



Journal of Nursing

Revista de Enfermagem

UFPE On Line

ISSN: 1981-8963

ORIGINAL ARTICLE

COST-EFFECTIVENESS OF COMPRESSION THERAPY IN PEOPLE WITH VENOUS ULCERS

CUSTO-EFETIVIDADE DA TERAPIA COMPRESSIVA EM PESSOAS COM ÚLCERAS VENOSAS COSTE-EFECTIVIDAD DE LA TERAPIA DE COMPRESIÓN EN LOS PACIENTES CON ÚLCERAS VENOSAS

Eurides Bezerra Macedo¹, Gilson Vasconcelos Torres², Aminna Almeida Oliveira³, Rosana Silva Medeiros⁴, Daliane Negreiros Silva⁵, Amanda Gomes Souza⁶

ABSTRACT

Objective: to identify the cost-effectiveness of compression therapy with Unna handled in relation to conventional therapy in the process of healing of venous ulcers. **Method:** analytical study of intervention, therapeutic type not randomized. The sample was composed of 18 people with venous ulcers seen in a university hospital of Natal/RN/northeastern Brazil. We used a screenplay by interview and another note for data collection. The data analyzed in SPSS 15.0. The study had the research project approved by the Research Ethics Committee, Protocol 276/09. **Results:** There was a reduction of injuries in all patients in the study and total healing in 27.8%. It verified the variation of 30.5% to 93.1% of cost reduction when using the Unna manipulated to the detriment of conventional therapy. **Conclusion:** Unna handled is more cost-effective than conventional therapy on the healing process. **Descriptors:** Nursing; Varicose Ulcer; Cost-Benefit Analysis.

RESUMO

Objetivo: identificar o custo-efetividade da terapia compressiva com bota de Unna manipulada em relação à terapia convencional no processo de cicatrização de úlceras venosas. **Método:** estudo analítico de intervenção, do tipo terapêutico não randomizado. A amostra foi composta por 18 pessoas com úlceras venosas atendidos em um hospital universitário de Natal/RN/Nordeste do Brasil. Foi utilizado um roteiro de entrevista e outro de observação para coleta dos dados. Os dados foram analisados no SPSS 15.0. O estudo teve o projeto de pesquisa aprovado pelo Comitê de Ética em Pesquisa, Protocolo 276/09. **Resultados:** houve redução das lesões em todos os pacientes do estudo e cicatrização total em 27,8%. Foi verificada a variação de 30,5% a 93,1% de redução de custos ao utilizar a bota de Unna manipulada em detrimento da terapia convencional. **Conclusão:** a bota de Unna manipulada é mais custo-efetiva que a terapia convencional no processo de cicatrização. **Descritores:** Enfermagem; Úlcera Varicosa; Análise Custo-Benefício.

RESUMEN

Objetivo: determinar la eficacia de la terapia de compresión con Unna manejados en relación a la terapia convencional en el proceso de cicatrización de las úlceras venosas. **Método:** estudio analítico de la intervención, tipo terapéutico no aleatorizado. La muestra estuvo compuesta por 18 personas con úlceras venosas en un Universidad hospital de Natal/RN/noreste de Brasil. Se utilizó un guión de entrevista y otra nota de recolección de datos. Los datos fueron analizados en SPSS 15.0. El estudio tenía el proyecto de investigación aprobado por el Comité de ética de la investigación, protocolo 276/09. **Resultados:** Hubo una reducción de las lesiones en todos los pacientes en el estudio y la curación total de 27,8%. Se verificó la variación de 30,5% a 93,1% de reducción de costos cuando se utiliza la Unna manipulado en detrimento de la terapia convencional. **Conclusión:** Unna manejado es más rentable que la terapia convencional en el proceso de curación. **Descriptores:** Enfermería; Úlcera varicosa; Analisis Costo Beneficio.

¹Nurse, teacher, Master, graduate/Universidade Federal do Rio Grande do Norte/UFRN. Natal (RN), Brazil. E-mail: eurides.araujo@hotmail.com; ²Nurse, graduate student, postgraduate program in nursing, Universidade Federal do Rio Grande do Norte/PPGENF/UFRN. Natal (RN), Brazil. Email: gilsonvtorres@hotmail.com; ³Nurse, graduate student, postgraduate program in nursing, Universidade Federal do Rio Grande do Norte/PPGENF/UFRN. Natal (RN), Brazil. Email: aminnakelly@hotmail.com; ⁴Nurse, graduate student, postgraduate program in nursing, Universidade Federal do Rio Grande do Norte/PPGENF/UFRN. Natal (RN), Brazil. Email: rosana_kelly@hotmail.com; ⁵Nurse, Universidade Federal do Rio Grande do Norte/UFRN. Natal (RN), Brazil. E-mail: dalianenegreiros@hotmail.com; ⁶Nurse, graduate student, postgraduate program in nursing, Universidade Federal do Rio Grande do Norte/PPGENF/UFRN. Natal (RN), Brazil. Email: amandajessicags@yahoo.com.br

INTRODUCTION

Chronic Venous Insufficiency (CVI) is a common disease in clinical practice and which is characterized by an abnormality of functioning of the system caused by valvular venous incompetence, associated or not to the obstruction of the venous flow.¹ this dysfunction carries in a framework of venous hypertension in which there are changes of skin and subcutaneous tissue characteristics of the IVC, as for example, edema, hyperpigmentation and lipodermatoesclerose, culminating in the emergence of Ulcus Cruris (UV).²

Worth pointing out that it is not known with accuracy regarding the pathophysiological mechanisms responsible for UV, however, most of the authors claim that the venous hypertension is the most common condition for the ulceration.³⁻⁴ These ulcers correspond to approximately 80% to 90% of all leg ulcers, committing a total of 600 thousand individuals in the United States and approximately 3% of the Brazilian population, being prevalent the population over 65 years old and female.⁵⁻⁶

A case of UV induced projection of a clinical path through therapeutic methods that could be applied along with a multidisciplinary team that, in turn, uses procedures and materials, with the purpose of bringing the wound healing without complications, with the restoration of functions and prevention of sequels in which the nursing professional monitor the evolution of the various stages of the treatment.⁷ Compressive therapy has been singled out as the cornerstone of the IVC and UV treatment, since it reduces the Chronic Venous hypertension, responsible for the emergence and maintenance of injury, favoring the tissue healing and reducing the signs and symptoms present in the affected limb by venous disease.⁸

Among the available compression methods the most widely used are the elastic and inelastic compressive bandages and compression socks. Among the more traditional is inelastic to Unna, which consists of a bandage impregnated with zinc oxide, creating a semisolid mould to carry out external compression.⁹ In Brazil, are unknown costs for the Union arising from the treatment of these lesions, since they are scarce studies of incidence and prevalence of UV in Brazil, knowing very little about its distribution in the general population or even by region.¹⁰ however, it is believed that the cost of the procedure with Unna boot is high relative to other options, when you think only at the cost of material and human resources for its implementation. However, the frequency of exchange of the dressings can offset this costs.¹¹

Before the exposed, this study aims to:

- Identify the cost-effectiveness of compression therapy with Unna handled in relation to conventional therapy in the process of healing of venous ulcers.

MÉTHOD

Analytical study of therapeutic-type intervention not randomized with intra-group control, held at University Hospital Onofre Lopes (HUOL), in the Ambulatory Surgical Clinic, which performs service in Angiology and Vascular surgery.

The study population was made up of people with UV, which were attended by amphibologists, in the outpatient surgical Clinic HUOL, during the data collection period (June 22, 2009 to October 23, 2009).

Were adopted for selection of participants in the study, the following inclusion criteria: present Ulcus Cruris in one or both lower limbs, with stable or evolution in process of increase of injury; be able to undergo compressive therapy in the treatment of Ulcus Cruris, according to angiologist assessment; not present clinical signs of systemic infection; does not display peripheral arterial insufficiency and/or ischemic necrosis; having older than 18 years; attend outpatient HUOL for application of Compression therapy; have cognitive conditions so you can follow the recommended guidelines during the study period. The exclusion criteria: patients who present during treatment of arterial involvement signals; patient with deep venous thrombosis; at the request of the patient; patient during monitoring no longer attend or have irregularities in the use of Unna and frequency to the ambulatory for achievement of compressive therapy.

After the referral of patients by angiologist, doctor and obeying the inclusion criteria of the study, 22 patients admitted for treatment with Unna handled, selected through a sampling procedure for accessibility.

Based on the exclusion criteria, four excluded from the study, two due to non-attendance to the ambulatory for Exchange of Unna and continuity of therapy and two because of occurrence of systemic infection, totaling 18 participants in the research accompanied by a maximum of 10 weeks foreseen for data collection in each patient.

The research instrument used in gathering data was adapted from instruments already used in extension and research projects developed in outpatient surgical Clinic HUOL, about the clinical evaluation of persons with vascular ulcers, built on basis of the clinical guidelines proposed by the Brazilian society of Angiology and Vascular Surgery (1995). The result was an instrument composed of a screenplay by interview patient admission to the applied study and a screenplay by observation implemented in ten evaluations following the admission, performed during exchanges of dressing in period of data collection.

The collection held after the approval of the Committee of ethics in research (Protocol No 276/09) and signature of informed consent on the part of the participants selected for the study. This was held from Monday to Thursday in the morning and evening shifts, by researcher and academic in undergraduate nursing 34, previously

trained by means of a theoretical-practical extension course with load time of 8:0 pm.

The data collected organize into electronic database by typing in the application Microsoft Excel worksheet, then exported and analyzed in the program Statistical Package for Social Science (SPSS) version 15.0 Windows.

For the determination of the area of the lesions, were made transparencies containing the design of the full-size ulcers that subsequently digitized and subjected to analysis in the program AutoCAD 2008, which provided the area of all wounds since the admission of patients in the study until the end of treatment.

RESULTS

In relation to the socio demographic characterization of the participants of the survey, it was possible to observe that the majority were female (88.9%). The age ranged from 44 years to 72 years, with an average age of 57.6 years $\pm$ 8.7, no predominance of age group, since 50% of surveyed showed up to age 59 years and 50%, 60 years or more.

With regard to education, it identified that 83.3% had even elementary and only 16.7% reported high school, evidenced that none of the patients in the study had higher education. With

respect to family income, observed the predominance of up to two minimum wages (77.8%).

As to the profession of the searched, it found that 94.7% of study participants had a profession, reported house cleaner professions (33.4%), laundress (11.1%), farmer (11.1%), Cook (11.1%), housekeeping (5.6%), tailor (5.6%), driver (5.6%), NISO (5.6%) and administrative civil servant (5.6%). When questioned about the current occupation, it found that 55.6 percent of the patients were retired or unemployed, 27.8% were medical leave and 16.7% worked on occasion.

Regarding the evolution of the patients and its venous ulcers during the period of research, of 18 patients studied, 27.8% obtained total tissue healing, while others (72.2%) presented reducing ulcer, however failed to close fully his injuries lesional area, staying with until the 10th week of treatment.

Thus, all patients in the study showed reduction of their injuries having this percentage varied from 32.5% to 100.0% reduction and reduction of average area of 73.5% $\pm$ 25.9.

Figure 1 shows the comparison areas and reductions in area as Wilcoxon test and Pearson correlation coefficient.

COMPARISON OF AREAS				
	AVERAGE OF THE AREAS	MEAN AND STANDARD DEVIATION OF AREA REDUCTION	WILCOXON TEST	PEARSON CORRELATION COEFFICIENT
AREA 1	22.58 $\pm$ 19.04	3.06 $\pm$ 2.71	0.00	0.99
AREA 2	20.79 $\pm$ 17.91			
AREA 2	20.79 $\pm$ 17.91	2.53 $\pm$ 5.82	0.03	0.95
AREA 3	19.56 $\pm$ 18.09			
AREA 3	19.56 $\pm$ 18.09	3.06 $\pm$ 3.46	0.00	0.98
AREA 4	16.99 $\pm$ 18.22			
AREA 4	16.99 $\pm$ 18.22	0.80 $\pm$ 9.11	0.07	0.92
AREA 5	17.32 $\pm$ 22.67			
AREA 5	17.32 $\pm$ 22.67	0.32 $\pm$ 4.54	0.40	0.98
AREA 6	18.23 $\pm$ 24.06			
AREA 6	18.23 $\pm$ 24.06	1.38 $\pm$ 6.63	0.15	0.96
AREA 7	18.26 $\pm$ 22.68			
AREA 7	18.26 $\pm$ 22.68	2.8 $\pm$ 6.4	0.15	0.98
AREA 8	15.46 $\pm$ 17.53			
AREA 8	15.46 $\pm$ 17.53	4.83 $\pm$ 1.91	0.05	0.98
AREA 9	13.55 $\pm$ 13.97			
AREA 9	13.55 $\pm$ 13.97	1.13 $\pm$ 2.94	0.12	0.99
AREA 10	12.42 $\pm$ 11.95			
AREA 1	22.58 $\pm$ 19.04	17.90 $\pm$ 11.02	0.00	0.75
AREA 10	12.42 $\pm$ 11.95			

Figure 1. Comparison of areas and reductions in area as Wilcoxon test and Pearson correlation coefficient. Natal/RN, 2009

It is possible to observe in the figure 01 in comparison of the averages of the areas of ulcers between the weeks of treatment, there was a significant reduction of the area between the first and second week of follow-up ($p = 0.000$) between the third and fourth week ($p = 0.01$), and between the first and last week of treatment ($p = 0.000$), showing that the Unna manipulated causes a significant reduction of injury immediately when placed, and treatment in General, happening during the weeks of treatment a reduction of sores, although this reduction is not significant. Moreover, it is still possible to

check in Figure 01 that the reduction of lesions was higher in the first few weeks of treatment, indicating a good prognosis with the implemented therapeutic and likely tissue healing, and that area reduction during every week of monitoring showed strong correlations.

It verified that the Unna is effective in reducing fibrin and increased graininess/epithelialization, since most of the surveyed (77.7%) presented satisfactory progress lesional flatbed with reduction of fibrin and increased granulation

tissue/epithelialization the end of treatment. This satisfactory progress can in both patients with minor injuries, time in which 71.4% showed reduction of fibrin and increased graininess/epithelialization, and in patients with higher chronicity, of which 81.8% showed satisfactory progress in this aspect.

In patients with less time of injury, the majority (57.1%) presented improves lesional flatbed early, with 1 to 5 weeks of treatment, while most (72.7%) of patients with wounds more Chronicles needed a longer therapy with Unna to present a satisfactory evolution of the bed. Soon, patients who have highest rates of tissue healing, that is, greater growth of granulation tissue/epithelialization and reduction of fibrin, had until 1 to 5 weeks of treatment, while those with lower indices presented in the 10 6 weeks, without the closing of lesions ($p = 0.035$).

It is important to note that patients who showed a greater amount of healing factors (four to seven factors) and who had less injuries Chronicles (37.5%), obtained the complete tissue healing, those who already had four to seven factors of healing and more than five years of injury (62.5%), 50% remained open with injury, while 12.5% had their ulcers healed, indicating the importance of these factors and chronicity of the lesion smaller for healing of UV.

As regards the evolution of the circumferences of the ankle and calf, it noticed that the Unna was effective in reducing these measures in most of the study participants, being this faster reduction in patients with minor injury time.

When it comes to the evolution of pain, 77.7% of the patients presented pain reduction at the end of the treatment. Once again it is possible to observe that, in patients with up to five years of injury, most needed little time to have satisfactory progress, while all patients with chronic and more lesions that evolved satisfactorily in this regard required longer treatment to present pain reduction.

To relate the percentage of reduction of lesions with the treatment time, it was noticed that all patients who have had to the 01 05 weeks of treatment had their healed lesions, i.e. 100.0% reduction without standard deviation. Already in patients with 6 to 10 weeks of treatment, the reduction varied from 32.5% to 99.1%, with an average reduction of $63.3\% \pm 23.3$.

As regards the cost of treatment with material resources, the average price of the products used for the treatment of wounds with Unna handled and the amount of material required for the application and

maintenance of Unna boot during a week of treatment, there was an average weekly cost of R \$ 46,77 for small and medium-sized wounds.

It has been seen that the cost for the implementation and maintenance of an Unna is on average \$ 46,77, while costs for a conventional dressing is approximately R \$ 9.62. However, Unna, as well as most modern coverage's for the treatment of wounds, requires a limited number of exchanges, which compensates the slightly higher value of this product.

Already in treatment with conventional therapy, by which all patients reported having gone through at least 10 weeks before his admission in this study, it is important to remember that the trading of curative daily and that were no patient presented the closing of your injuries, performing thus 70 exchanges of dressing during the 10 weeks of conventional therapy.

As for each Exchange of traditional healing was considered the average value of R \$ 9.62, estimated that the cost with conventional therapy during the 10 weeks of treatment was approximately R \$ 673,40 for all patients in the study, showing a significant difference ($p = 0.000$), Wilcoxon test. It is noteworthy that of the total patients, 66.7% reported exchange of bandage once a day, but 33.3 percent were exchange of dressings twice a day, which would increase costs with conventional therapy.

As some patients required only a boot for the complete tissue healing, while others completed 10 weeks of treatment, the total cost for treatment with Unna manipulated ranged from \$ 46,77 r \$ 467,70, with an average cost of \$ $148.11 \pm 381,95$, noting that the boot was exchanged on a weekly basis.

As for the percentage of cost reduction, it verified a variation of 30.5% to 93.1% of cost reduction when using the Unna manipulated to the detriment of conventional therapy, with an average reduction of $43.3\% \pm 22.0$.

DISCUSSION

Some authors corroborated with the data found in this study to the report that the Unna manipulated promotes a significant reduction of injuries and that with the course of treatment result in tissue healing in most cases.¹²⁻³

In study about the effectiveness of Unna boot handcrafted in the treatment of patients with UV, of total patients studied 84.4% obtained reducing the area of his wounds within three months, being verified that 37.5%

achieved the complete tissue healing during this period.¹² Other authors point out that within 24 weeks of treatment the best success rates ranging from 30.0 to 60.0%, and after one year of 70.0% 85.0 of the healing of UV.¹⁴ in the research in question, within just 10 weeks of treatment was achieved a percentage of 27.8% of cure, denoting the effectiveness of Unna manipulated on healing of UV.

According to these authors, some clinical trials and systematic reviews attest to the effectiveness of compressive UV treatment therapies, denoting a consensus among scholars that the compression increases the healing rates of this lesions.^{-6 13.15}

To be related the percentage of reduction of lesions with the time of treatment, it was verified that all patients who have had of 01 to 05 weeks of treatment had their healed lesions, i.e. 100.0% reduction without standard deviation. Already in patients with 6 to 10 weeks of treatment, the reduction varied from 32.5% to 99.1%, with an average reduction of $63.3\% \pm 23.3$.

Corroborating with these findings, some authors cite that the reduction of UV in the first three or four weeks of treatment is an important predictor of cure, indicating a good prognosis for most patients.¹⁷ in line with that statement, another study detects that a percentage reduction of the area of the wound more than 30% in the first two weeks of treatment with compression therapy indicates likely tissue healing.¹⁶

The cost for the implementation and maintenance of an Unna in the study in question was on average \$ 46,77, while costs for a conventional dressing is approximately R \$ 9.62. However, Unna, as well as modern coverage's for the treatment of wounds, requires a limited number of exchanges, which compensates the slightly higher value of this product.

As for the percentage of cost reduction, it verified a variation of 30.5% to 93.1% of cost reduction when using the Unna manipulated to the detriment of conventional therapy. In addition, with the effectiveness of therapy for reduction in treatment time, has a consequent reduction in costs. As stated by another study that shows the total time for healing as one of the factors that most influence the cost of treatment.¹⁷ Thus, by harnessing the lower cost of treatment with the Unna manipulated to be more effective than conventional therapy, it is possible to affirm that the compression therapy with Unna manipulated presents best cost-effectiveness ratio than conventional therapy. Other authors, who

report the increased rate of healing of the compressive treatment UV, when compared to treatment without compression, resulting in reliable and cost-effective healing in most patients and should therefore be used for treating people with UV.¹⁸, corroborate such a claim also

CONCLUSION

Given the above, it is possible to affirm that the treatment with Unna manipulated was cost-effective in the healing process of UV in the period of 10 weeks, all patients in the study showed reduction of their injuries, of which 27.8% reached the complete tissue healing within 1 to 5 weeks of treatment and with low cost.

Furthermore, presented best cost-effectiveness ratio than conventional therapy, being more cost-effective in patients with higher number of healing factors, less treatment time and current UV, and have attained the complete tissue healing.

The Unna manipulated demonstrated good results for patients in the study, because it consists of a practical, low-cost therapy, which provides a quick healing, being more comfortable for patients, because of the need for less frequent exchanges. It is evidenced, with it, the need of health services identify and treat early form patients with UV, applying compression therapy as soon as possible, for the healing of injuries, being essential to the discussion, reorientation and dissemination of effective therapies in the treatment of these injuries among health professionals. Yes, these pipelines not only reduce costs for health services and public agencies, as well as all the suffering resulting from economic and bio psychosocial chronicity of these injuries to patients and their families, providing them a better quality of life.

REFERENCES

1. Carmo SS, Castro CD, Rios VS, Sarquis MGA. Atualidades na assistência de enfermagem a portadores de úlcera venosa. Rev eletrônica de enferm. 2007 May-Aug [cited 2012 Dec 08];7(2):506-17. Available from: http://www.fen.ufg.br/fen_revista/v9/n2/pdf/v9n2a17.pdf
2. Yamada BFA, Santos VLCG. Quality of life of individuals with chronic venous ulcers. Wound repair regen. 2005 [cited 2012 Dec 08];17(7):178-9. Available from: <http://www.medscape.com/viewarticle/509912>

3. Gohel MS, Barwell JR, Taylor M, Chant T, Foy C, Earnshaw JJ, et al. Long term results of compression therapy alone versus compression plus surgery in chronic venous ulceration (ESCHAR): randomised controlled trial. *BMJ*. 2007 July [cited 2012 Dec 10]; 335(83):1-6. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/17545185>
4. Barbosa GJA, Nogueira CLM. Diretrizes para o tratamento da úlcera venosa. *Enferm glob*. 2010 Oct [cited 2012 Dec 10];20:01-13. Available from: http://scielo.isciii.es/scielo.php?pid=S1695-61412010000300022&script=sci_arttext&tlng=pt
5. Santos RFFN, Porfírio GJM, Pitta GBB. A diferença na qualidade de vida de pacientes com doença venosa crônica leve e grave. *J vasc bras*. 2009 [cited 2012 Dec 08];8(2):143-7. Available from: <http://www.scielo.br/pdf/jvb/v8n2/a08v8n2.pdf>
6. Pieper B, Caliri MHR, Cardoso LJ. Úlceras venosas e doenças venosas. 2002. [cited 2012 Dec 08]. Available from: <http://www.erp.usp.br/projetos/feridas/uvenosa.htm>
7. Moraes GFC, Oliveira SHS, Soares MJGO. Avaliação de feridas pelos enfermeiros de instituições hospitalares da rede pública. *Texto & contexto enferm* [Internet]. 2008 Jan-Mar [cited 2012 Dec 08];17(1):98-105. Available from: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S0104-07072008000100011
8. Palfreyman S, Nelson EA, Michaels, JA. Dressings for venous leg ulcers: systematic review and meta-analysis. *BMJ* [Internet]. 2007 Aug [cited 2012 Dec 08];335:244. Available from: <http://www.bmj.com/content/335/7613/244.long>
9. Abbade LPF, Lastoria S. Abordagem de pacientes com úlcera da perna de etiologia venosa. *An bras dermatol* [Internet]. 2006 [cited 2012 Dec 08]; 81(6):509-22. Available from: <http://www.scielo.br/pdf/abd/v81n6/v81n06a02.pdf>
10. Macedo EAB, Silva DDNS, Oliveira AKA, Vasconcelos QLDAQ, Costa IKF, Torres, GV. Characterization of the care to patients with venous ulcers in 10 weeks using conventional therapy. *J Nurs UFPE on line* [Internet]. 2011 Nov [cited 2012 Dec 09];5:2129-35. Available from: <http://www.revista.ufpe.br/revistaenfermage>
11. Baptista CMC, Castilho V. Levantamento do custo do procedimento com bota de Unna em pacientes com úlcera venosa. *Rev latinoam enferm* [Internet]. 2006 Nov-Dec [cited 2012 Dec 09];14(6):944-9. Available from: http://www.scielo.br/p4n6a17.pddf/rlae/v14n6/pt_v1f
12. Luz BSR, Araújo CS, Barbosa KDPR, Vieira PG, Von Atzingen DANC, Mendonça ARA. A avaliação da eficácia da bota de Unna artesanal no tratamento de pacientes com úlceras venosas. In: *Anais do VI Congresso de Iniciação Científica da Universidade do Vale do Sapucaí - UNIVÁS*; 2009; Pouso Alegre (MG).
13. Figueiredo M. A terapia da compressão e sua evidência científica. *J vasc bras*. 2009 [cited 2012 Dec 09];8(2):100-2. Available from: <http://www.scielo.br/pdf/jvb/v8n2/a02v8n2.pdf>
14. Simon DA, Dix FP, Mccollum CN. Management of venous leg ulcers. *BMJ* [Internet]. 2004 June [cited 2012 Dec 09];328:1358-62. Available from: <http://www.bmj.com/content/328/7452/1358>
15. Palfreyman SJ, Nelson EA, Lochiel R, Michaels JA. Dressings for venous leg ulcers: systematic review and meta-analysis. *BMJ* [Internet]. 2007 Aug [cited 2012 Dec 09];335:244-250. Available from: <http://www.bmj.com/content/335/7613/244.long>
16. Borges EL, Caliri MHL, Haas VJ. Systematic review of topic treatment for venous ulcers. *Rev latinoam enferm* [Internet]. 2007 Sept [cited 2012 Dec 09]; 15(6): 1163-70. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/9302954>
17. Tennvall GR, Hjelmgren J, Ien R. O custo do tratamento de úlceras venosas difíceis de cicatrizar: resultados de um estudo sueco. *Wound repair regen*. 2006;13(1):13-18.
18. Borges EL, Caliri MHL, Haas VJ. Revisão sistemática do tratamento tópico da úlcera venosa. *Rev Latino-am Enfermagem* [Internet]. 2007 Nov-Dec [cited 2012 Dec 09]; 15(6):1163-70. Available from: http://www.scielo.br/pdf/rlae/v15n6/pt_16.pdf

Submission: 2013/02/25
Accepted: 2013/08/26
Publishing: 2013/10/15

Corresponding Address

Aminna Kelly Almeida de Oliveira
Programa de Pós-Graduação em Enfermagem
Centro de Ciências da Saúde
Universidade Federal do Rio Grande do Norte
Av. Senador João Câmara, 845 / Centro
CEP: 59650-000 Assú (RN), Brazil