RESEARCH ARTICLE

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Predictive Factors of Peripheral Artery Disease in Homecare Patients

ABSTRACT

Objective: The aim of the present study was to investigate the predictive factors of peripheral arterial disease (PAD) in home care patients.

Method: This descriptive study was conducted in Istanbul with 285 homebound patients who applied for the first time to receive services from the Home Health Care Unit of a tertiary hospital between 01.07.2014 and 01.12.2014. The patients having known PAD diagnosis were excluded. Sociodemographic characteristics, home dependency duration, chronic diseases, medications used and smoking status were recorded. Then, deformities in the patients' toenails, peripheral hair loss, foot wounds were recorded, and the patients' functional status and skinfold thickness were evaluated peripheral arterial disease was evaluated by ankle–brachial index (ABI). An ABI below 0.9 was considered indicative of PAD. A chi-square test, Mann–Whitney U test and a logistic regression analysis were used in the statistical analysis.

Results: The mean age of the participants was 75.84±1.17 years (34% M; 65% F). Peripheral artery disease was detected in 16.8% (n=48) of the patients. Current or former smoking (β: 4.09), peripheral hair loss (β: 3.42), deformity of toenails (β: 3.02), and increased skinfold thickness (β: 1.124) were identified as predictors of PAD.

Conclusions: The findings of the present study suggest that home health care providers should inquire about the patient's smoking history, assess skinfold thickness, and examine the toes for hair loss and deformities, to predict PAD.

Keywords: Ankle-Brachial Index; Peripheral Artery Disease; Immobility; Cardiovascular Disease; Screening; Home Health Care.

Evde Bakım Hastalarında Periferik Arter Hastalığını Öngörücü Faktörler

ÖZET

Amaç: Çalışmanın amacı evde bakım hastalarında periferik arter hastalığı için (PAH) öngörücü faktörlerin araştırılmasıdır.

Yöntem: Tanımlayıcı tipte olan bu araştırma, İstanbul'da 01.07.2014-01.12.2014 tarihleri arasında üçüncü basamak bir hastanenin Evde Sağlık Birimine hizmet almak için ilk kez başvuran 285 hasta ile gerçekleştirilmiştir. Bilinen PAH tanısı olan hastalar çalışma dışı bırakılmıştır. Sosyodemografik özellikler, yatağa bağımlı kalma süresi, kronik hastalıklar, kullanılanı ilaçlar ve sigara içme durumu kaydedilmiştir. Daha sonra hastaların ayak tırnaklarında şekil bozukluğu, periferik kıl kaybı, ayak yaraları kaydedilmiş, hastaların fonksiyonel durumları ile deri kıvrım kalınlıkları değerlendirilmiştir. PAH ayak bileği-kol indeksi (ABI) ile değerlendirilmiş ve 0.9'un altı PAH olarak kabul edilmiştir. İstatistiksel analizde ki-kare testi, Mann-Whitney U testi ve lojistik regresyon analizi kullanılmıştır.

Bulgular: Katılımcıların yaş ortalaması 75,84±1,17 yıldır (%34 E; %65 K). Hastaların %16,8'inde (n=48) periferik arter hastalığı saptanmıştır. Halen veya geçmişte sigara kullanımı (β:4.09), periferik kıl kaybı (β:3.42), ayak tırnaklarında şekil bozukluğu (β:3.02) ve deri kıvrım kalınlığında artış (β:1.124), PAH varlığını öngören faktörler olarak belirlenmiştir.

Sonuç: Bu araştırmanın bulguları, evde bakım hizmeti sunanların PAH'ı öngörebilmek için hastaların sigara içme geçmişini sorgulaması, deri kıvrım kalınlığını değerlendirmesi ve kıllarda dökülme ve tırnak deformiteleri açısından ayak parmaklarını incelemesi gerektiğini göstermektedir.

Anahtar Kelimeler: Ayak Bileği-Kol İndeksi, Periferik Arter Hastalığı, İmmobilite, Kalp Ve Damar Hastalıkları, Evde Sağlık Hizmetleri.

INTRODUCTION

The elderly are the most rapidly growing segment of the population. The prevalence of chronic diseases due to increase in the elderly population has been increase. Chronic diseases limit an individual's daily activities by causing loss of some abilities, rendering patients with chronic diseases immobile, dependent, and bed/home bound. Immobility is a primary cause of peripheral arterial disease (PAD) and systemic atherosclerosis. Furthermore, immobility prevents the manifestation of symptoms of existing PAD, such as claudication, and leads to a delay in diagnosis (1). For this reason, evaluation of patients who are immobile and are served home health care for PAD is crucial to prevent occurrence of possible problems. However, there is no information in the literature regarding the screening for and the prevalence of PAD in patients who are served homecare. In population-based studies in our country, the prevalence of PAD was reported to be 19.76% in people over the age of 40 years and 17.6% in people over the age of 45 years (2, 3). The high prevalence of PAD and its association with ischemic and thromboembolic events and increased mortality increases the importance of its early diagnosis (4-7). In general, there is no screening that is recommended for PAD in healthy individuals without any risk factors; however, screening with ankle–brachial index (ABI) measurement is recommended for people at high risk for cardiovascular disease (8-10). In patients with a history or physical examination suggestive of PAD measurement of the ABI is indicated as a first-line non-invasive test for both screening and diagnosis of PAD (sensitivity: 68%-84%; specificity: 84% to 99%) (10). People who were served home health care may be at risk for developing PAD due to their immobility and concurrent chronic diseases.

The aim of the present study was to investigate the predictors of PAD in home care patients, therefore, to identify which findings that home health care providers encounter should lead them to suspect PAD.

MATERIAL AND METHODS

The population of this descriptive study includes patients who applied for the first time to receive services from the Home Health Care Unit of a tertiary hospital in Istanbul. No sample size was identified, and the study was designed to enrol all eligible patients among the patients applied for the first time to receive home health care between 01.07.2014 and 01.12.2014.

The inclusion criteria were voluntary participation in the study, absence of any known PAD, absence of physical and medical obstacles to ABI measurement, patients who are served homecare not for acute causes, such as postoperative homecare, and patients not receiving end-of-life care for a terminal illness. The exclusion criteria of the study were unwillingness to continue the study, failure to measure ABI, and an ABI>1.4 (these patients were excluded because an ABI above 1.4 suggested technical error or medial arterial calcinosis) (10).

The Home Health Care Unit had 578 registered patients in June 2014. During the study period, 308 patients applied to the Home Health Care Unit for the first time. All patients were contacted via phone to obtain verbal approval from the patient or their caregiver and to schedule a home visit appointment. After contacting via phone, as 45 patients died, 52 did not consent to participate in the study, 61 did not meet the inclusion criteria (48 patients under the age of 40, 7 patients with a known PAD, 6 patients in the terminal stage), 112 patients could not be reached because of a change in their address, phone number or a temporary change in residence. With the exclusion of 19 patients in whom ABI measurement could not be performed accurately due to peripheral edema and 4 patients with an ABI>1.4 at the time of home assessment, the final study included 285 patients.

Procedure: A questionnaire was administered to inquire about sociodemographic characteristics, duration of bedridden status, chronic diseases, medication, and smoking history. The data on the discharge summary explaining the reason for homecare dependency was recorded, if available. Next, a systemic examination was performed and any deformities of toenails, hair loss, and foot and bed sores were recorded; for obesity assessment, the skin fold thickness indicating subcutaneous fat tissue was measured; and the functional status of the patients was evaluated using the Barthel Index for Activities of Daily Living (ADL). The level of independence increases with high score of Barthel Index of ADL, and a maximum of 100 points can be obtained which represent complete independence. The scores of 0-20 indicate "total dependency", 21-60 "severe", 61-90 "moderate", 91-99 "slight" dependency (11). HbA1c values and lipid parameters of patients with diabetes or hyperlipidemia, evaluated in the last three months were recorded from the patient charts. Finally, the ABI was measured.

The ABI was measured by placing a sphygmomanometer on both arms and the lower part of the knee and using a vascular hand Doppler with an 8-MHz probe (Sonotrax B, Contec Medical Systems). For the measurement of ankle blood pressure, the Doppler probe was placed on the posterior border of the medial malleolus to detect the pulsations of the posterior tibial artery and between the first and second metatarsals to detect the pulsations of the dorsalis pedis artery. Arm pressure was measured from both arms using a vascular Doppler device. The ABI was calculated

by dividing the highest pressure measured in the posterior tibialis or dorsalis pedis arteries by the highest pressure in the right or left arm. The single measurement was considered the highest pressure value in people in whom only a single pressure measurement could be obtained. An ABI below 0.9 was considered in favor of PAD (10). All measurements were made by the same researcher.

The skinfold thickness measurement was made on the right arm, halfway between the acromion of the shoulder and the olecranon of the elbow. The midpoint was marked while the elbow was flexed at 90 degrees, and the skin and the underlying fat tissue 1 cm above this point were grasped between the two fingers and pulled away from the underlying muscle. The jaw of the caliper (Harpenden®, Baty International, UK), which is a special measuring instrument, was placed on the marked point perpendicular to the long axis of the arm. Two measurements were obtained in each patient and the average was recorded. In bedridden patients, the patient was placed on their side and the measurement was obtained by performing the above-mentioned procedures in order.

The wounds on the feet of the patients were evaluated as a "bed sore" when they were located in foot parts in contact with the bed, and as a "foot wound" due to poor circulation when they were on the fingertips. Since most of the patients were immobile and could not express themselves, complaints such as claudication related to PAD could not be evaluated. The drugs were classified according to the World Health Organization's International Anatomical Therapeutic and Chemical Classification system (ATC) (12).

Ethic: The study was approved by Local Ethics Committee of the School of Medicine in Marmara University (2014/1400123396). The participants and caregivers were informed about the study and their consent was obtained. Only voluntary people were included the study.

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards.

Analysis: Statistical analysis of the study was performed using the Statistical Package for the Social Sciences (SPSS Inc., Chicago, Illinois, USA) version 16.0 package program for Windows. Descriptive statistics included frequency, percentage, mean, standard deviation, median, interquartile range, minimum and maximum values. In univariate analyses, a chi-square test was used to compare categorical variables, and a Mann–Whitney U test was used to compare continuous variables. Logistic regression analysis was used to idendify the predictors of PAD. A p value less than 0.05 was used as the level of statistical significance.

RESULTS

The study included 285 patients with a mean age of 75.84±1.17 years (min:42, max:100) (34% M; 65% F). Sociodemographic characteristics of the participants are presented in Table 1.

Table 1. Sociodemographic characteristics of the participants

		n	%
Sex	**Female**	186	65.3
	Male	99	34.7
Educational Status	**Illiterate**	182	63.9
	Literate	45	15.8
	Primary school	39	13.7
	Secondary school	12	4.2
	High school	5	1.8
	University	2	0.7
Marital status	**Widow**	176	61.8
	Married	96	33.7
	Single	10	3.5
	Divorced	3	1.1
Households	**Children**	184	64.6
	Spouse and at least one child	49	17.2
	Only spouse	37	13.0
	Alone	7	2.5
	Other*	10	2.8
Monthly income**	**<1,100**	98	34.4
	1,100–3,700	179	62.8
	>3,700	8	2.9

*Other: Relatives or caregivers.

**According to the study conducted by TÜRK-İŞ in June 2014, the hunger limit for a family of four is 1,158 liras and the poverty line is 3,772 liras.

Health-Related Data of Participants: The median duration of home dependency of the participants was 2 years (IQR:1.0–5.0). The most common diseases were hypertension (58.6%), cerebrovascular disease (CVD) (42.8%), diabetes mellitus (DM) (29.1%) (Table 2). The Barthel ADL index scores of the participants evaluating the functional status, skinfold thickness, HbA1c values of 56 patients (19.65%) and lipid parameters of 35 patients (12.28%) evaluated in the last three months are presented in Table 2. It was determined that 217 (76.1%) patients were never smokers, 61 (21.4%) were former smokers, and 7 (2.5%) were current smokers.

Table 2. Some parameters indicating health-related data of the participants

	n	**%**
Hypertension	167	58.6
Cerebrovascular disease	122	42.8
Diabetes mellitus	83	29.1
Dementia	70	24.6
Musculoskeletal system disease	40	14.0
Coronary artery disease	31	10.9
Heart failure	29	10.2
No any disease	9	3.2

	Median (25th–75th. Percentile)	**Minimum–Maximum**
Barthel ADL Index Score (n=285)	25.0 (0.0–50.0)	0–90
Skinfold thickness (cm) (n=285)	15.0 (11.0–20.0)	4–30
F (n=186)	22 (19–27)	8–37
M (n=99)	14 (10–18)	5–30
HbA1c (%) (n=56)	6.40 (5.80–6.98)	4.80–9.10
Total cholesterol (mg/dl) **(n=35)**	180.0 (146–212)	98–312
HDL (mg/dl) **(n=35)**	41.0 (33.0–48.0)	25–114
LDL (mg/dl) **(n=35)**	110.00 (89.75–140.25)	16–204
Triglyceride (mg/dl) **(n=35)**	130.0 (80.0–183.0)	51–355

HDL: high-density lipoproteins; LDL: low-density lipoproteins

The Associated Factors of Peripheral Artery Disease: Peripheral artery disease was detected in 16.8% (n=48) of the patients (ABI<0.9). It was determined that 91.6% of these patients had at least one risk factor for PAD other than age, and 62.5% had 2 or more risk factors. Half of them (n=24) were current or former smokers; it was found that 35 (73%) had HT, 20 (42%) had DM, 10 (21%) had CAD, and 6 (13%) had HL.

It was observed that only 27.8% (n=25) of the patients diagnosed with PAD used any anticoagulant or antiaggregant.

The prevalence of PAD was higher in males than in females; in smokers than in non-smokers; in patients with nail deformity and hair loss in the feet than in those without; in patients with obesity, HT, CAD, and diabetes than in those who did not have; and the skinfold thickness was found to be higher in patients with PAD than in those without PAD (p=0.006; p<0.001; p<0.001; p<0.001; p=0.027; p=0.015; p=0.036; p=0.004) (Tables 3 and 4). There was no association between PAD and CVD, HL, heart failure, renal failure and foot wound (Table 3). There was no association between the level of dependency calculated by the Barthel Index of ADL and PAD (Table 3).

Table 5 presents the results of logistic regression analysis, which was performed using a model (sex, smoking status, skinfold thickness, DM, HT, CAD, CVD, loss of peripheral hair, and deformity of the toenails) incorporating the factors that were found to be associated with PAD in univariate analysis and the presence of CVD that was found to have a strong relationship with PAD in the literature. Accordingly, "current smoking and former smoking" (β:4.09), loss of peripheral hair (β:3.42), deformity of toenails (β:3.02), and increased skinfold thickness (β:1.124) were identified as the factors predicting the presence of PAD (ABI<0.9), respective order (Table 5).

Table 3. Comparison between Presence of Peripheral Arterial Disease and categorical variables

	PAD (+) n (%)	PAD (-) n (%)	Total n (%)	p	x^2
Sex					
Female	23 (12.4%)	163 (87.6%)	186 (100%)	**0.006**	7.66
Male	25 (25.3%)	74 (74.7%)	99 (100%)		
Smoking status					
Current/former smoker	24 (35.3%)	44 (64.7%)	68 (100%)	**<0.001**	21.77
Never smoker	24 (11.1%)	193 (88.9%)	217 (100%)		
Diabetes Mellitus					
Present	20 (24.1%)	63 (75.9%)	83 (100%)	**0.036**	4.40
Absent	28 (13.9%)	174 (86.1%)	202 (100%)		
Hypertension					
Present	38 (20.9%)	144 (79.1%)	182 (100%)	**0.015**	5.86
Absent	10 (9.7%)	93 (90.3%)	103 (100%)		
Coronary Artery Disease					
Present	10 (32.3%)	21 (67.7%)	31 (100%)	**0.015**	5.90
Absent	38 (15.0%)	216 (85.0%)	54 (100%)		
Cerebrovascular Disease					
Present	25 (20.5%)	97 (79.5%)	122 (100%)	0.154	-
Absent	23 (14.1%)	140 (85.9%)	163 (100%)		
Hyperlipidemia					
Present	11 (23.4%)	36 (76.6%)	47 (100%)	0.422	-
Absent	37 (15.5%)	201 (84.5%)	238 (100%)		
Renal disease					
Present	3 (25.0%)	9 (75.0%)	12 (100%)	0.432	-
Absent	45 (16.5%)	228 (83.5%)	273 (100%)		
Heart Failure				0.117	-
Present	8 (27.6%)	21 (72.4%)	29 (100%)		
Absent	40 (15.6%)	216 (84.4%)	256 (100%)		
Foot wound					
Present	2 (20.0%)	8 (80%)	10 (100%)	0.678	-
Absent	46 (16.7%)	229 (83.3%)	275 (100%)		
Deformity of toenails					
Present	41 (25.2%)	122 (74.8%)	163 (100%)	**<0.001**	18.78
Absent	7 (5.7%)	115 (94.3%)	122 (100%)		
Loss of peripheral hair					
Present	38 (29.7%)	90 (70.3%)	128 (100%)	**<0.001**	27.37
Absent	10 (6.4%)	147 (93.6%)	157 (100%)		
Barthel Index of ADL*					
Total dependence	25 (18.5%)	110 (81.5%)	135 (100%)	0.109	-
Severe dependence	20 (19.4%)	83 (80.6%)	103 (100%)		
Moderate dependence	3 (6.4%)	44 (93.6%)	47 (100%)		

The percentages indicate the percentage of rows.

PAD: Peripheral Arterial Disease

*There were no any patients who were complete independent or slightly dependent.

Table 4. Comparison between Presence of Peripheral Arterial Disease and continuous variables

	PAD (+)	PAD (-)	
	Median (25th–75th. Percentile)	**Median (25th–75th. Percentile)**	**p**
Age *(year)*	74.0 (65.0–84.0)	80.0 (69.50–84.0)	0.24
Duration of home dependency *(year)*	3.0 (1.0–5.0)	2.0 (1.0–5.0)	0.33
Barthel ADL Index Score	17.5 (0.0–40.0)	25.0 (0.0–50.0)	0.292
Skinfold thickness *(cm)*	18.0 (11.0–25.0)	15.0 (11.0–18.0)	**0.004**

PAD: Peripheral Arterial Disease

Table 5. Factors predicting peripheral artery disease (Logistic regression analysis)

	B	S.E	Exp(B)	95% C.I. for Exp(B)	p value
Constant	-6.429	0.962	0.002		0.000
Smoking history *(Current/Former vs. Never smoked)*	1.410	0.487	4.095	1.578-10.627	**0.004**
Loss of peripheral hair *(Yes vs. No)*	1.228	0.498	3.415	1.288-9.058	**0.014**
Deformity of toenails *(Yes vs. No)*	1.105	0.545	3.02	1.037-8.784	**0.043**
Skinfold thickness *(cm)*	0.117	0.033	1.124	1.053–1.198	**<0.001**
Sex *(Female vs Male)*	-0.244	0.485	0.784	0.303-2.028	0.615
HT *(Yes vs. No)*	0.622	0.479	1.863	0.729-4.764	0.194
DM *(Yes vs. No)*	0.627	0.414	1.873	0.832-4.214	0.129
CAD *(Yes vs. No)*	0.379	0.523	1.461	0.524-4.077	0.468
CVD *(Yes vs. No)*	0.714	0.399	2.043	0.935-4.463	0.073

R^2=.228 (Cox ve Snell), .381(Nagelkerke), Modelχ2(9)=71.611

The model includes sex, smoking status, skinfold thickness, DM, HT, CAD, CVD, loss of peripheral hair, and deformity of the toenails. HT: Hypertension; DM: diabetes mellitus; CVD: cerebrovascular disease; CAD: coronary artery disease.

DISCUSSION

The aim of this study was to identify the which findings that home health care providers encounter should lead them to suspect PAD. Accordingly, smoking, loss of peripheral hair, toenail deformity, and increased skinfold thickness were the predictors of PAD in home care patients.

The prevalence of PAD has been reported between 5% and 19.76% in general population (2, 13, 14) but 12.2% and 40.0% in elderly patients (15-17). The difference of the present study from those is that it was not conducted in the general population, but with the patients who were served home health care due to immobility. In the present study, peripheral arterial disease was detected in 16.8% of home care patients, which is similar with the prevalence reported in those studies. In another study conducted with the patients over 60 years of age living in a nursing home in our country, the prevalence of PAD was found to be 5.9% (18). In the aforementioned study, the characteristics of the participants, such as age and frequency of chronic diseases, were similar to those in our study conducted with homebound patients; lower prevalence of PAD in their study compared to the present study can be explained by the fact that their patients received long-term care by full-time health professionals, and that the number of patients who were immobile were less in their study. The finding of high frequency of antiaggregant or anticoagulant use in the aforementioned study confirms that the individuals in their study had received high-performing health care services. In our study group, the participants have recently started receiving home health care. The fact that the frequency of using any antiaggregant or anticoagulant was quite low is an indication of that. In addition, it is obvious that our study group is more disadvantageous in terms of immobility, which is one of the most important risk factors for PAD.

While previous studies have reported a relationship between peripheral arterial disease and advanced age (2, 19), the present study found no relationship between increasing age and the prevalence of PAD. This difference may be related to the high mean age of individuals who need homecare (75.84±1.17 years) in our study. In general, the studies in the literature report higher prevalence of PAD in males than in females (2, 18, 20). Similarly, the present study found a higher prevalence of PAD in males than in females, but in the multivariate logistic regression analysis, the sex factor was eliminated, and smoking, which is known to be consumed more by males, was identified as the strongest factor predicting the presence of PAD, similar to that reported in the literature (21). Other studies investigating the risk factors of PAD have identified DM, CAD, HL, HT, smoking, and obesity as risk factors for PAD (5, 22-25). While DM, HT, and CAD appeared as factors associated with PAD in univariate analysis, DM, HT, CAD and HL were not identified as factors associated with PAD in regression model incorporating these factors. The use of different

models and the number of people participating in the study may have caused this difference.

The most important finding in the history of PAD is claudication, but because home care patients are immobile, this finding is absent or asymptomatic. Therefore, it is important to identify other findings when PAD is suspected. Physical examination findings in the guidelines include lower extremity pulse examination to detect vascular bruit, non-healing lower extremity wounds, lower extremity gangrene, and other suggestive lower extremity physical findings (e.g., elevated pallor/dependent rubor) (26-29). In addition, the sensitivity and specificity of nail deformities and peripheral hair loss for detecting PAD have been reported to be low. However, in our study, examination of the toes for hair loss and deformities with assessment of skinfold thickness came to the fore in predicting PAD in home care patients. The results of the present study suggest that home care providers should inquire about the patient's smoking history, assess skinfold thickness, and examine the toes for hair loss and deformity. In the presence of a history of smoking, increased skinfold and peripheral hair loss, and nail deformities in home care patients, it would be appropriate to measure the patient's ABI and perform the necessary interventions in accordance with guideline recommendations.

The strengths of this study are it is the first study to investigate the predictive factors of PAD in patients receiving homecare health services using ABI. The most remarkable limitation of this study is that measurement of ABI and clinical examination were made by the same researcher. Other limitations are the inability to reach all patients who were being followed up by the homecare health unit for various reasons, and the lack of generalizability of the findings due to the fact that the study was carried out only on patients from a single center. However, the present findings may add to increase the knowledge by paving the way for future studies or if the present data are included in a meta-analysis.

CONCLUSIONS

Considering that most of the patients who are homebound are at risk for PAD, the early diagnosis and management of PAD can reduce cardiovascular mortality of homebound patients. We can conclude that smoking status, peripheral hair loss, deformity of the toenails, and increased skinfold thickness should be evaluated by home care providers. If a suspicion, ABI measurement, a noninvasive and easy to perform can be performed. Therefore, healthcare professionals visiting homebound patients should be trained about signs of PAD and ABI measurement. In addition, our research findings suggest that the fight against smoking and obesity in homecare recipient should be an important part of the practice of homecare professionals.

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REFERENCES

1. McDermott MM, Guralnik JM, Ferrucci L, Tian L, Liu K, Liao Y, et al. Asymptomatic peripheral arterial disease is associated with more adverse lower extremity characteristics than intermittent claudication. Circulation. 2008;117(19):2484-91.
2. Karabay Ö, Karaçelik M, Yilik L, Tekin N, Iriz AB, Kumdereli S, et al. Iskemik periferik arter hastaliği: Bir tarama çalismasi. Turkish Journal of Thoracic and Cardiovascular Surgery. 2012;20(3):450-7.
3. Vural T, Tan MN, Kartal M, Güldal AD. Detecting peripheral arterial disease in primary care: A population based study. Korean Journal of Family Medicine. 2020;41(1):61-7.
4. Ouriel K. Detection of peripheral arterial disease in primary care. 2001;286:1380-1.
5. Diehm C, Schuster A, Allenberg JR, Darius H, Haberl R, Lange S, et al. High prevalence of peripheral arterial disease and co-morbidity in 6880 primary care patients: Cross-sectional study. Atherosclerosis. 2004;172(1):95-105.
6. Zanati SG, Mouraria GG, Matsubara LS, Giannini M, Matsubara BB. Profile of cardiovascular risk factors and mortality in patients with symptomatic peripheral arterial disease. Clinics. 2009;64(4):323-6.
7. Hajibandeh SS, Hajibandeh SS, Shah S, Child E, Antoniou GA, Torella F. Prognostic significance of ankle brachial pressure index: A systematic review and meta-analysis. 2017;25:208-24.
8. Ferket BS, Spronk S, Colkesen EB, Hunink MGM. Systematic review of guidelines on peripheral artery disease screening. 2012;125.
9. Aboyans V, Ricco JB, Bartelink MLEL, Björck M, Brodmann M, Cohnert T, et al. 2017 ESC Guidelines on the Diagnosis and Treatment of Peripheral Arterial Diseases, in collaboration with the European Society for Vascular Surgery (ESVS). European Heart Journal. 2018;39(9):763-816.
10. Gornik HL, Aronow HD, Goodney PP, Arya S, Brewster LP, Byrd L, et al. 2024 ACC/AHA/AACVPR/APMA/ABC/SCAI/SVM/SVN/SVS/SIR/VESS Guideline for the Management of Lower Extremity Peripheral Artery Disease: A Report of the American College of Cardiology/American Heart Association Joint Committee on Clinical Practice Guidelines. 2024;149:e1313-e410.

11. Shah S, Vanclay F, Cooper B. Improving the sensitivity of the Barthel Index for stroke rehabilitation. J Clin Epidemiol. 1989;42(8):703-9.
12. Atcc. WHOCC - ATC/DDD Index [Internet]. Norway: Norwegian Institute of Public Health WHO Collaborating Centre for Drug Statistics Methodology; 2024 Jan [cited 2024 June 12] Available from: https://www.whocc.no/atc_ddd_index/?code=C&showdescription=no
13. Carbayo JA, Divisón JA, Escribano J, López-Abril J, López de Coca E, Artigao LM, et al. Using ankle-brachial index to detect peripheral arterial disease: Prevalence and associated risk factors in a random population sample. Nutrition, Metabolism and Cardiovascular Diseases. 2007;17(1):41-9.
14. Menke A, Muntner P, Wildman RP, Dreisbach AW, Raggi P. Relation of Borderline Peripheral Arterial Disease to Cardiovascular Disease Risk. American Journal of Cardiology. 2006;98(9):1226-30.
15. Cacoub P, Cambou JP, Kownator S, Belliard JP, Beregi JP, Branchereau A, et al. Prevalence of peripheral arterial disease in high-risk patients using ankle-brachial index in general practice: A cross-sectional study. International Journal of Clinical Practice. 2009;63(1):63-70.
16. Ostchega Y, Paulose-Ram R, Dillon CF, Gu Q, Hughes JP. Prevalence of peripheral arterial disease and risk factors in persons aged 60 and older: Data from the National Health and Nutrition Examination Survey 1999-2004. Journal of the American Geriatrics Society. 2007;55(4):583-9.
17. Bergiers S, Vaes B, Degryse J. To screen or not to screen for peripheral arterial disease in subjects aged 80 and over in primary health care: A cross-sectional analysis from the BELFRAIL study. BMC Family Practice. 2011;12(1):39-.
18. Tekin N, Baskan M, Yesilkayali T, Karabay O. Prevalence of peripheral arterial disease and related risk factors in Turkish elders. BMC Family Practice. 2011;12.
19. Criqui MH, Aboyans V. Epidemiology of Peripheral Artery Disease. Circulation Research. 2015;116(9):1509-26.
20. Sigvant B, Wiberg-Hedman K, Bergqvist D, Rolandsson O, Andersson B, Persson E, et al. A population-based study of peripheral arterial disease prevalence with special focus on critical limb ischemia and sex differences. Journal of Vascular Surgery. 2007;45(6):1185-91.
21. Weiss NS, McClelland R, Criqui MH, Wassel CL, Kronmal R. Incidence and predictors of clinical peripheral artery disease in asymptomatic persons with a low ankle-brachial index. Journal of medical screening. 2018;25(4):218-22.
22. Kownator S, Cambou JP, Cacoub P, Léger P, Luizy F, Herrmann MA, et al. Prevalence of unknown peripheral arterial disease in patients with coronary artery disease: Data in primary care from the IPSILON study. Archives of Cardiovascular Diseases. 2009;102(8-9):625-31.
23. Joosten MM, Pai JK, Bertoia ML, Rimm EB, Spiegelman D, Mittleman MA, et al. Associations between conventional cardiovascular risk factors and risk of peripheral artery disease in men. JAMA - Journal of the American Medical Association. 2012;308(16):1660-7.
24. Selvin E, Erlinger TP. Prevalence of and risk factors for peripheral arterial disease in the United States: Results from the National Health and Nutrition Examination Survey, 1999-2000. Circulation. 2004;110(6):738-43.
25. Hirsch AT, Criqui MH, Treat-Jacobson D, Regensteiner JG, Creager MA, Olin JW, et al. Peripheral arterial disease detection, awareness, and treatment in primary care. Journal of the American Medical Association. 2001;286(11):1317-24.
26. Armstrong DW, Tobin C, Matangi MF. The accuracy of the physical examination for the detection of lower extremity peripheral arterial disease. Can J Cardiol. 2010;26(10):e346-50.
27. Khan NA, Rahim SA, Anand SS, Simel DL, Panju A. Does the clinical examination predict lower extremity peripheral arterial disease? JAMA. 2006;295(5):536-46.
28. McDermott MM, Greenland P, Liu K, Guralnik JM, Criqui MH, Dolan NC, et al. Leg symptoms in peripheral arterial disease: associated clinical characteristics and functional impairment. JAMA. 2001;286(13):1599-606.
29. McDermott MM, Mehta S, Greenland P. Exertional leg symptoms other than intermittent claudication are common in peripheral arterial disease. Arch Intern Med. 1999;159(4):387-92.