

Education of Physicians and its Impact on the Management of Chronic Venous Insufficiency – Our Experience

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UDC 616.14-005-036.1-084

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Abstract

Introduction: Chronic venous insufficiency (CVI) is a very common chronic disease, yet often overlooked by healthcare providers. Education of physicians may have a positive impact on better recognition and treatment of patients with CVI. **Material and Methods:** During the one year period (2011), we conducted a series of specialized courses on CVI for physicians in the South Bačka region. Before and after each course, the attendants were asked to complete entry and exit tests. During two three-year periods, before and after the education courses (2008 - 2010, and 2012 - 2014), data on hospital morbidity and number of patients with CVI, examined by physicians in general practice and in dermatological outpatient facilities in South Bačka region, Province of Vojvodina, were gathered and analyzed. **Results:** In the period 2008 – 2010, a total of 1.128 patients were hospitalized due to CVI with an average length of stay of 6.42 days. In the period 2012 - 2014, 1.296 patients were hospitalized and the average length of stay was 3.76 days. The number of hospitalizations increased in second period by 14.89%, and the average length of stay decreased by 41.43%. In the period 2008 – 2010, the total number of patients with CVI in the general practice was 13.624 and in the second period 14.931 patients. The number of examinations increased by 9.59%. In the period 2008 – 2010, there were 1.094 patients with CVI in dermatological outpatient facilities, and 1.165 patients in the second period. A slight increase of 6.09% was noticed. After analyzing the entry and exit test results, on average, there were 7.35 correct answers in the entry test, and 8.89 correct answers in the exit test. An increase in knowledge by 20.95% was established. **Conclusion:** Education of physicians in primary and secondary health care facilities may have a positive impact on early diagnosis and better treatment of patients with CVI.

Key words

Venous Insufficiency; Health Education; Education, Continuing; Length of Stay; Delivery of Health Care; Morbidity; Physicians, Primary Care; Secondary Care

The exact prevalence of chronic venous insufficiency (CVI) is hard to determine due to variations in the study populations, selection criteria, and disease definition in different studies. In most of the studies, the prevalence of CVI is estimated to be as high as 60% in general adult population (1, 2). According to some recent studies it is even higher, and the total CVI prevalence goes up to almost 90% of adult population (3). The majority of CVI patients have the milder form of the disease, that is stage 1

or 2 of Clinical-Etiology-Anatomy-Pathophysiology (CEAP) classification, but about 15% of cases have moderate to severe CVI (CEAP 3 - 6), with CVI-related symptoms and complications (3).

Several risk factors have been associated with the development of CVI, including older age, female gender, family history, obesity, and predominantly standing occupation. Generally, the prevalence is higher in more developed, industrialized countries than in underdeveloped regions (4, 5, 6, 7).

Having this in mind, it can be hypothesized that there is a huge number of patients who need professional help for management of CVI. But regardless of the high incidence, CVI is often overlooked by healthcare providers. Mostly it is due to underestimated impact of the disease, as well as unrecognized presentations of the disease. Education of physicians can lead to early identification of patients with CVI and implementation of diagnosis and treatment protocols in the initial stages of the disease.

In this study, we investigated if education of physicians in primary and secondary health care facilities has a positive impact on the diagnosis and treatment of patients with CVI.

Material and Methods

The study was conducted on the territory of the South Bačka region, the largest district of Vojvodina province, situated in the northern part of Serbia. According to the last census in 2011, the Province of Vojvodina has a population of 1.931.806, of which 607.835 inhabitants live in the South Bačka region (8).

The health system is organized into three levels. People with CVI-related manifestations are first referred to primary health care facilities, that is to general practitioners, or in the minority of cases, to dermatologists. Most cases of CVI should be recognized and treated at this level. However, in advanced, unresponsive and more complicated cases, patients should be referred to specialists in secondary health care, or to the regional hospital. This means outpatient treatment, or in advanced CVI, short inpatient management with continuing outpatient treatment and monitoring. The most complicated cases are referred to specialists or subspecialists in tertiary health care institutions, and often treated in hospital settings.

That is why we thought that education of primary and secondary care physicians is of great importance, because the diagnosis and therapy of CVI starts there.

The study was conducted in 3 phases:

In the first phase, we collected data on hospital morbidity of patients with CVI in all hospitals in the

South Bačka region (Clinical Center of Vojvodina, Novi Sad; Institute for Cardiovascular Diseases, Sremska Kamenica; General Hospital, Vrbas), in a 3-year period (2008 - 2010). We also gathered data on the number of patients with CVI, examined by physicians in the general practice and in dermatological outpatient facilities, in the primary health care settings in the entire region, in the same period.

In the second phase, during 2011, we conducted a series of education courses for physicians in all 5 branches of the Association of Physicians of Vojvodina in the South Bačka region. The courses were intended for general practitioners and specialists in dermatovenereology, general and vascular surgery, internal diseases, occupational medicine, general medicine, etc. Participation was voluntary. The education courses covered the following topics: introduction to the problem of CVI, epidemiological characteristics, diagnostic methods, contemporary conservative and surgical therapy, with special emphasis on preventive measures. Before and after each course, the attendants were asked to complete entry and exit tests, which consisted of 10 multiple choice questions with 4 choices and one correct answer. The test questions were grouped in 4 main domains: anatomy and physiology, diagnostics, conservative treatment and surgical therapy.

The third phase was conducted after education lectures; we re-gathered the same data on hospital morbidity and number of patients with CVI in the general practice and in dermatological outpatient facilities in South Bačka region in the subsequent 3-year period (2012 - 2014).

Finally, we compared and analyzed all the collected data.

Results

In the period 2008 - 2010, the total number of patients diagnosed with CVI in the general practice was 13.624, whereas in the period 2012 - 2014, there were 14.931 patients. The number of diagnosed CVI patients between the two observed periods showed an increase by 9.59% (Figure 1).

In the period 2008 - 2010, there were 1.094 patients with CVI in dermatological outpatient facilities, while during the period 2012 - 2014, there

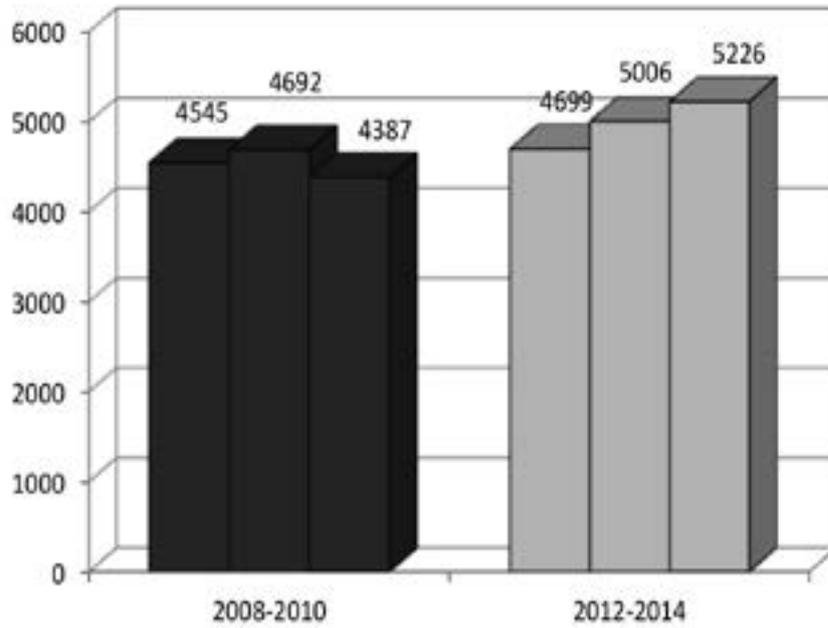


Figure 1. Number of CVI patients in general practice during the two study periods

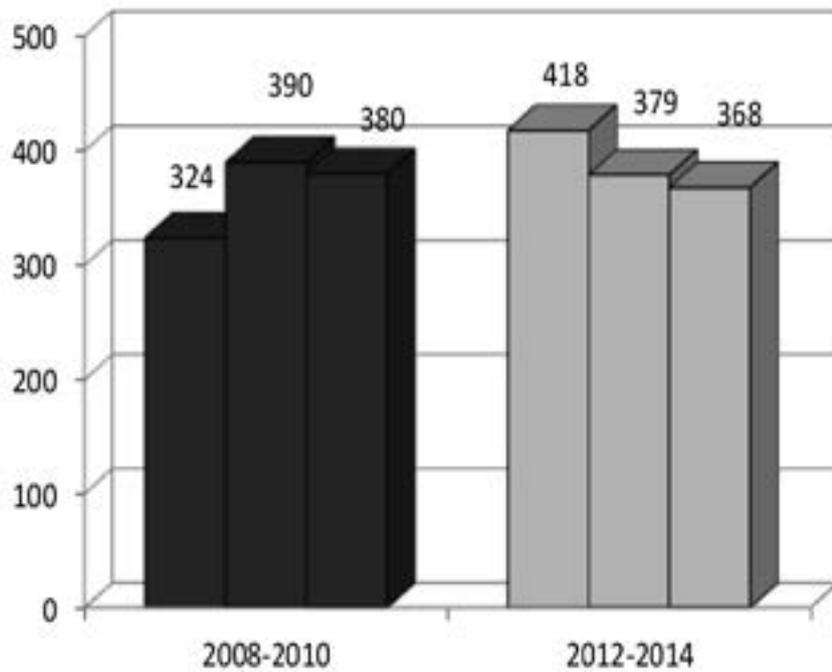


Figure 2. Number of CVI patients in dermatological outpatient facilities during the two study periods

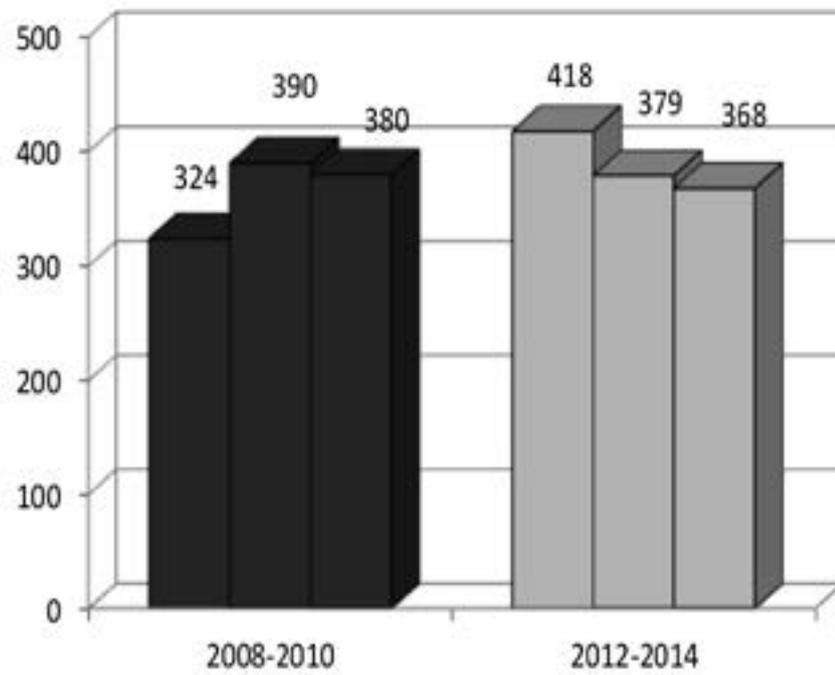


Figure 3. Number of hospitalized CVI patients during the two study periods

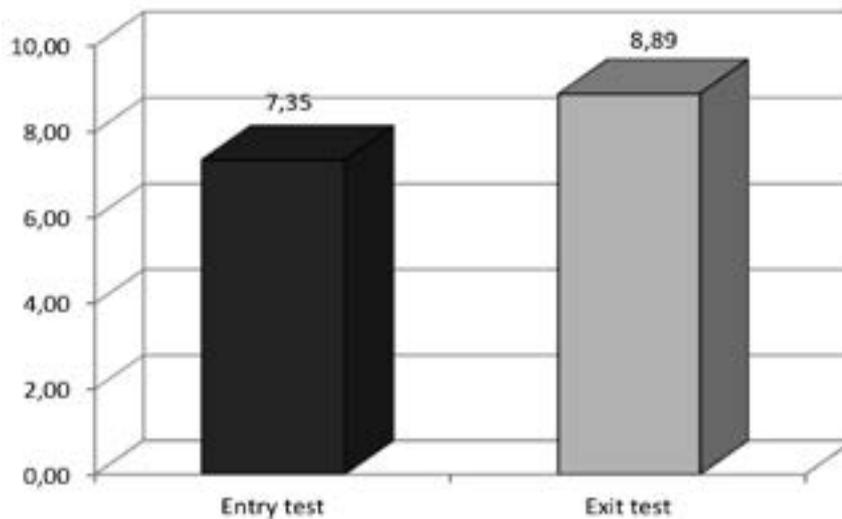


Figure 4. Entry and exit test results of physicians on CVI

were 1.165 patients. A slight increase by 6.09% was established. (Figure 2)

In the period 2008 - 2010, a total of 1.128 patients were hospitalized due to CVI. The total number of hospital days was 7.250, while the average length of stay was 6.42 days. During this period, the most common cause of hospitalization were venous ulcers (64.09%).

In the period 2012 - 2014, 1.296 patients were hospitalized. The total number of hospital days was 4.791, and the average length of stay was 3.76 days. During this period, venous ulcers were also the most common reason for hospitalization, but a certain decrease (59.87%) was established (Figure 3).

A difference between the two periods was observed: the number of hospitalized CVI patients increased in the second period by 14.89%. At the same time, the total number of hospital days decreased by 33.92%, and the average length of stay decreased by 41.43%.

The education courses were attended by more than 500 physicians. Out of this number, a total of 409 completed both the entry and the exit tests, and only they were further processed. On average, there were 7.35 correct answers in the entry test, and 8.89 correct answers in the exit test. Taking into account the average test results, an increase in knowledge by 20.95% was established (Figure 4).

After detailed analysis of the entry test results, we observed that the level of knowledge was lowest in the domains of conservative treatment and surgical therapy. The exit test results showed the highest percentage of correct answers in the domains of diagnostics and conservative treatment. Comparative analysis of entry and exit test results revealed that the highest knowledge gain was achieved in the domain of conservative treatment of CVI, which increased from 69.92% to 93.07%. Detailed data on knowledge about CVI within different domains are shown in the Table 1.

Discussion

In recent years, CVI has become extremely common, due to changes in lifestyle and prolonged life expectancy. It has a significant impact on both CVI patients and the health care system.

Since CVI is a very common chronic disease, it causes significant direct costs related to the treatment of CVI, especially in its advanced stage, such as venous ulceration and its complications. In addition, it leads to significant indirect costs due to sick leaves, early retirement, and loss of functional independence (9, 10). It has been estimated that in the United States the cost of CVI treatment is approximately \$3 billion per year, and about 2% of the total health care expenditures of all Western European countries (2, 11).

Table 1. Percentage of correct answers in different domains of entry and exit tests

	Entry test (% of correct answers)	Exit test (% of correct answers)
Anatomy and physiology	74.81%	84.35%
Diagnostics	79.58%	94.13%
Conservative treatment	69.92%	93.07%
Surgical therapy	69.80%	82.39%

In the early stages, CVI does not cause major symptoms. Therefore, patients usually see a doctor in the advanced stages (C3 - C6), when CVI causes serious discomfort (limb swelling, pain, dermatitis and ulceration...). The vast majority of CVI patients only then seek doctor's help. Our results show that the number of CVI patients that are included in the health care system is significantly lower than worldwide estimated prevalence of the disease, even when just advanced CVI is accounted. That may be the consequence of negligence and/or misinterpretation of CVI symptoms by patients but, very likely, by doctors as well. Increased knowledge on CVI among primary and secondary health care physicians, who represent the first link in CVI diagnostics, may be helpful for faster and more accurate recognition of CVI. CVI is one of the most common pathologies seen by a primary care physician (12), hence the importance and need for regular review of up-to-date CVI protocols. In Serbia, there are national guidelines for the treatment of CVI, for several years now (13), but the methodology of diagnosis and treatment are still not fully agreed on. It is well known that treatment of venous disease is only possible with accurate, prompt diagnosis and appropriate early implementation of therapeutic measures.

Although doctors undoubtedly learned about CVI during medical education, these issues are not sufficiently included in the basic medical curriculum, or in the subsequent levels of education. By analyzing the results, we could see that their prior knowledge on CVI was on a pretty high level. But after the education courses, a significant improvement was evident. Education of physicians in primary and secondary health care has contributed to the improvement of both basic and advanced knowledge on CVI. It may be connected with the increasing number of CVI patients in primary health-care, reduction in total days of hospitalization, and average length of stay.

The highest knowledge gain was seen in the areas of diagnosis and conservative treatment. These are the fields with the largest number of innovations in recent years. Therefore, it is so important to constantly improve our knowledge.

Since CVI is so prevalent in the general population, triage of these patients on the way to the higher-level settings is of great importance, and

primary care physicians are excellent "gatekeepers". In primary health care, patients are initially diagnosed and managed, and only if and when it is necessary, they are referred to a specialist (12). Not so long ago, the treatment of CVI was almost exclusively in the domain of vascular and general surgeons. Nowadays, the spectrum of medical specialists dealing with this pathology is constantly increasing. The leading role belongs to dermatologists and internists, but physiatrists, family practitioners, anesthesiologists, gynecologists, interventional radiologists, are also more and more involved in the management of patients with venous diseases. Today, phlebology is a well established medical specialty/subspecialty (14).

Only continuous education of primary care physicians, which may be carried out through targeted courses, monographs and textbooks, clinical guidelines and involvement in clinical studies, can lead to better understanding of venous pathology, and consequently earlier and better recognition and treatment of such patients (14, 15).

Conclusion

Our results suggest that education of physicians in primary and secondary health care may contribute to higher recognition and shorter hospital stay of patients with CVI. Still, the number of patients with CVI who seek professional help is significantly lower than the estimated number of CVI patients. Therefore, only further education at all levels (physicians, nurses, patients) may lead to a significant increase of patients with CVI that are included in the health care system, preferably in the early stages of the disease when the results of treatment are most favorable.

Abbreviations

CVI - chronic venous insufficiency

CEAP - Clinical-Etiology-Anatomy-Pathophysiology

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Uticaj edukacije lekara na lečenje hronične venske insuficijencije – naše iskustvo

Sažetak

Uvod. Hronična venska insuficijencija veoma je učestalo hronično oboljenje koje zdravstveni radnici ipak često previde. Edukacija lekara može imati pozitivan uticaj na bolju dijagnostiku i lečenje pacijenata sa hroničnom venskom insuficijencijom. Materijal i metode. Tokom jednogodišnjeg perioda (2011) sprovedi smo seriju specijalističkih kurseva o hroničnoj venskoj insuficijenciji, namenjenih lekarima Južnobačkog okruga. Pre i posle svakog kursa, polaznici su bili zamoljeni da popune odgovarajuće ulazne i izlazne testove provere znanja. U dva trogodišnja perioda (2008–2010. i 2012–2014. godine) pre i posle specijalističkih kurseva, prikupili smo podatke o bolničkom morbiditetu i broju pacijenata sa hroničnom venskom insuficijencijom, pregledanih u službama opšte medicine i dermatovenerološkim ambulantom, sa teritorije Južnobačkog okruga. Rezultati. U periodu 2008–2010. godine bilo je hospitalizovano ukupno 1 128 pacijenta sa hroničnom venskom insuficijencijom, a prosečna

dužina lečenja bila je 6,42 dana. U periodu 2012–2014. godine, bolnički je lečeno 1 296 pacijenata, a prosečna dužina lečenja bila je 3,76 dana. Broj hospitalizacija je u drugom periodu porastao za 14,89%, a prosečna dužina lečenja smanjena je za 41,43%. U periodu 2008–2010. godine, broj pregleda pacijenata sa hroničnom venskom insuficijencijom u službama opšte medicine bio je 13 624, a u drugom periodu, 14 931. Broj pregleda je povećan za 9,59%. U periodu 2008–2010. godine, u dermatovenerološkim ambulantom bilo je 1 094 bolesnika sa hroničnom venskom insuficijencijom, a drugom periodu pregledano je 1 165 bolesnika. Zapažili smo malo povećanje od 6,09%. Analizom rezultata dobijenih iz ulaznih i izlaznih testova znanja, videli smo da je na ulaznom testu bilo prosečno 7,35 tačnih odgovora. Rezultati izlaznih testova pokazali su da je bilo prosečno 8,89 tačnih odgovora. Zapažili smo poboljšanje znanja od 20,95%. Zaključak. Edukativni rad među lekarima u

primarnom i sekundarnom nivou zdravstvene zaštite ima pozitivan uticaj na ranije prepoznavanje

i bolje lečenje bolesnika sa hroničnom venskom insuficijencijom.

Ključne reči

Venska insuficijencija; Zdravstveno obrazovanje; Kontinuirano obrazovanje; Dužina bolničkog lečenja; Zdravstvena zaštita; Morbiditet; Lekari primarne zaštite; Sekundarna zdravstvena zaštita