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Epidemiology of chronic venous disease in Mexico and its impact on quality of life

Epidemiología de la enfermedad venosa crónica en México y su impacto en la calidad de vida

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Abstract

Epidemiological data on chronic venous disease (CVD) are important for developing prevention and treatment programs. We review the epidemiological data gathered from Mexican population on CVD and its impact on quality of life (QoL). Primary physicians recruited 20 consecutive adult patients visiting for any medical reason except an emergency and collected clinical and demographic data. QoL was measured using the CIVIQ-14 questionnaire. We reviewed data collected from 5,484 patients. The prevalence of CVD was 71.3%, predominantly in women (76.3%), and the mean age was 44.7 years. The most frequently reported leg symptoms were pain (73.1%) and heaviness (71.9%). QoL was poor in patients aged over 50, with BMI > 30 kg/m2, presenting three or more symptoms, and at higher grades of CVD. Early referral to a vascular specialist was 18.6%. This review provides reliable data showing that CVD is highly prevalent in Mexico and affects QoL as it progresses.

Keywords: *Epidemiology. Vein consult. Quality of life.*

Resumen

Los datos epidemiológicos sobre la enfermedad venosa crónica (EVC) son importantes para desarrollar programas de prevención y tratamiento. Revisamos los datos epidemiológicos recopilados en población mexicana sobre EVC y su impacto en la calidad de vida. Los médicos primarios reclutaron a 20 pacientes adultos consecutivos que visitaron por cualquier razón médica, excepto una emergencia, y recopilaron datos clínicos y demográficos. La calidad de vida se midió mediante el cuestionario CIVIQ-14. Se revisaron datos recopilados de 5,484 pacientes. La prevalencia de EVC fue del 71.3%, predominantemente mujeres (76.3%), y una edad media de 44.7 años. Los síntomas más frecuentes en las piernas fueron dolor (73.1%) y pesadez (71.9%). La calidad de vida fue pobre en pacientes mayores de 50 años, con IMC > 30 kg/m2, presentando tres o más síntomas, y en grados más altos de ECV. La derivación temprana a un especialista vascular fue del 18.6%. Esta revisión proporciona datos confiables que muestran que la EVC es altamente prevalente en México y afecta la calidad de vida a medida que progresa.

Palabras clave: *Epidemiología. Vein consult. Calidad de vida.*

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Introduction

Chronic venous disease (CVD) is defined as any long-term morphological and functional abnormalities of the venous system with signs or symptoms that require investigation or care[1]. CVD is one of the most commonly reported chronic medical conditions and a substantial source of morbidity in the Western world; it affects more than 25 million adults in the United States, 6 million of whom experience more advanced venous disease[2]. Although CVD remains a non-lethal condition, the total number of people affected and the associated management costs make it a major public health issue[3]. However, its quality of life (QoL) impact is often underestimated, causing discomfort and disability, necessitating leave from work for medical consultations, or emergency care visits.

The clinical, etiological, anatomical, and pathophysiological (CEAP) classification[4] allows the accurate determination of moderate (varicose veins and edema) and severe (cutaneous dystrophy and ulcer) grades of CVD, but it does not extensively evaluate the clinical symptomatology or measure the impact on patients' QoL. It is well-known that CVD negatively impacts the well-being of patients, both physical and mental aspects[5], and there are various QoL questionnaires specific to venous diseases that provide information about patients' perception of their own health[6,7].

Nevertheless, there is still a paucity of scientific data regarding the impact of CVD on QoL[8]. Estimates of CVD prevalence are subject to significant heterogeneity, as epidemiological studies worldwide vary due to their population, selection criteria, disease definition, and imaging techniques[9]. Gathering demographic data of CVD patients from individual countries are vital for a better understanding of the disease and developing prevention and treatment programs. In Mexico, epidemiological information on CVD is limited, and what is available has been gathered either in regional settings or in specific occupational groups[10,11].

The Vein Consult Program is one of the largest global efforts to raise awareness of CVD among patients, health-care professionals, and health authorities[12]. Although Mexico actively participated in recruiting patients and the data collected were included in the final worldwide report[13], the nationwide results for the Mexican population were never published.

We aim to provide nationally representative epidemiological data on CVD among patients attending routine consultations in general practice and to evaluate the impact on the QoL in this patient population to improve our understanding of the different settings of the disease.

Methods

We reviewed data from a cross-sectional descriptive study carried out in urban and rural areas of Mexico as part of the Vein Consult Program, a global joint initiative between the International Union of Phlebology and Servier Laboratories. The data were collected through opportunistic screening by a selection of general practitioners (GPs), who attempted to enroll patients consecutively during ordinary medical consultations. Those who received a CVD diagnosis were asked to complete the CIVIQ-14 questionnaire. All data collection procedures complied with the ethical standards in the Helsinki Declaration amended in October 2008.

Target population

Participants selected were male or female outpatients, aged over 18 years, who were fully informed about the study and required to give written consent to participate in the screening program. Patients attending for emergency visits were excluded from the study. Participants could not be further scheduled to continue the consultation visit with their GP regarding the screening program, nor require any changes to their usual medical and therapeutic care.

Methodology

Each GP randomly recruited ten or 20 consecutive patients who attended the practice for various medical reasons. In addition to the original reason for consultation, each GP conducted an evaluation defined as *step one* of the study. For each participant, the GP completed a report assessing the patient's history, listing any CVD risk factors, screening for CVD symptoms, and performing a routine leg examination. The GP scored the patient according to the C-classification by visual examination. No ultrasound was carried out.

After the evaluation, if the GP diagnosed the patient with CVD, the patient was provided with the CIVIQ-14 questionnaire, asked to complete it at the front desk, and to return it before leaving the office. In addition, at the discretion of the GP, the patient was invited to take part in *step two* of the study, where they were referred to a vascular specialist for a further clinical evaluation, including a Doppler ultrasound examination. If they did

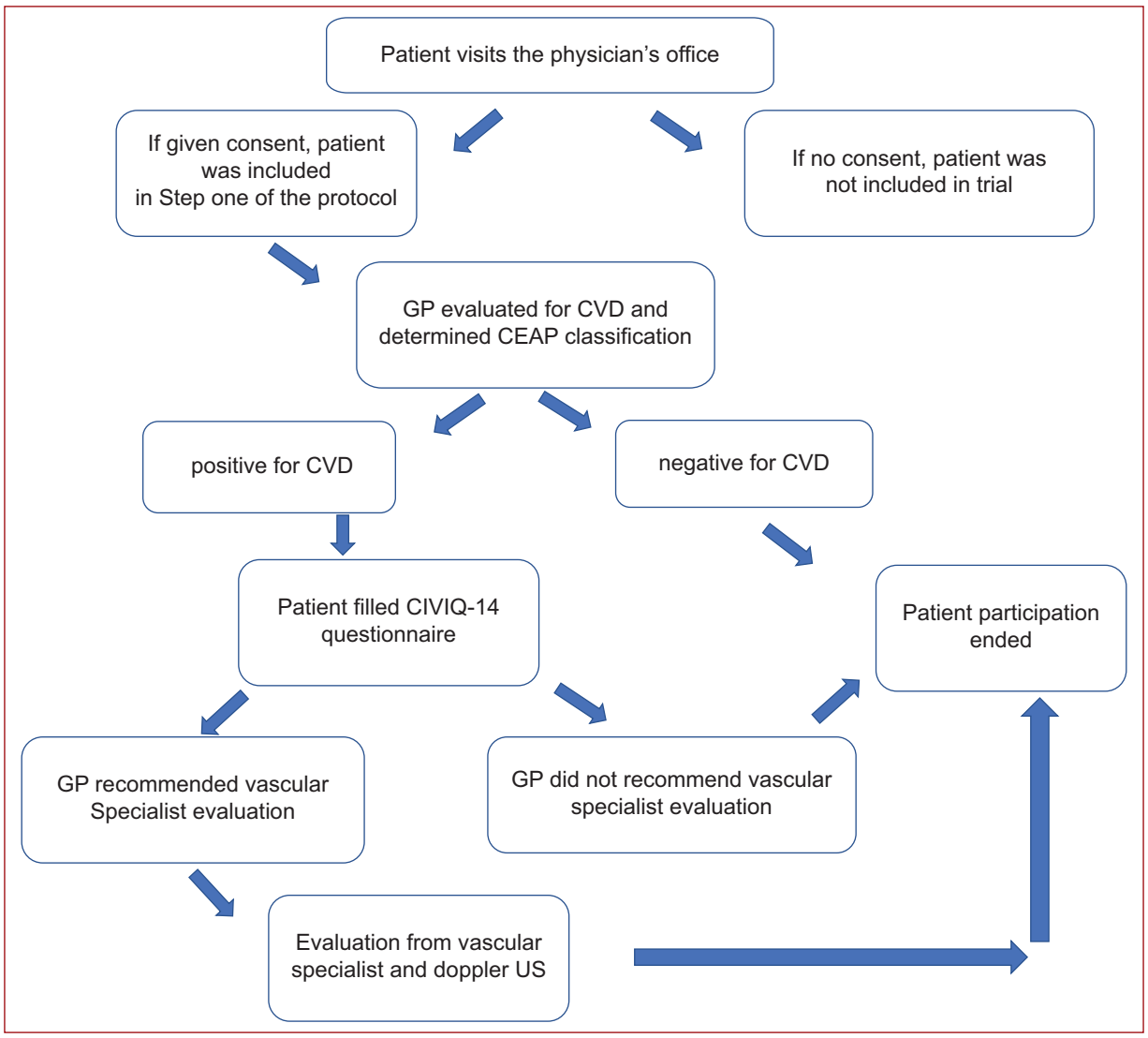

Figure 1. Flow diagram of patient evaluation during the Vein Consult trial. GP: General practitioner; CVD: Chronic venous disease; CEAP: clinical, etiological, anatomical, pathophysiological; CIVIQ-14: 14 item chronic venous insufficiency quality of life questionnaire; US: Ultrasound.

not withdraw, the patient was enrolled in *step two* upon signing a new written agreement. In all cases, whether or not the patient agreed to participate, their medical care and treatment were not affected. The completed case report forms were collected and provided to the data management and statistics departments. The methodology is represented in figure 1.

Statistical methodology

Unless specified, qualitative and quantitative variables were, respectively, described as numbers (percentages) and means ± standard deviations. Percentages were calculated from the total number of valid answers, excluding missing values. If there were missing values, no imputation was performed. For cross-tables, the means for quantitative variables were compared using a student t-test or one-way ANOVA, and frequencies for qualitative variables were analyzed with a chi-squared test. An α level of 0.05 was used. p-value ≤ 0.05 indicated a statistically significant difference. Some items were included in two questionnaires, such as both GP and patient questionnaires. To compare the data and assess their agreement, the kappa coefficient (K) was calculated from two different estimates: the percentage of observed agreement and the

probability of random agreement. Agreement was considered very good if K > 0.8, good if K was between 0.08-0.6, and moderate if K was < 0.4.

For the CIVIQ-14 scale, a global index score (GIS) was estimated as follows: there were 14 questions in the CIVIQ-14, each with five possible answers (1-5). The minimum possible score was 14 and the maximum was 70. The difference between the final score and the minimum possible score was divided by the difference between the theoretical maximum and minimum scores (70-14 = 56), and the result was multiplied by 100.

GIS = ([Final score – minimum possible score]/[Theoretical maximum – minimum score]) × 100

GIS = ([Final score – minimum possible score]/56) × 100

GIS = ([Final score – 14]/56) × 100.

Patients answering fewer than 50% of the CIVIQ-14 were excluded from the QoL analysis.

Results

Sociodemographic data

We review data collected from a total of 5484 patients between April 1, 2009, and December 18, 2010. The majority of the study participants were women (76.3%), the mean age was 44.7 ± 15.3 years, and the BMI average was 27.63 ± 4.83. Two thousand eight hundred and ninety-five (53.2%) participants were full-time workers, with a mean of 7.2 ± 3.7 h spent standing per day. The demographic data are presented in detail in table 1.

Table 1. General demographic. Table displays general and female-specific demographic data, as well as risk factors for CVD. Reflected numbers, means, and percentages in each category include valid answers only, as missing data were not imputed

Characteristic	Total population (n = 5,484)
Age	
Mean (years), SD	44.7 ± 15.3
18-34, n (%)	1538 (28.3)
35-50, n (%)	2026 (37.2)
51-64, n (%)	1281 (23.5)
65 and older, n (%)	597 (11)
Gender	
Male, n (%)	1299 (23.7)
Female, n (%)	4184 (76.3)
BMI	
Mean, SD	27.63 ± 4.83
Occupation	
Full time, n (%)	2895 (53.2)
Part time, n (%)	856 (15.7)
Unemployed, n (%)	524 (9.6)
Student, n (%)	184 (3.4)
Retired, n (%)	318 (5.8)
Other, n (%)	663 (12.2)
Women specific	
Number of births, mean, SD	3.2 ± 2.2
0, n	0
1, n (%)	572 (17.8)
2, n (%)	944 (29.4)
3, n (%)	724 (22.5)
4, n (%)	408 (12.7)
5 or more, n (%)	567 (17.6)
Current use of birth control pills, n (%)	607 (14.9)
Pregnant women, n (%)	109 (3.1)
Menopause, n (%)	1007 (28.2)
Under hormonal replacement therapy, n (%)	230 (7.7)
Risk factor for CVD	
Family history of venous disease, n (%)	3006 (54.8)
History of venous thrombosis, n (%)	566 (10.4)
Hours per day spent standing, mean (SD)	7.2 ± 3.7
Hours per day spent sitting, mean (SD)	5.1 ± 2.9
Regular exercise practice, n (%)	1800 (32.9)
Smoker (current or past), n (%)	1936 (35.6)

For quantitative analysis the parameter used was mean ± SD , and for qualitative analysis, the parameter used was number of patients in each category (%), CVD: Chronic venous disease; n: number of patients; SD: Standard deviation; %: Percentage; BMI: Body mass index; Kg: Kilograms; cm: centimeters.

CVD data

When including C0s patients, the prevalence of CVD was reported to be 89.6%, or 71.3% if considering only CEAP categories C1-C6. Chronic venous insufficiency (CEAP categories C3-C6) had a prevalence of 25%. Three thousand six patients (54.8%) mentioned a family history of CVD. The most frequently reported leg symptoms were pain (73.1%) and heaviness (71.9%), with 94% of patients indicating these to be present at the end of the day or at night. More detailed data are displayed in tables 2 and 3.

QoL data

QoL was measured using the CIVIQ-14 questionnaire. QoL steadily declined as age increased (mean GIS decreases from 82.75 ± 16.39 for the 18-34 age group to 64.12 ± 24.63 for the ≥ 65 age group). QoL was also lower in patients with a BMI > 30 kg/m^2 (mean GIS 67.78 ± 22.98), and those presenting three or more symptoms (mean GIS 64.83 ± 21.1). Patients' QoL decreased as the CEAP category increased, with GIS fluctuating between 86.69 ± 14.95 for C0s (symptomatic with no visible signs) and 44.25 ± 24.93 for C6 (active venous ulcer). Data are displayed in table 4. Based on gender stratification, women reported a lower mean

Table 2. Clinical data. Table displays characteristics of clinical symptoms reported by the study population and prevalence in the patients that the reason for visiting the GP was leg vein problem. Also shows, the distribution of patients according to the clinical parameter of the CEAP classification

Symptoms	Prevalence of CVD (n = 3718)	Leg vein problem consultation (n = 910)
Heavy legs, n (%)	2673 (71.9)	729 (80.1)
Pain in the legs, n (%)	2720 (73.2)	758 (83.8)
Sensation of swelling, n (%)	2341 (63)	655 (71.9)
Night cramps, n (%)	1949 (53.7)	516 (56.7)
Itching, n (%)	1559 (41.9)	480 (52.7)
Sensation of "pins and needles" in the legs, n (%)	1440 (38.7)	454 (49.9)
When symptoms are most intense		
At the end of the day	2241 (47.5)	
Nighttime	2152 (45.7)	
After prolonged standing	1792 (38%)	
After prolonged sitting	816 (17.3)	
In summer	699 (14.8)	
After warm baths	218 (4.6)	
During walking	875 (18.6)	
Before menstrual periods	373 (7.9)	
Other	207 (4.4)	
CEAP classification		
C0, n (%)	512 (10.4)	
C0s, n (%)	894 (18.1)	
C1, n (%)	1504 (30.5)	
C2, n (%)	778 (15.8)	
C3, n (%)	662 (13.4)	
C4, n (%)	436 (8.8)	
C5, n (%)	76 (1.5)	
C6, n (%)	65 (1.3)	

For quantitative analysis the parameter used was mean ± SD, and for qualitative analysis, the parameter used was number of patients in each category. Percentages were calculated out of the total number of valid answers, excluding missing values. n: number of patients; SD: Standard deviation; %: Percentage.

CIVIQ-14 GIS at CEAP categories C3, C4, C5, and C6; men's scores were commonly ten points higher than women's ($p < 0.01$).

Seven hundred and seventy-two patients had a history of venous leg problems (leg ulcers, thrombosis, edema, pain, etc.) that resulted in a loss of work days, change of job, or change of professional activities. The mean CIVIQ-14 GIS of this group was lower than that of the total study population. This was particularly true for those with a history of surgery (62.64 ± 23.77) and subsequent changes in professional activities (51.04 ± 22.45), previous hospitalizations due to venous leg problems (54.62 ± 25.83), and loss of workdays due to venous leg problems (52.70 ± 23.67).

Miscellaneous data

Of the 3558 patients who received treatment, 3296 (92.6%) received advice on adapting their lifestyle to manage CVD, and 2872 (80.7%) patients were advised to add a venoactive medication to this adapted lifestyle. Compression therapy was recommended alone or in combination with lifestyle advice or venoactive medication to 1587 (44.6%) of patients. Lifestyle adaptations and venoactive medication were recommended equally by GPs among every CEAP grading class. More detailed data are shown in table 5.

Of the 4823 patients with valid answers, 924 patients were referred to a vascular specialist, although only 172 (18.6 %) consulted the specialist (Table 6). A total of 569 patients in the C3-C6 category were not referred to a vascular specialist. One hundred and eighty-eight (3.9%) of the patients screened were already under the medical care of a vascular specialist.

Among related comorbidities, the most frequently reported were high blood pressure (34.1%), diabetes (18.6%), and inflammatory bowel disease (18%).

Doppler ultrasound was only performed for 162 patients.

Table 3. Prevalence of clinical symptoms. Table displays the correlation between the type of symptoms described by the patients and the actual CVD status assessment by GPs relying on the Clinical (C) parameter of the CEAP classification. The presence of symptoms was higher as CEAP class grading increased from C0s to C6 (p value < 0.01)

Type of symptom	C0s (n = 894)	C1 (n = 1504)	C2 (n = 778)	C3 (n = 662)	C4 (n = 436)	C5 (n = 76)	C6 (n = 65)	p-value
Heavy legs, n (%)	419 (46.9)	914 (60.8)	591 (76)	536 (81)	367 (84.2)	65 (85)	52 (80)	< 0.01
Pain in the legs, n (%)	439 (49.1)	917 (61)	619 (79.6)	533 (80.5)	377 (86.5)	69 (90.8)	57 (87.7)	< 0.01
Sensation of swelling, n (%)	283 (31.7)	732 (48.7)	502 (64.5)	517 (78.1)	341 (78.2)	65 (85.5)	56 (86.2)	< 0.01
Night cramps, n (%)	278 (31.1)	564 (37.5)	361 (46.4)	356 (53.8)	268 (61.5)	56 (73.7)	44 (67.7)	< 0.01
Itching, n (%)	180 (20.1)	486 (32.3)	336 (43.2)	284 (42.9)	258 (59.2)	52 (68.4)	47 (72.3)	< 0.01
Sensation of "pins and needles" in the legs, n (%)	131 (14.7)	411 (27.3)	297 (38.2)	298 (45)	245 (56.2)	51 (67.1)	51 (78.5)	< 0.01
No symptom, n (%)	0	24 (1.6)	0	0	0	0	0	

For qualitative analysis, the parameter used was number of patients in each category. Percentages were calculated out of the total number of valid answers, excluding missing values. For p = value determination, the means for quantitative variables were compared using a student t-test and for qualitative analysis, Chi square was used, n: Number of patients; %: Percentage.

Discussion

CVD epidemiology is important for the creation of specific clinical guidelines for prevention and treatment, as international guidelines may not properly reflect populations of individual countries. This study represents one of the largest recent epidemiological studies focusing on vein disease in the Mexican population. It provides reliable data on the high prevalence of CVD and how the QoL of patients deteriorates as the disease progresses to more severe stages.

Overall, epidemiological studies have demonstrated that CVD is widespread, age-progressive, more commonly encountered in women, and multifactorial in etiologies[14]. Beebe-Dimmer et al. reviewed methodologies and results of studies on varicose veins and CVD[15]. Overall, estimated prevalence of simple uncomplicated varicose veins ranges dramatically from 2% to 56% in men and <1% to 73% in women. The definition of varicose veins varies among epidemiological investigations, resulting in a range of prevalence estimations. Namely, case definitions may rely on reports of varicose veins by study participants, which may be based on self-diagnosis, recall of a diagnosis by a physician, or a standardized physical examination. The Edinburgh Vein Study, one of the largest studies of venous disease, employed the Basle criteria to categorize varicose veins based on location and severity[16]. In a systematic review of global CVD epidemiology, Salim et al. identified 32 studies including over 300,000 adults[9]. The unadjusted and pooled prevalence estimates were as follows: $C0_S$: 9%, C1: 26%, C2: 19%, C3: 8%, C4: 4%, C5: 1%, and C6: 0.4%. The pooled prevalence of C2 disease was highest in Europe (21%) and lowest in Africa (5.5%), indicating that CVD affects a significant proportion of the population globally, but also that there is significant heterogeneity in existing epidemiological studies. Our results showed a C2 prevalence of 15.8% in Mexico, which could reflect the inclusion of a younger population, compared to the San Diego study, for example, where the average age was over 60 years.

Commonly reported risk factors for CVD include female gender, age, obesity, prolonged standing, CVD-positive family history, and parity[17]. However, obesity has not been consistently shown to be a risk factor for CVD. Case-control studies of obesity and CVD are limited in that they do not establish a temporal sequence between exposure and disease. It is possible that CVD and varicose veins may cause patients to be less physically active, making them more prone to becoming overweight. As obesity is associated with a deterioration in joint mobility, this, in turn, can lead to worsening of CVD[18]. In this trial, although C0 patients had a lower mean BMI than C1–C6 patients (26.49 ± 4.62 kg/m^2 versus 28.26 ± 5.11 kg/m^2), both groups were still overweight. However, the QoL was lower in the obese group (BMI > 30 kg/m^2).

One surprising observation in this study was that the rate of referral to vascular specialists was low. A 2013 survey of GPs in the UK indicated that under 50% were aware of referral guidelines for CVD patients and would refer patients with moderate to

Table 4. CIVIQ-14 Demographic and Clinical data. Table displays the data from patients diagnosed with chronic venous disease after general practician evaluation and completion of the CIVIQ-14 questionnaire. No missing data was imputed. The GIS fluctuation between C0s and C6 patients was significant ($p < 0.001$)

Demographic characteristic	Patients (n = 2808)	CIVIQ-14 GIS Mean (SD)	p-value
Gender			< 0.01
Male	501	79.13 ± 20.23	
Female	2307	72.64 ± 2102	
Age			< 0.01
18-34	555	82.75 ± 16.39	
35-50	1059	74.66 ± 19.94	
51-64	799	70.96 ± 20.99	
≥ 65	373	64. 12 ± 24.63	
BMI (kg/m²)			< 0.01
< 18	6	76.49 ± 22.26	
18-24	713	78.74 ± 18.22	
25-30	1121	75.66 ± 19.67	
> 30	800	67.78 ± 22.98	
Number of hours spent standing per day			< 0.01
< 5	636	75.34 ± 22.38	
5-10	1646	74 ± 20.71	
> 10	491	71.78 ± 19.61	
Number of symptoms			< 0.01
0	103	95.09 ± 9.04	
1	234	90.34 ± 11.67	
2	357	84.88 ± 13.07	
3	464	80.1 ± 15.04	
> 3	1583	64.83 ± 21.1	
CEAP classification			< 0.01
C0s	210	86.69 ± 14.95	
C1	840	81.74 ± 15.88	
C2	604	72.33 ± 18.31	
C3	494	67.14 ± 20.61	
C4	348	61.94 ± 21.82	
C5	65	51.70 ± 20.94	
C6	57	44.25 ± 24.93	

The parameter used for quantitative analysis was mean ± SD, and number of patients. Percentages were calculated out of the total number of valid answers, excluding missing values. For p = value determination, the means for quantitative variables were compared using a student t-test and for qualitative analysis, Chi square was used. GSI: Global index score; n: Number of patients; SD: Standard deviation; %: Percentage; BMI: Body mass index; Kg: Kilograms; cm: Centimeters.

severe disease (C4 or C5) to a vein specialist. In addition, only about 10% were aware of clinical venous scoring systems[19]. These findings indicate that for CVD patients of all severities to receive the treatment specified by international guidelines, a substantial knowledge gap needs to be bridged[20]. In this study, only 16.8% of patients with CVD were considered for a referral to a vein specialist, even some with higher CEAP classification. Several factors can influence these decisions; some health-care providers do not authorize referrals to specialists for patients in the lower CEAP categories unless they are very symptomatic, and many patients cannot afford to lose work days if they are only mildly symptomatic, or only consider their condition to be a cosmetic problem.

Of the 924 patients eligible for step two of the study, which involved referral to a vascular specialist, only 172 (18.6 %) consulted the specialist. In this trial, there was no follow-up regarding the reasons behind the low compliance with referrals to vascular specialists, but the accessibility of specialist care has long been debated[21]. The wait for access to specialists has a significant impact on patients, with longer delays increasing stress, anxiety, and pain, affecting daily activities and sometimes leading to deterioration in health. Delayed access to specialist care can also result in diagnostic delays, repetition of tests and services, dissatisfaction among patients and providers, and rising costs[21]; this was also observed in this study, with only 162 patients having a Doppler ultrasound performed. Lack of early treatment can lead to disease progression

Table 5. Treatment recommendation. Table displays the correlation between the CEAP classification and the recommended treatment the general practitioner offered the patients. Some patients received a combination of treatments

CEAP, n, (%)	Lifestyle advise (n = 3296)	Venoactive medication (n = 2872)	Compression therapy (n = 1587)	Vein procedure (n = 241)
Missing data or C0	73 (2.2)	50 (1.7)	29 (1.8)	7 (2.9)
C0s	265 (8)	142 (4.9)	51 (3.2)	2 (0.8)
C1	1203 (36.5)	936 (32.6)	458 (28.9)	34 (14.1)
C2	663 (20.1)	675 (23.5)	363 (22.9)	56 (23.2)
C3	581 (17.6)	549 (19.1)	346 (21.8)	29 (12)
C4	395 (12)	395 (13.8)	253 (15.9)	71 (29.5)
C5	62 (1.9)	70 (2.4)	52 (3.3)	18 (7.5)
C6	54 (1.6)	55 (1.9)	35 (2.2)	24 (10)

For qualitative analysis the parameter used was number of patients in each category. Percentages were calculated out of the total number of valid answers, excluding missing values. n: Number of patients;, %: Percentage.

Table 6. Patients referred to a vascular specialist. Table displays the number of patients that were referred to a vascular specialist after general practitioner evaluation distributed by their clinical category CEAP classification

CEAP, n, (%)	Missing data (n = 658)	Not Referred to specialist (n = 3714)	Referred to specialist (n = 924)	Already under specialist care (n = 188)
C0	289 (27)	751 (70.3)	21 (2)	8 (0.7)
C0s	100 (11.2)	761 (85.1)	19 (2.1)	14 (1.6)
C1	132 (8.8)	1175 (78.1)	156 (10.4)	41 (2.7)
C2	57 (7.3)	458 (58.9)	213 (27.4)	50 (6.4)
C3	55 (8.3)	371 (56)	216 (32.6)	20 (3)
C4	20 (4.6)	178 (40.8)	202 (46.3)	36 (8.3)
C5	4 (5.3)	9 (11.8)	50 (65.8)	13 (17.1)
C6	1 (1.5)	11 (16.9)	47 (72.3)	6 (9.2)

For qualitative analysis the parameter used was number of patients in each category. Percentages were calculated out of the total number of valid answers, excluding missing values. n: Number of patients; s: Symptomatic; SD: Standard deviation; %: Percentage.

and the development of skin lesions, such as lipodermatosclerosis and venous leg ulcers. Even before escalation to ulcers, there is still a significant disease burden from chronic venous disorders, such as pain or edema[8]. Although opinions on the need for the early treatment are highly divided, early treatment of these conditions can reduce the risk of escalation and help improve QoL. The low compliance of patients in this study may reflect their perceived minimization of the potential severity of the disease, as it can lead to missed work days. In addition, CVD was not the reason for their initial medical consultations.

Current guidelines and scientific publications tend to focus on clinical and physiological aspects of CVD, as opposed to its impact on patients' QoL[22,23]. In the present study, CIVIQ-14 scores represented a progressive reduction of QoL from C0s to C6, although this work did not separately compare each section of the questionnaire, such as pain and physical or psychological effects. Radak et al. observed progressive impairment of QoL that primarily involved pain and physical limitations in older patients and women[7]. Similarly, the results of the RELIEF trial also showed that age had a significant effect on global scores, but not on

psychological scores[24]. It is reasonable to infer that the emotional effect of CVD is greater in younger people than in older people, and especially higher in women[25], as a significant emphasis is placed on appearance for them.

One important factor that has a long-term effect on QoL was the higher prevalence of diabetes and high blood pressure in patients with CVD in this study. Clinical studies have reported the association of CVD with cardiovascular disease and its risk factors, which have a higher prevalence in CVD patients when compared to the general population (17% vs. 8.6%)[26]. Diabetes and CVD share microvascular ethological afflictions that predispose patients to vascular wall remodeling, impaired blood flow, increased oxidative stress, vascular inflammation, increased vascular permeability, and endothelial dysfunction[27]. Higher CEAP classes have been associated with a a higher predicted 10-year risk of developing cardiovascular disease. In individuals without cardiovascular disease (n = 9923), CVD was found to be a strong predictor of all-cause death regardless of the concomitant clinical profile and medication[17]. The association of CVD with an increased risk of all-cause death was externally validated in the MyoVasc cohort[28].

This study had some limitations: there were several missing data; test-retest reproducibility and responsiveness of the CIVIQ-14 were not assessed; and a CVD diagnosis was made by a GP based on symptoms and clinical and visible changes, rather than on a functional basis and not confirmed by a specialist in most cases, due to the very low compliance of patients with referrals. Available data from those who were evaluated by a specialist were too limited for proper statistical analysis. The CEAP classification, although useful as an objective parameter, does not consider the severity of a patient's different symptoms. In addition, classification was only done through the clinical evaluation "C," and the updated classification[4] was not used.

Conclusion

This study provides reliable data showing that CVD is highly prevalent among patients seen at primary care clinics in Mexico, especially in women, and is not limited to elderly patients, as it was detected even in younger age groups. CVD affects QoL as it progresses, underlining the importance of adequate screening for CVD and additional training for GPs to improve the rates of early referral to vascular specialists. The data generated can be the foundation for proper prevention and treatment programs specifically targeting high-risk populations.

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Conflicts of interest

The author declares to be a consultant for Servier Laboratories Mexico.

Ethical disclosures

Protection of human and animal subjects. The authors declare that the procedures followed were in accordance with the regulations of the relevant clinical research ethics committee and with the Code of Ethics of the World Medical Association (Declaration of Helsinki).

Confidentiality of data. The authors declare that they have followed the protocols of their work center on the publication of patient data.

Right to privacy and informed consent. The authors have obtained the written informed consent of the patients mentioned in the article. The corresponding author is in possession of this document.

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