Importance of Academic Quality in the Treatment of Chronic Venous Insufficiency

Jefferson Petto, Vinicius Afonso Gomes, Francisco Tiago Oliveira de Oliveira, Marcos Paulo Alves dos Santos, Paulo Ricardo Pinto Barbosa, Alan Carlos Nery dos Santos

Faculdade Social da Bahia – Grupo de Fisioterapia e Pesquisa Cardiovascular – Salvador, BA – Brazil

Abstract

Background: Studies have shown limitations in the knowledge of academics and health professionals on a variety of clinical conditions. However, there is little research in the field of cardiovascular sciences.

Objective: To identify and describe the level of knowledge of Physiotherapy graduates on chronic venous insufficiency (CVI).

Methods: Descriptive cross-sectional observational study with graduates in the last year of physiotherapy undergraduate studies randomly selected from six higher education institutions. Data were collected through a self-administered structured questionnaire addressing academic education, clinical aspects and physiotherapy interventions on CVI. The students were grouped into: FSDA – universities where Angiology is not taught; FPNE – universities where a non-specialist professor teaches Angiology; and FPE – universities where a specialist professor teaches Angiology.

Results: The evaluation covered 101 graduates. Of these, only 4.9% were familiar with all the techniques and methods to diagnose CVI and 44.0% did not mention clinical examination as diagnostic evaluation. Of the 35 FPNE students, 18 (51.0%) did not mention clinical examination and 31.0% mentioned incorrect CVI diagnosing methods. Of the 19 FSDA students, 74.0% did not choose elastic compression as a means of treatment.

Conclusion: It was concluded that the evaluated graduates presented little knowledge on the main physiotherapy treatments and diagnostic methods for chronic venous insufficiency.

Keywords: Education, medical; Physical therapy specialty; Venous insufficiency; Rehabilitation

Introduction

Chronic venous insufficiency (CVI) is the inability of the venous complex to drain blood from the tissues to the heart, lasting more than three months, mainly due to valvular insufficiency of the lower limbs. Inability of the venous complex results in increased venous vascular pressure and consequent formation of reticular and varicose veins. In the later stages, CVI evolves with cutaneous and subcutaneous alterations, ulcerations and, in 1-3% of the individuals, amputation.

Besides preventing individuals from performing daily activities, affecting the quality of life and causing significant pain, CVI is a socioeconomic challenge on a national and world level. In Brazil, CVI is the fourteenth leading cause of temporary or permanent absence from work, affecting three times more women than men. It is estimated that, in the world population, its prevalence is about 10%, being one of the most common diseases in clinical practice.

Of the many different treatments used in CVI, physiotherapy stands out because it is not invasive and works preventively. Its advantages include easy employability, fewer adverse effects than medications and it is less traumatic than surgeries. Many therapeutic resources are used by physiotherapy in the treatment of
CVI: elastic compression, lymphatic drainage, hidrotherapy, in addition to prescription of personalized exercises to prevent the progress of this condition.

Despite this range of physiotherapy approaches, studies demonstrate that the treatment of CVI remains slow, painful and recurrent, raising doubts about the approaches and procedures adopted in physiotherapy. Such questioning may indicate situations like deficits in academic education, as evaluated in other areas of physiotherapy. These studies showed that both academics and professionals have limitations in the assessment, diagnosis and treatment plan.

Given the importance of physiotherapy in the treatment and rehabilitation of CVI as well as the lack of studies of this nature, this study aimed to identify and describe the knowledge of physiotherapy students on the evaluation, diagnosis and treatment of CVI.

**Methods**

Descriptive cross-sectional study that evaluated students in the last year of Physiotherapy undergraduate studies from six higher education institutions: five private institutions and one public institution, in the city of Salvador, state of Bahia. Both female and male students regularly enrolled and taking supervised internship according to the curriculum of each educational institution researched were evaluated. Data collection was conducted from July 2012 to July 2013.

Data were collected through a self-administered structured questionnaire addressing the academic education of students, clinical aspects and physiotherapy interventions in CVI. After the data collection, the students were divided into three groups: FSDA – universities where Angiology is not taught; FPNE – universities where a non-specialist professor teaches Angiology; and FPE – universities where a specialist professor teaches Angiology. Specialist professors were those who have completed graduate studies or master’s or doctor’s in Cardiology or Angiology. All data were tabulated in specific Microsoft Excel spreadsheets and later described in absolute terms and as a percentage.

The study was conducted according to the recommendations of the Helsinki Declaration and Resolution CNS 466/12. All participants signed an Informed Consent Form. This study was approved by the Research Ethics Committee of Faculdade de Tecnologia e Ciências de Salvador under no. 3397.

### Results

The interviews included 101 graduates from six higher education institutions from the city of Salvador, Bahia – Brazil: five private institutions and one public institution. Table 1 shows the number of students evaluated at each institution, the presence or not of Angiology in the academic curriculum, and specialist or non-specialist professor. Five universities offered Angiology, but only in three the professor was a specialist.

<table>
<thead>
<tr>
<th>Table 1</th>
<th>Graduates studied by institution, with indication of the presence of Angiology in the curriculum and specialist professor</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Students</td>
</tr>
<tr>
<td>University I</td>
<td>26</td>
</tr>
<tr>
<td>University II</td>
<td>11</td>
</tr>
<tr>
<td>University III</td>
<td>10</td>
</tr>
<tr>
<td>University IV</td>
<td>15</td>
</tr>
<tr>
<td>University V</td>
<td>20</td>
</tr>
<tr>
<td>University VI</td>
<td>19</td>
</tr>
<tr>
<td>Total</td>
<td>101</td>
</tr>
</tbody>
</table>
Table 2 shows the responses of each group (FSDA, FPNE and FPE) about diagnostic methods and classification of CVI based on CEAP (Clinical signs, etiology, anatomic distribution, pathophysiology), the most appropriate classification for CVI\textsuperscript{14}. FPE students presented better knowledge about the diagnosis and especially about CEAP. FSDA performed much worse, especially on the classification of CVI.

As an important part of diagnostic evaluation of CVI, 56.0% of the study population mentioned physical examination; in the FSDA group, 42.0% mentioned it, in the FPNE group, 49.0%, and in the FPE group, 68.0% of the students mentioned physical examination.

Table 3 presents the knowledge of the groups on the physiotherapy resources indicated and contraindicated in the treatment of CVI. The best performing group was the FPE, both in the correct indications of physiotherapy resources and in the identification of contraindicated resources. The groups FPNE and FSDA presented high percentages of indications of non-physiotherapy resources, surgery and medication, as well as contraindicated resources, such as thermotherapy.

### Table 2
Responses concerning diagnostic evaluation and classification of chronic venous insufficiency in the groups studied

<table>
<thead>
<tr>
<th>Groups</th>
<th>Partially accurate diagnosis n (%)</th>
<th>Totally accurate diagnosis n (%)</th>
<th>Partially inaccurate diagnosis n (%)</th>
<th>CEAP Classification n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FPE (n=47)</td>
<td>45 (96.0%)</td>
<td>2 (4.0%)</td>
<td>1 (4.0%)</td>
<td>45 (96.0%)</td>
</tr>
<tr>
<td>FPNE (n=35)</td>
<td>33 (94.0%)</td>
<td>2 (6.0%)</td>
<td>11 (31.0%)</td>
<td>25 (71.0%)</td>
</tr>
<tr>
<td>FSDA (n=19)</td>
<td>19 (100.0%)</td>
<td>0 (0.0%)</td>
<td>2 (10.0%)</td>
<td>0 (0.0%)</td>
</tr>
</tbody>
</table>

FPE – universities where a specialist professor teaches Angiology; FPNE – universities where a non-specialist professor teaches Angiology; FSDA – universities where Angiology is not taught

Partially accurate – those who correctly chose at least one method of diagnosis; Totally accurate – those who correctly chose all methods of diagnosis; Partially inaccurate diagnosis – those who mentioned at least one inaccurate method to diagnose chronic venous insufficiency; CEAP – Clinical signs, etiology, anatomic distribution, pathophysiology

### Table 3
Responses related to physiotherapy intervention in chronic venous insufficiency in the groups studied

<table>
<thead>
<tr>
<th></th>
<th>Accurate indications</th>
<th>Contraindications</th>
<th>Non-physiotherapy indications</th>
</tr>
</thead>
<tbody>
<tr>
<td>FPE (n=47)</td>
<td>45 (96.0%)</td>
<td>1 (2.0%)</td>
<td>8 (17.0%)</td>
</tr>
<tr>
<td>FPNE (n=35)</td>
<td>29 (83.0%)</td>
<td>7 (20.0%)</td>
<td>14 (40.0%)</td>
</tr>
<tr>
<td>FSDA (n=19)</td>
<td>6 (32.0%)</td>
<td>7 (36.0%)</td>
<td>6 (32.0%)</td>
</tr>
</tbody>
</table>

FPE – universities where a specialist professor teaches Angiology; FPNE – universities where a non-specialist professor teaches Angiology; FSDA – universities where Angiology is not taught

Accurate indications – those who mentioned at least three accurate physiotherapy indications; Contraindications – those who mentioned at least one contraindication of treatment; Non-physiotherapy indications – those who mentioned at least one indication of non-physiotherapy treatment
Discussion

The results of this study indicate deficits in the knowledge of students from the last year of Physiotherapy on the evaluation, diagnosis and treatment of CVI in universities that do not offer Angiology in the curriculum or taught by a non-specialist professor. Therefore, it is suggested that quality of evaluation, diagnosis and physiotherapy as a treatment of CVI may be directly influenced by academic training.

Proper evaluation is essential both to determine the diagnosis and to efficiently design treatment. Stages of evaluation — medical history and physical examination, especially including inspection and palpation — are of the essence to deliver diagnosis of CVI. In line with this statement, literature review conducted by the Brazilian Society of Angiology and Vascular Surgery found that physical evaluation is one of a key requirement for the positive outcome of treatment of CVI. That review points out that proper physical examination reduces the need for additional tests for the diagnosis of CVI.

This context further emphasizes that professionals and academics from multidisciplinary health teams looking after individuals with CVI must possess evaluative knowledge. Acquisition of this knowledge begins with academic education. This findings from this study point out that the education offered by higher education institutions is not always sufficient or efficient in the education of future professionals.

It was found that very few students, from all the groups evaluated, had full knowledge of all the ways to diagnose CVI (Table 2). Nearly half of the study population did not even mention physical examination as an option in the evaluation. On the FPE group presented far superior performance compared to the other groups in this aspect.

After diagnosing CVI, it is important to classify it according to the stage and severity. The most complete classification, which covers the entire pathological progression (clinical status, etiology, anatomy and pathophysiology) is CEAP. This is the scale most used by researchers and specialists. This study showed that students from the FSDA group showed poor performance in the classification of CVI using CEAP and most FPE students were completely familiar with the CEAP (Table 2).

For the treatment of CVI, physiotherapy offer several resources that can be used in all stages of the disease, and elastic compression is one of the main resources. A study conducted in Germany showed that more than 70.0% of the sample evaluated — about 3,100 volunteers — reported improved venous insufficiency treatment resulting from elastic compression. Some studies have found that the use of elastic compression stockings (30/40 mmHg) delivers positive venous hemodynamic effects and is effective in improving venous return in the lower limbs and in venous filling index, besides increasing the healing levels of ulcer.

Another effective physiotherapy resource is walking and neuromuscular exercises. A prospective analysis performed on 100 individuals aged > 50 found decreased progress of the disease in individuals who started to walk regularly. Neuromuscular exercises, especially for strengthening the sural triceps, promote beneficial changes in venous hemodynamics, such as decreased venous valvular reflux. Results show that most FSDA students were unaware of walking as a physiotherapy resource for the treatment of CVI, while most of the FPE group correctly pointed out that treatment.

As well as the appropriate physiotherapy resources promote benefits for disease control, it must be noted that contraindicated resources must be known, as they may speed up the progression of the disease and make the condition even worse. In this study, FPE students indicated they are more knowledgeable than the others, both with respect to indicated resources and contraindicated resources.

In general, the results show the importance of academic education, the courses of study offered in the curriculum and better qualified professors. A specific finding is that, in the undergraduate courses, Angiology contents are not covered by other subjects, and appointing non-specialist professors to teach this subject also impairs students’ knowledge in this area.

Just like the results presented here, observational studies on evaluation of knowledge show that themes directly related to physiotherapy have not been adequately
addressed in the curriculum of higher education institutions. Those studies, as well as this one, found limitations in the knowledge of the students evaluated, emphasizing the need for revising the curriculum of Physiotherapy, since dissolving this knowledge across various curricular subjects is insufficient for adequate learning. Finally, another concern is that the limitations observed in the students seem to remain in their career. In fact, studies that investigated the knowledge of physiotherapy professionals have also shown significant lack of knowledge of breathing, basic life support and neurology.

Despite the relevant information gathered in this study, generalization of results should be done with caution, because the results were based on the sample of a single city, from a single public institution.

**Conclusion**

The graduates analyzed presented little knowledge on the evaluation, diagnosis and treatment of chronic venous insufficiency, mainly in the institutions that did not offer the subject Angiology and when the professor was not an expert in Angiology.

**Potential Conflicts of Interest**

This study has no relevant conflicts of interest.

**Sources of Funding**

This study had no external funding sources.

**Academic Association**

This study is not associated with any graduate programs.

---

**References**


