contact, listen to the patient, and use pauses in speech. In addition, communication techniques can be used with patients, such as the "Teach-back" method[32,] which consists of asking the person to explain in their words the instructions given to see if they were properly understood. The use of 'Teach-back" has been shown to improve patients' knowledge and self-care abilities [33], improving quality, dissemination of information, and communication skills in general. Furthermore, the use of adapted and accessible health education materials, composed mostly of images, is a fundamental factor to increase understanding, memorization, and sedimentation of knowledge [34]. Therefore, the use of questionnaires, educational booklets, and informative videos, supported by active and collaborative communication between the patient and the health professional in a clinical context, can be an asset to increase health literacy.

Study strengths

This study has three strengths that should be emphasized. First, it presents the construction of a questionnaire with good properties of reliability, internal and convergent validity to be used in clinical health contexts to identify misconceptions and lack of knowledge about the disease. It is simple and easy to understand to be self-reported. Second, the study was conducted with both diagnosed and symptomatic patients, some with several years of symptoms duration. Finally, this tool could be a starting point for an educational conversation about the disease, between health professionals and patients; it will be able to leverage scientific studies that include the level of knowledge of patients as a predictor of clinical outcomes; and motivating the implementation of literacy promotion campaigns based on the real needs of patients.

Study limitations

First, the main limitation of this study refers to the fact that the sample was collected only in a tertiary central hospital, and therefore is not representative of the entire PAD population. Inclusion of patients from primary care units and peripheral hospitals should be considered in future studies. Second, the sample consisted only of patients with PAD and IC Fontaine II or Rutherford [1-3]. Patients in all stages of PAD should be included in the future. A convenience sample was used in this study, which may have increased the risk of selection bias. Therefore, there is an urgent need to use this instrument in other centers and to evaluate its applicability in a larger sample and in patients with behavioral risk factors to develop the disease (primary prevention), or in more advanced stages of the disease (secondary prevention). Moreover, psychiatric history and the presence of depressive symptoms impact adherence to the therapeutic plan,[35] so future studies should include a screening to assess and identify cases of patients with psychiatric and psychological pathology in order to take preventive measures against non-adherence.

CONCLUSION

The PADKQ is a useful, brief, and simple instrument to be filled in by patients and interpreted by health professionals. Its informative potential reinforces its usefulness in vascular surgery specialty consultations but also in general and family medicine practice. Misconceptions and a low level of knowledge about the disease contribute to low adherence to health behaviors (such as physical exercise) that are essential for controlling risk factors.

CONCORDÂNCIA INTER OBSERVADORES

Caros especialistas,

Agradecemos a vossa colaboração na construção do Questionário de Conhecimentos sobre a Doença Arterial Periférica (QCDAP).

Abaixo encontram uma tabela com os critérios de avaliação do questionário em anexo.

O QCDAP foi construído com os seguintes objetivos: 1) avaliar os conhecimentos que os doentes com Doença Arterial Periférica têm sobre a doença; 2) a perceção de gravidade da doença e 3) a perceção de causalidade.

A perceção de gravidade é avaliada através de uma questão pontuada numa escala de *Likert* de 5 pontos que varia entre "nada grave" a "muito grave". Os conhecimentos sobre a doença são avaliados através de 30 itens, divididos por cinco domínios e pontuados como "Verdadeiro", "Falso" ou "Não sei". A causalidade da doença é avaliada através de uma questão aberta sobre a causa da doença.

É nossa intenção que este questionário seja utilizado por qualquer profissional de saúde e preenchido por qualquer indivíduo (com DAP ou não), em contextos de saúde primários ou secundários, com o objetivo de prevenir a DAP, e não apenas com o objetivo de informar e de corrigir crenças erróneas em doentes com DAP. Por este motivo, solicitamos que tenham em consideração a abrangência da população alvo e a capacidade do questionário para se ajustar a qualquer indivíduo.

De seguida apresentamos as instruções de avaliação dos itens e uma tabela para preenchimento.

Agradecemos a vossa colaboração,

Março 2021

A equipa WalkingPad

PERCENTAGEM DE CONCORDÂNCIA INTEROBSERVADORES	
Dimensões para a avaliação quantitativa dos itens: - Aparência - Compreensão - Relevância - Representatividade	Opções de resposta em escala de *Likert*:
Aparência A aparência refere-se a: • construção da frase • tamanho da frase • elaboração semântica da frase	1= má 2= razoável 3= boa 4= muito boa 5= excelente
Compreensão A compreensão refere-se a: • O item está redigido de forma a que o conceito esteja compreensível? • O item expressa adequadamente o que se espera medir? • O item é objetivo e simples de compreender?	1= compreensão totalmente inadequada 2= compreensão pouco adequada 3= compreensão moderadamente adequada 4= compreensão adequada 5= compreensão excelente
Relevância A relevância refere-se a: • Os itens refletem os conceitos envolvidos? • O conteúdo dos itens é relevante? • Os itens são adequados para atingir o objetivo proposto? (fornecer conhecimentos sobre a doença; informar, desmistificar crenças)	1 = item não relevante 2 = item pouco relevante 3 = item moderadamente relevante 4 = item relevante 5= item altamente relevante
Representatividade A representatividade refere-se a: • Os itens são suficientes e vão ao encontro de cada domínio? • Os domínios (escalas) são suficientes e cobrem todos os itens? • Os itens incluem informação considerada essencial para fornecer ao doente?	1 = item não representativo 2 = item necessita de grande revisão para ser representativo 3=item moderadamente representativo 4 = item necessita de pequena revisão para ser representativo 5 = item representativo

Supplementary Material 1

QUESTIONÁRIO DE CONHECIMENTOS SOBRE A DAP

1. De 1-5, na sua opinião, qual é a gravidade da doença que tem nas pernas?

1	2	3	4	5
Nada grave	Pouco grave	Moderadamente grave	Grave	Muito grave

2. Por favor, assinale (x) na coluna apropriada para indicar se as afirmações são:. Verdadeiras (**V**) ou Falsas (**F**). Se não souber assinale na coluna Não Sei (**NS**).

V	F	NS	
			1. É uma doença que afeta as artérias das pernas
			2. É uma doença que entope as artérias das pernas
			3. Esta doença é crónica (para sempre)
			4. Esta doença pode pôr em risco as pernas
			5. Esta doença, no início, não dá sintomas
			6. Esta doença pode provocar dor nas pernas durante a noite
			7. Esta doença, se deixar avançar, pode provocar feridas nas pernas/pés que demoram a cicatrizar
			8. As tensões altas e o colesterol altos também agravam esta doença
			9. Quem tem diabetes pode ter mais probabilidade de ter esta doença
			10. Ter excesso de peso influencia esta doença
			11. Pessoas com esta doença têm maior risco de ataque cardíaco ou uma trombose cerebral (AVC)
			12. Esta doença, se não for tratada, pode levar à amputação das pernas
			13. Esta doença, se não for tratada, pode provocar mais limitações no caminhar
			14. Se fizer caminhadas regulares, os sintomas desta doença podem melhorar
			15. A medicação para a diabetes, tensões e colesterol, ajuda a controlar esta doença
			16. Em alguns casos é necessária cirurgia para melhorar os sintomas e evitar a amputação

3. Na sua opinião, qual é a causa principal desta doença?

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Supplementary Material 2

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