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Economic cost of treating pressure ulcers: a theoretical approach*

CUSTO ECONÔMICO DO TRATAMENTO DAS ÚLCERAS POR PRESSÃO: UMA ABORDAGEM TEÓRICA

COSTO ECONÓMICO DEL TRATAMIENTO DE LAS ÚLCERAS POR PRESIÓN: UNA APROXIMACIÓN TEÓRICA

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ABSTRACT

The present study consisted of a theoretical approach to the problem posed by the economic costs associated with pressure ulcers (PUs). The initial aim was to assess the target problem from a conceptual perspective and then to report the results of prevalence studies that formed the basis for investigations of the disease's economic impact. The purpose of the present article is to discuss the economic costs associated with PUs from both the global point of view (appraising their financial repercussion) and the individual point of view (addressing the intangible costs). Regarding the economic impact of the costs associated with PUs, the total cost of treatment per healthcare setting was estimated relative to the Autonomous Community of Azores. The total cost of all the PU categories was EUR 7,086,415 in the homecare setting, EUR 1,723,509 in the hospital setting, and EUR 1,002,562 in older people's homes. Therefore, the estimated total treatment cost of all the PU categories was approximately EUR 9,812,486 in Azores. However, the emotional impact of this disease imposes high costs on patients and their relatives as a function of the resultant suffering. Indeed, PUs impose high costs not only related to the treatment but also related to the intangible costs of the suffering caused to patients and their caregivers.

DESCRIPTORS

Pressure ulcer
Cost and cost analysis
Nursing care

RESUMO

O presente artigo consiste numa abordagem teórica sobre a problemática dos custos económicos das úlceras por pressão. Parte-se do conhecimento do problema, numa perspetiva conceptual, para, de seguida, apresentar resultados de estudos de prevalência, a partir dos quais foram delineados estudos de impacto económico. O objectivo deste artigo é o de reflectir sobre os custos económicos associados às úlceras por pressão, quer numa perspetiva global, considerando a repercussão financeira, quer numa vertente personalista, atendendo aos custos intangíveis. Relativamente ao impacto económico das úlceras por pressão, foi efectuada uma estimativa ao nível da Região Autónoma dos Açores do custo total do tratamento por ambiente de cuidados. Nos cuidados domiciliários o custo com o tratamento de todas as categorias é calculado em 7.086.415 euros; nos cuidados hospitalares, em 1.723.509 euros, e nos cuidados prestados em lares de idosos, em 1.002.562 euros. Nos Açores, a estimativa do custo total do tratamento das úlceras por pressão, considerando todas as suas categorias, ronda os 9.812.486 euros. Quanto ao impacto emocional associado, este tem elevados custos para pessoa e para os familiares, nomeadamente pelo sofrimento gerado. De facto, as úlceras por pressão acarretam elevados custos económicos associados ao tratamento, bem como custos intangíveis pelo sofrimento vivenciado por pessoas e cuidadores.

DESCRITORES

Úlcera por pressão
Custos e análise de custo
Cuidados de enfermagem

RESUMEN

El presente artículo consiste en una reflexión teórica sobre el problema de los costos económicos de las úlceras por presión. Se empieza por el conocimiento del problema, desde una perspectiva conceptual, y, a continuación, se presentan los resultados de estudios de prevalencia, a partir de los cuales se diseñaron estudios de impacto económico. El objetivo del artículo es reflexionar sobre los costos económicos asociados a las úlceras por presión tanto en una perspectiva global, considerando la repercusión financiera, como en una vertiente personalista, de acuerdo a los costos intangibles. En cuanto al impacto económico de las úlceras por presión, se realizó una estimación de la Región Autónoma de Açores del costo total del tratamiento por ámbito de atención. En la atención domiciliaria el costo con el tratamiento de todas las categorías se estima en € 7.086.415, en la atención hospitalaria, se estima € 1.723.509 y en la atención en los asilos se estima en €1.002.562. En Açores, el costo total estimado del tratamiento de las úlceras por presión en todas las categorías, es de alrededor de € 9.812.486. En cuanto al impacto emocional asociado, éste tiene elevados costos para la persona y para los familiares, principalmente, por el sufrimiento causado. De hecho, las úlceras por presión implican altos costos económicos asociados con el tratamiento, así como, costos intangibles generados por el sufrimiento experimentado por los individuos y los cuidadores.

DESCRIPTORES

Úlcera por presión
Costos y análisis de costos
Atención de enfermería

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INTRODUCTION

Pressure ulcers (PUs) represent a public health concern mostly due to their impact on the affected individuals, their relatives, and the society. In addition, PUs are an indicator of healthcare quality relative to the therapeutic (and mainly preventive) interventions that are implemented.

Nurses are the healthcare professionals who provide the most direct assistance in the treatment and prevention of PU, in addition to playing a significant role in the emotional support given to patients and their relatives. Furthermore, from an autonomous perspective, nursing interventions are critical for implementing patient care programmes and for enhancing the patients' and informal caregivers' knowledge and skills aimed at preventing PUs.

During deep economic crises, it is crucial for nurses and other healthcare professionals to have a thorough understanding of the tangible and intangible costs associated with PUs.

In the present article, we present a global perspective on PUs based on their prevalence and associated costs. Our reflection is grounded on a theoretical perspective and is included within the scope of the Project ICE2 (Scientific Research in Nursing – Investigação Científica em Enfermagem) study, *Economic Cost of Pressure Ulcers in Macaronesia* (*Custo Económico das Úlceras por Pressão na Macaronésia*).

Regarding the methodological procedures, a literature survey with the widest possible scope was performed, including national (Portuguese) and international journals, reference manuals in this area, and the EBSCO (Elton B Stephens COmpany) Host, Medline, and CINAHL (Cumulative Index to Nursing and Allied Health Literature) databases. No particular search method or time limits were established *a priori* because our aim was not to perform a systematic literature review but to conduct a theoretical review of the state of the art relative to the investigated subject.

THE PROBLEM POSED BY PRESSURE ULCERS

PUs pose a serious problem because they significantly reduce the quality of life of the affected individuals and threaten the solution of other health problems, particularly infections, that might have lethal outcomes[1]. Although PUs are considered indicators of the quality of care provided in the hospital setting and/or nursing homes, these lesions are the focus of particular attention in the homecare setting, where they function as indicator of health gains, mostly as a function of their prevention. Nevertheless, the prevalence of PUs is still significant, particularly in the homecare setting.

To elucidate the entire process, PU must first be defined, as this definition has changed over time. According to the latest concept,

> a pressure ulcer is a localised injury to the skin and/or underlying tissue usually over a bony prominence, as a result of pressure, or pressure in combination with shear. A number of contributing or confounding factors are also associated with pressure ulcers; the significance of these factors is yet to be elucidated[2].

The formulation of efficacious preventive measures against PU requires epidemiological information on their prevalence and incidence, on the factors that most contribute to their occurrence, and on the ones that determine their presence or absence[3]. Epidemiological indicators are useful because they measure the progression of a problem over time. Prevalence and incidence are the indicators most widely used in PU studies[4]. Nurses, other healthcare professionals, and managers have been increasingly attributed the responsibility for the quality of care provided to ill individuals, demonstrating an interest in assessing the assistance based on the results achieved[5].

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A discussion regarding the relevance of studies on the prevalence of PU is necessary because of the disease's importance as indicator of the overall quality of healthcare and of the nursing care provided to patients in various settings. Thus, several investigations of the prevalence of PU conducted in various countries are described, including both acute and community-based care.

PREVALENCE OF THE PROBLEM

The indicators most widely used in studies on the prevalence of PU include the incidence of falls or wounds, bacteraemia, and PU. Estimates of the extent of the problem posed by PU are crucial and include the point and period of prevalence. The prevalence affords a static view of a problem at a given timepoint[4], and in this case, the prevalence indicates the proportion of a population that exhibits one or more PUs at a particular site (point prevalence) or for a specific duration (period prevalence).

Several studies on the prevalence of PU have been published. Indeed, this problem was investigated in several countries and contexts at the beginning of the 1990s. A multicentre study involving institutions that provide acute care measured the prevalence of PU, including non-blanchable erythaema, in countries such as Germany (7%), Italy (9%), the Netherlands (15%), and the United Kingdom (18%)[6]. Other studies were conducted in Europe in the second half of the 1990s and at the beginning of the 21st century, thus indicating an ongoing concern with this problem within the most diverse healthcare contexts.

The current PU prevalence in either the hospital or the primary care setting is unknown. A pilot study on the

prevalence of PU in several hospitals from five European countries (Belgium, Italy, Portugal, Sweden, and the United Kingdom) revealed that 1,078 (18.1%) of 5,947 investigated patients exhibited PU. The global prevalence in each country was as follows[7]: Belgium – 21.0%, Italy – 8.0%, Portugal – 12.5%, United Kingdom – 21.0%, and Sweden – 23.0%

In Portugal, 784 inpatients were assessed, 98 (12.5%) of whom exhibited PUs. The most severe ulcers were located on the sacrum. Another relevant finding was that only 1% (four individuals) of the investigated population had been given preventive care appropriate to their risk level[8]. Most patients (86.2%, 674 individuals) were not provided any type of preventive care during the study period[7]. Nevertheless, it is noteworthy that this sample was not significantly representative of the Portuguese inpatient population; consequently, the results cannot be extrapolated to the national level.

In 2001, a nationwide study was conducted in Spain and demonstrated a PU prevalence of 8%. Moreover, the investigation revealed that the largest proportion of affected individuals corresponded to older adults exhibiting serious lesions (mostly on the lower half of the body) and that the sacrum and heels were the sites most frequently affected[9].

A second nationwide study was conducted in Spain in 2005, revealing that the average PU prevalence varied from 9.11% to 10.9% among individuals older than 14 years in the primary care setting, from 8.91% to 12.20% in the hospital setting, and from 10.9% to 11.9% in social-sanitary centres. Among the 1,791 individuals included in the study, 2,837 exhibited PUs, specifically, 23.2% in category I, 37.5% in category II, 27.0% in category III, and 11.8% in category IV. The sacrum and trochanter were the most frequently affected sites in all healthcare settings, and 84.7% of the individuals with PUs were 65 years of age or older[10].

The above-mentioned studies demonstrate that PUs are a common occurrence in the various healthcare settings worldwide and that their prevalence rates exhibit a noticeable tendency to vary as a function of the investigated population, i.e., the population at risk of developing PU. In these studies, the prevalence rates in the acute care setting varied from 3.5% to 41.0%, and most of the investigations included non-blanchable erythaema in the analysis.

In the community-based care setting, the PU prevalence rates varied from 3.0% to 29.0%, also including non-blanchable erythaema in the analysis. The PUs tended to occur most frequently in the acute care setting compared with the homecare setting. These studies further indicate the relevance of age as a risk factor because the PU prevalence rate increased along with the patients' age.

However, these prevalence rates are difficult to compare because the methods varied among the studies. For instance, some authors applied a questionnaire to the service nurses to assess the prevalence rates[11]. Other investigators included individuals at high risk of developing PU only, while still others performed retrospective reviews, with both types of studies having a potential to underestimate the actual prevalence rates. This predicament results from the poor reliability of the nursing records, which in many places still consist of written descriptions, without considering or enunciating the nursing diagnoses and results.

A further feature that makes the reports difficult to compare is the use of different definitions of PU relative to the particular effects of pressure that should or should not be included. Thus, some investigators considered skin discolouration as PU, others included individuals with non-blanchable erythaema only, and yet another group did not include cases with only discolouration but required the presence of skin alterations to define a lesion as PU[11].

In 2006 and 2008, studies on the prevalence of PU were conducted by the ICE-MAC Group (Scientific Research in Nursing – Madeira/Azores/Canary Islands) of the Community Initiative Programme (Programa de Iniciativa Comunitária) INTERREG III. The resultant data are available at the website of the Community Initiative Programme (Programa de Iniciativa Comunitária) Project ICE 2 (PCT Programa de Cooperación Transnacional/Transnational Cooperation Programme)/MAC (Madeira/Azores/Canary Islands) (2007-2013), which is chaired by the University of Azores –School of Nursing of Angra do Heroísmo (Universidade dos Açores – Escola Superior de Enfermagem de Angra do Heroísmo) and has the University of Madeira (Universidade da Madeira) – Competence Centre for Health Technologies (Centro de Competência Tecnologias da Saúde) and the University of Las Palmas of Gran Canaria (Universidade de Ciências da Saúde de Las Palmas de Gran Canaria) – Department of Nursing (Departamento de Enfermaria) as partners.

The 2006 study demonstrated a PU prevalence of 14.2%, distributed as follows: 9.2% in the hospital setting, 18.5% in the primary care setting, and 6.5% in older people's homes. The prevalence distribution per geographical area was as follows: 9.0% in Azores, 22.7% in Madeira, and 12.4% in the Canary Islands. Of particular concern was the finding that 81.8% of the users with a high risk of PU had no preventive materials, lived in the community, and were assisted at healthcare centres. These features necessitate both a greater reinforcement of preventive equipment and the caregiver's education[12].

In 2008, the ICE-MAC Group study included Cape Verde and was limited to the hospital setting, where the prevalence of PU was 9.1%[13].

REVIEW OF STUDIES REGARDING THE ASSOCIATED ECONOMIC COSTS

PUs are a problem in many countries, at all levels of assistance, and affect individuals from all age ranges, imposes high economic costs as a function of the resources used, and causes suffering to patients and their relatives. The high costs associated with PUs result from the materials and

equipment necessary for treatment, the increased use of pharmacological agents, and the eventual requirement for surgical interventions or long hospital stays [14].

The idea that prevention is preferred over treatment is recurrent in a wide scope of health conditions; indeed, the cost of the former is lower compared with the latter. In the case of PUs, the costs associated with treatment are much higher than those incurred by prevention[15], whereas the investment of material and human resources in prevention yields better economic returns and a higher quality of patient care[16]. Because the causes and consequences of PU are known, decision-makers should be sensitised to the fact that prevention is by far the soundest bet for the future and thus is the soundest investment.

Although we are discussing a public health problem, published studies facilitating the quantification of the economic impact of PU are scarce[17]. Indeed, few investigations have effectively established the relevance of PU from the economic point of view. In addition, these few published studies are based on cost approximations, such as those conducted in Spain. In the La Rioja Autonomous Community, the total cost associated with all categories of PU in 1999 was estimated to be PTAS 70 million, i.e., EUR 421,000[17].

To date, the most precise study on the economic impact of PU was conducted by Bennett, Dealey, and Posnett in the United Kingdom in 2002. These authors established that the cost of treatment varied from GBP 1,064 per PU in category I to GBP 10,551 per PU in category IV, based on the wound healing time and on the incidence of complications[17]. In addition, the researchers estimated that the total annual cost of PUs in the United Kingdom varied from GBP 1.4 to 2.1 million, representing 4% of the English National Health Service spending[17].

In 2003, Posnett and Torra extrapolated the results found by Bennett, Dealey, and Posnett (2002) to the Spanish context and estimated that the annual cost of PUs was EUR 1.687 million, corresponding to 5.2% of the public health spending in that country[17].

One year later, in 2005, based on the data provided by the second study regarding the PU prevalence in Spain and according to the information from questionnaires applied to a panel of experts at the *2nd National Meeting of Commissions of Pressure Ulcers*, the annual cost of PU treatment in Spain was estimated to be EUR 435 million[17].

A study conducted in the United States highlighted the fact that the cost of treating PU in category IV over a maximum of 29 months was USD 129,248 in the hospital setting and USD 124,327 in the community-based setting[18]. These findings illustrate the economic impact of PU treatment and confirm the relevance of PU prevention and early identification for anticipating and avoiding complications.

Based on the Spanish study of the economic impact of PU, the PCT/MAC 2007-2013 Group ICE2 estimated the total cost of PU treatment per healthcare setting in Azores. The data provided by the prevalence study conducted in 2006 (within the context of Project ICE 2005-2008) revealed that the estimated cost of treating all PU categories was EUR 7,086,415 in the homecare setting, EUR 1,723,509 in the hospital setting, and EUR 1,002,562 in older people's homes. Therefore, the total cost of PU treatment was approximately EUR 9,812,486[19], corresponding to 4.5% of the public health spending in Azores and to 0.3% of the gross domestic product in 2006.

The above-described estimates indicate that the cost of PU treatment exerts a significant economic impact, and these findings suggest preventive care as the best focus for investment because 95% of PUs are preventable[20].

Other estimates made by Group ICE2 addressed the cost of PU prevention and revealed a total cost of EUR 3,352,529 (including all three healthcare settings)[21]. A comparison of the estimated costs of prevention and treatment reveals that the former is one-third of the latter.

The problems posed by the costs of PUs further include the intangible costs to the patients, their relatives, and their informal caregivers. Although virtually all of the publications dealing with this subject explicitly mention the associated suffering, few specific studies have been conducted on this topic.

The authors of a phenomenological study conducted with eight PU patients aimed to understanding the subjects' personal experiences, namely, the pain and suffering caused by PU; the investigation emphasised the feelings of powerlessness and of being subjected to a *never ending story*, as reported by the participants[22]. The authors of a study, conducted within the context of Project ICE 2, regarding the perception of the relatives of PU patients regarding the emotional impact and intangible costs associated with the disease found that the PU-related suffering is included within the global life and disease context experienced by the individuals; furthermore, this impact is characterised by high costs to the patients (i.e., pain, suffering, indisposition) and to their relatives (i.e., feelings of anguish and concern, restrictions to the activities of daily life and leisure, and thoughts of having lost the life they used to have)[23].

A satisfactory PU-prevention programme must include a policy for risk assessments, training of nurses in preventive care, and analysis of results. Based on the particular circumstances, an investment in the individuals' education is recommended for enabling them to contribute to the prevention of disease. Furthermore, the training of formal caregivers must be considered because they are among the main agents in preventive care. Finally, the informal or family caregivers must also be trained to intervene in the preventive care of the ill individuals.

CONCLUSION

The present analysis began by framing the problem associated with PUs based on their prevalence. As a public health concern, PUs exert a significant impact on the lives of patients and their relatives, as well as on the entire society. The economic costs associated with PUs are remarkably high, to which the emotional impact and suffering (i.e., intangible costs) must still be added.

The theoretical approach used in the present study has a limitation inherent to the narrative style of the literature survey that was performed without establishing a definite period or inclusion/exclusion criteria.

Based on the above-mentioned considerations, topics recommended for future studies include the direct economic costs associated with PU and the intangible costs to patients and their relatives.

Although the focus of the present study was PUs and their associated costs, the reflection triggered points to the relevance of prevention. Because nurses are the healthcare professionals who assume the responsibility for assisting patients, their families, and the community to preserve and promote health and to attain maximal functional recovery within the shortest possible period, the role of nurses in PU prevention at all healthcare levels must be emphasised.

REFERENCES

1. Medeiros A, Lopes C, Jorge M. Analysis of prevention and treatment of the pressure ulcers proposed by nurses. Rev Esc Enferm USP [Internet]. 2009 [cited 2012 Feb 22];43(1):223-8. Available from: http://www.scielo.br/pdf/reeusp/v43n1/en_29.pdf

2. European Pressure Ulcer Advisory Panel and National Pressure Ulcer Advisory Panel. Prevention and treatment of pressure ulcers: quick reference guide. Washington: National Pressure Ulcer Advisory Panel; 2009.

3. Merriam-Webster's collegiate dictionary. 10th ed. Merriam: Springfield; 1994.

4. Grupo Nacional para el Estudio y Asesoriamiento de Úlceras por Presión y Heridas Crónicas. Documento I del GNEAUPP. Prevención de las úlceras por presión, Revisión Febrero 2003 [Internet]; 2003 [citado 2011 set. 09]. Disponível em: www.gneaupp.org

5. Berlowitz DR, Ash A, Brandeis G, Brand H, Halpern J, Moskowitz M. Rating long-term care facilities on pressure ulcer development: importance of case-mix adjustment. Ann Intern Med. 1996;124(6):557-63.

6. O'Dea K. The prevalence of pressure damage in acute care hospital patients in the UK. J Wound Care. 1999;8(4):192-4.

7. European Pressure Ulcer Advisory Panel (EPUAP). Summary report on pressure ulcer prevalence data collected in Belgium, Italy, Portugal, Sweden and the United Kingdom over the 14th and 15th of November; 2001.

8. Furtado K. Úlceras de pressão: actualidades e paradoxos. Nursing. 2003;15(183):37-42.

9. Verdú J. Epidemiología, prevención y tratamiento de las úlceras por presión [tese doutorado]. San Vicente del Raspeig, España: Universidade de Alicante; 2005.

10. Soldevilla J, Torra I Bou JE, Verdú J, Martínez F, López P, Rueda J, et al. 2º Estudio Nacional de Prevalencia de Úlceras por Presión en España 2005: epidemiología y variables definitorias de lesiones y pacientes. Gerokomos. 2006;17(3):154-72.

11. Bours GJJW. Pressure ulcers: prevalence measurements as a tool for improving care. Maastricht: Universitaire Pers Maastricht. 2003. p. 11-4.

12. Grupo de Investigação Científica em Enfermagem (ICE). Colectânea: enfermagem e úlceras por pressão: da reflexão sobre a disciplina às evidências nos cuidados [Internet]. Angra do Heroísmo (PT); 2008 [citado 2011 set. 9]. p. 41-2. Disponível em: http://ice-mac.org/pdf/colectanea/ci.pdf

13. Grupo de Investigação Científica em Enfermagem (ICE). Prevenção de úlceras por pressão manual de orientações para a macaronésia [Internet]. Angra do Heroísmo (PT); 2010 [citado 2011 set. 9]. p. 43-6. Disponível em: http://ice-mac.org/pdf/manual_de_prevencao.pdf

14. Boucheron M, Lesueur MJ, Meriguet A, Moreau JJ. Protocole de prévention d'escarres. Soins Chir. 1988;(94-95):33-42.

15. Bergstrom N, Braden B, Boynton P, Bruch S. Using a research-based assessment scale in clinical practice. Nurs Clin North Am. 1995;30(3):539-51.

16. Pancorbo PL, García FP. Estimación del coste económico de la prevención de úlceras por presión en una unidad hospitalaria. Gerokomos. 2002;13(3):164-71.

17. Posnett J, Soldevilla J, Torra i Bou JE, Verdú J, San Miguel L. Una aproximación al impacto del coste económico del tratamiento de las úlceras por presión en España. In: Soldevilla J, Torra i Bou JE e Verdú J, editores. Epidemiología, coste y repercusiones legales de las úlceras por presión en España, años 2005-2006. Logroño, España: GNEAUPP; 2007. p. 33-63.

18. Brem H, Maggi J, Nierman D, Rolnitzky L, Bell D, Rennert R, et al. High cost of stage IV pressure ulcers. Am J Surg. 2010;200(4):473-7.

19. Grupo de Investigação Científica em Enfermagem (ICE). O custo económico das úlceras por pressão. In: Poster apresentado no Congresso de Ciências e Tecnologias da Saúde; 2010; Açores, Portugal.

20. Hibbs P. The economics of pressure ulcer prevention. Decubitus. 1988;1(3):32-8.

21. Grupo de Investigação Científica em Enfermagem (ICE2). O custo económico do tratamento e prevenção das úlceras por pressão nos Açores. In: Poster apresentado no V Encontro ICE2; 2011; Funchal, Madeira, Portugal.

22. Hopkins H, Dealey C, Bale S, Defloor T, Worboys F. Patient stories of living with a pressure ulcer. J Adv Nurs. 2006;56(4):345-53.

23. Pereira S M, Soares H. Úlceras por pressão: perceção dos familiares acerca do impacto emocional e custos intangíveis. Rev Enferm Referência. 2012;III Série(7):139-48.

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