Original Article

Pressure ulcer in patients under home care*

Úlcera por pressão em pacientes sob assistência domiciliária

Úlcera por presión en pacientes bajo asistencia en el domicilio

Emília Maria Paulina Campos Chayamiti[1], Maria Helena Larcher Caliri[2]

ABSTRACT

Objectives: To describe the sociodemographic and clinical characteristics of patients under home care in a health district of Ribeirao Preto and to determine their risks for pressure ulcers, the use of preventive measures, and prevalence and characteristics of pressure ulcers. **Method**s: This was a descriptive cross-sectional study with 47 patients. **Results**: The age of the participants ranged from 21 to 91 years. The majority of them was whites (85%), elderly (76.6%), dependent of caregivers (91.5%), and were at risk for pressure ulcers (70.2%). There was 19.1% of prevalence of pressure ulcers. There were 17 pressure ulcers, in which 35.3% were at stage I and 29.4% were at stage IV. The trochanter of the femur (29.4%) and calcaneous (23.5%) were the anatomic regions that pressure ulcers occurred more often. The majority of patients did not use measures for preventing pressure ulcers. **Conclusion**: Since the majority of patients were at risk for pressure ulcers, there is a need for educational interventions to patients and home care services.

Key Words: Pressure Ulcers; Prevention and Control; Home Care; Prevalence

RESUMO

Objetivos: Investigar as características sociodemográficas e clínicas e o risco para desenvolvimento de úlcera por pressão (UPP) em pacientes sob assistência domiciliária em um Distrito de Saúde de Ribeirão Preto, assim como a prevalência e características das úlceras, uso e adequação das medidas utilizadas para prevenção. **Métodos:** Estudo descritivo, transversal, abordagem quantitativa. **Resultados:** Foram avaliados 47 pacientes, com idades entre 21 e 91 anos; a maior frequência foi de idosos (76,6%), brancos (85%) e dependentes de cuidadores (91,5%). Trinta e três pacientes (70,2%) apresentavam risco para úlcera por pressão, sendo que a prevalência foi 19,1%, tendo sido identificadas 17 úlceras (35,3% e 29,4% nos estágios I e IV, respectivamente). As regiões anatômicas com maior frequência foram trocânter do fêmur (29,4%) e calcâneo (23,5%). Medidas básicas para prevenção não foram utilizados em sua maioria pelos pacientes. **Conclusões:** Considerando que a maior parte das pessoas apresentava risco para úlceras, identificou-se a necessidade de intervenção educacional junto a esta população e aos serviços de saúde.

Descritores: Úlcera por pressão/prevenção e controle; Assistência domiciliar; Prevalência.

RESUMEN

Objetivos: Investigar las características sociodemográficas y clínicas y el riesgo de desarrollar úlcera por presión (UPP) en pacientes bajo asistencia en el domicilio en un Distrito de Salud de Ribeirao Preto; también estudiar la incidencia y características de las úlceras, el uso y adecuación de las medidas utilizadas para la prevención. **Métodos:** estudio descriptivo, transversal, de abordaje cuantitativo. **Resultados:** fueron evaluados 47 pacientes, con edades entre 21 y 91 años; la mayor frecuencia fue de ancianos (76,6%), blancos (85%) y dependientes de cuidadores (91,5%). Treinta y tres pacientes (70,2%) presentaban riesgo para úlcera por presión, siendo que la incidencia fue 19,1%, habiendo sido identificadas 17 úlceras (35,3% y 29,4% en los estados I y IV, respectivamente). Las regiones anatómicas con mayor frecuencia fueron trocánter del fémur (29,4%) y calcáneo (23,5%). Las medidas básicas para prevención no fueron utilizadas en su mayoría por los pacientes. **Conclusiones:** considerando que la mayor parte de las personas presentaba riesgo para úlceras, se identificó la necesidad de intervención educacional junto a esta población y a los servicios de salud.

Palabras clave: Úlcera por presión/prevención y control; Asistencia domiciliar; Incidencia.

** This study is parto of the Master in Nursing Dissertation presented to Escola de Enfermagem de Ribeirão Preto, Universidade de São Paulo – USP - Ribeirão Preto (SP), Brazil.*

[1] Master degree in Nursing by Escola de Enfermagem de Ribeirão Preto, Universidade de São Paulo – USP - Ribeirão Preto (SP), Brazil; Nurse at Ribeirão Preto Municipal Health Department. Ribeirão Preto (SP), Brazil.

[2] Associate Professor of the Department of General and Specialized Nursing at Escola de Enfermagem de Ribeirão Preto, Universidade de São Paulo – USP - Ribeirão Preto (SP) Brazil.

Corresponding Author: **Maria Helena Larcher Caliri**
Av. Bandeirantes, 3900. Campus Universitário USP - Ribeirão Preto (SP), Brazil.
CEP: 14040-902 E-mail: mhcaliri@eerp.usp.br

Received article **05/08/2008** and accepted **23/03/2009**

INTRODUCTION

Worldwide birth rates have reduced, life expectancy has increased and populations have grown older. Both epidemiologic and demographic tendencies have indicated a raise in chronic diseases, which will eventually elevate the burden in terms of distress and disabilities in addition to economic losses, posing as one of the greatest challenges of the health sector of this century[1]. Therefore, there is a need to redesign the current health model, according to innovative management bases and effective practices, guided by the principles of the Unique Health System (SUS, in Portuguese for Sistema Único de Saúde) with the purpose of meeting the needs of the population in terms of health promotion, prevention, treatment and rehabilitation both in the individual and collective levels.

In this context, homecare (HC) reappears as a strategy capable of responding to an actual need of the individual with chronic diseases, especially in cases when there is difficulty for locomotion to health services. Authors state that HC permits reducing hospital length of stay for treatment and rehabilitation, re-hospitalizations and the risk of infection, thus increasing the chances of achieving comfort and staying close to relatives, in addition to reducing the costs of health care[2-3].

The universal increase in homecare aims at meeting population needs regarding long term care; has been caused by the increase in non infectious chronic disease causing disabilities as well as by the increased longevity. Other factors, such as the economy, have also influenced this tendency, and, with the changes in the context of health care, from the hospital to the community, a great deal of the costs was transferred to the families[4].

In the Netherlands, public homecare agencies offer health care to over 2 million patients, which represent 12% of the population. This makes it possible for these patients, who are mostly aged individuals, to stay at home even when ill or disabled, thus avoiding hospitalizations[5].

In Brazil, focusing on primary health care, the Family Health Strategy (FHS) and HC are considered guidelines for reorganizing the healthcare model, with the following principles: family, a defined territory, clientele registered at the unit, interdisciplinary work, full co-responsibility, resolutivity, intersetoriality and encouragement of collective participation.

One of the guidelines proposed in the Ribeirão Preto Health Plan for reorganizing the health care system and the mode of work production at health centers is to expand the Family Health Strategy (FHS) and the Homecare Service (HCS)[6]. One of the situations that nursing professionals frequently experience when delivering HCS is the presence of bed-ridden individuals with pressure ulcers (UP) or with the risk of developing PU [7].

This situation is also common in HC services in other countries. A study performed in Italy, involving patients from twelve homecare agencies, identified that the prevalence of UP was 18% and that during a 12-month follow-up period, the group of patients with pressure ulcer had higher chances of death ($p<0.001$) than the group without PU[8]. In the Netherlands, over 1% of the total health system budget is spent on the prevention and treatment of PU, and this health problem ranks as the fourth issue that most consumes resources in the country[5].

The quality of health care, in terms of PU prevention was assessed in 144 home healthcare institutions of four North-American states. It was found that in 57.8% of the institutions all patients were evaluated when admitted for their risk of developing PU. The most commonly used method was the clinical nursing judgment. Only 21% of the institutions used instruments such as the Braden or Norton scales for the referred evaluation. In 30% of the institutions, the prevention routines were followed, but only 18% used protocols with interventions recommended in the literature[9].

The prevention of PU, in any health care context, requires a systematic approach, which should start with an evaluation of the patient being admitted to a service, considering the existing risks and proceeding with the adoption of appropriate measures, and this process should involve the whole health team. To do this, nurses, as coordinators of the nursing team, should have the necessary knowledge and skills to provide the service in an efficient and safe way, as they are responsible for the results of their actions[5,10]. For patients with PU or with the risk of developing this problem, better curative and preventive healthcare practices should be implemented in every context of healthcare[5,11].

International literature also shows a small number of studies that address the situation found in the context of patients receiving homecare, regarding risk evaluation and use of recommendations or guidelines for the prevention and treatment of PU[5], thus expressing a lack of knowledge in this area.

OBJECTIVES

To investigate the sociodemographic and clinical characteristics as well as the risk of developing pressure ulcer (PU) in patients receiving homecare in a health District of Ribeirão Preto, the prevalence and characteristics of the ulcers, and the use and adequacy of the adopted preventive measures.

METHODS

This is a descriptive, cross-sectional study using a quantitative approach, performed with a population of patients receiving homecare in a Health District of Ribeirão Preto. The study was approved by the Research Ethics Committee of the Health Center of Faculdade de Medicina de Ribeirão Preto, University of São Paulo. Participants were individuals living in the areas covered by the five Family Health Centers (FHC) of the Health District, who were bed-ridden or restrained to chairs, at least 18 years old, and agreed to participate in the study. All participants signed the Free and Informed Consent Form. Data collection was performed from September to December 2007, by means of domiciliary visits, when the patient was interviewed and his/her skin was inspected using an instrument validated in a pilot study. When needed, the caregiver was also interviewed. To find the prevalence of PU, the number of patients receiving homecare who were bed-ridden or restrained to chairs (47) and the number of patients with PU (9) were considered. The identified PU was classified according to the recommendation of the NPUAP[12].

The risk of UPP was evaluated using the Braden Scale, which consists of an instrument already validated and used in Brazil, thus permitting to evaluate the patients' conditions and providing the bases for selecting the preventive and curative actions for the PU[11,13].

The patients' risk of developing PU is classified in levels, considering the total score, and are defined as: Without Risk – adult and aged patients, with a score between 19 and 23; Low risk with a score from 15 to 18; Moderate risk with a score from 13 to 14; High risk with a score from 10 to 12; Very high risk with a score equal to or less than 9[14].

Data analysis was performed using the process of double entry validation using Microsoft Excel spreadsheets. Once validated, the data were exported and analyzed using EPI-INFO and SPSS (Statistical Package for Social Sciences) software.

RESULTS

Six of the 55 patients registered in the FHC of the Health District declined to participate and two moved to a new address, away from the covered area. Therefore, 47 patients participated in the study; 11 (23.4%) adult and 36 (76.6%) aged individuals. The patients' ages ranged between 21 and 91 years, with an average 68.5 years (SD 18.58). The majority of patients (40 or 85.1%) were white. As for their gender, 24 (51.1%) were women. Twenty (42.5%) patients were married, 20 (42.5%) lived with their daughter-in-law, children and grandchildren, and 12 (25.5%) lived with their spouse and children. As for their level of education, most patients had an incomplete primary level (19-40.4%), which corresponded to 4 years of education. Twenty-six (55.4%) were retired and 7 (14.9%) did not have any personal income. In terms of family income, 23 patients (48.9%) received from 3 to 5 minimum salaries. Forty-three patients (91.5%) depended on caregivers. Regarding these patients, the main caregiver of 13 (27.7%) was the spouse; the wife, in 12 cases. For another 13 (27.7%) cases whose caregiver was one of their children, daughters were the main caregivers of 11 patients. Table 1 shows the main sociodemographic characteristics of the sample. In terms of the clinical profile, 30 patients (63.8%) had circulatory system diseases. This category includes systemic arterial hypertension (SAH), heart diseases, acute myocardial infarction (AMI), thrombosis and pulmonary embolism, venous insufficiency and cerebrovascular accident (CVA). The second group in terms of frequency includes nervous system diseases, reported by 23(48.9%) patients. In the elderly, degenerative disorders were most common, such as Alzheimer's Disease and Parkinson's Disease; among adults, amyotrophic lateral sclerosis (ALE) and, for younger individuals, a traumatic spinal cord injury (TSCI) and disorders due to neonatal anoxia and cerebral palsy (CP). For most patients (48.9%), the factor that caused restricted mobility was the disease itself. It was found that the patients' time restricted to the bed or chair ranged between 15 days and 480 months, with a mode of 72 months or 6 years.

The prevalence rate of patients with PU was 19.1%, considering that 9 of the 47 patients had PU. The lowest score found using the Braden scale was 10 and the highest was 23, with an average score of 17.07 (DP 3.26). The patient distribution according to the scores and presence of PU is shown in Table 2. Results evidenced that as the scores obtained in the evaluation using the Braden Scale increased, fewer people had PU. One (50%) of the 2 patients with high risk had PU: as did two (25 %) of the eight patients with moderate risk. Four (40.4%) of the 23 patients with different risk levels had PU, three of which were aged individuals and one adult (25 years) with paraplegia. Fourteen patients had scores equal to or above 19, considered without risk, two of which had UP, and were of old age (over 70 years old) and had several comorbidities.

Table 1 – Sociodemographic variables of the 47 patients receiving homecare. Ribeirão Preto, 2007

Variables	N	%
Gender		
Male	23	48,9
Female	24	51,1
Color of skin		
White	40	85,1
Not white	7	14,9
Age group		
< 60 years	11	23,4
≥ 60 years	36	76,6
Education		
Never been to school	14	29.8
Never been to school/Reads– writes	3	6.4
Incomplete 1st cycle of primary level	19	40.4
Complete 1st cycle of primary level	6	12.8
Complete 2nd cycle of primary level	1	2.1
Complete secondary level	1	2.1
Complete higher level	3	6.4
Family income/ Minimum salary		
< 1	1	2.1
1 – 2	12	25.5
3 – 5	23	48.9
≥ 6	9	19.1
Were unable to answer	2	4.4
Main caregiver		
Spouse	13	27.7
Child	13	27.7
Daughter in law	3	6.4
Formal	5	10.6
Other*	9	19.1
Does not need caregiver	4	8.5
Total	47	100

* mother, sister, niece, granddaughter, grandmother and ex-wife.

The nine patients had, in average, 1.88 PU, with a total of 17 wounds. The most frequent anatomic location was the femur trochanter (29.4%), followed by the calcaneus (23.5%). In terms of UP classification, the highest percentages were found for stage I (35.3%) and IV (29.4%). As for the time of injury, 58.8% of the PU had appeared 4 months before the evaluation.

The results of the patient evaluation regarding the use of preventive measures and equipments to reduce mechanical loads, which causes excessive pressure on the tissues, are presented in Table 3. Although 70% of the population was at risk of PU according to the evaluation using the Braden Scale, basic measures recommended to prevent PU were not used by many patients. Nineteen (40.0%) patients did not change position; 21 (44.7%) did not perform ischial decompression when sitting. Twenty-six (55.3%) used a pillow or cushion under their calves to relieve

Table 2 – Distribution of patients according to the levels of risk of PU. Ribeirão Preto, 2007

Braden Scale Scores	PU		Total	f%
	Yes	No		
10 – 12 (high risk)	1	1	2	4.3
13 – 14 (moderate risk)	2	6	8	17.0
15 – 18 (at risk)	4	19	23	48.9
≥ 19 (without risk)	2	12	14	29.8
Total patients	9 (19.1)	38 (80.9)	47	100.0

Table 3 – Distribution of patients according to the presence of PU and the use of preventive measures. Ribeirão Preto, 2007

Preventive measures	PU		Total	f%
	Yes	No		
Changing positions				
Yes	6	22	28	59,6
No	3	16	19	40,4
Ischial decompression				
Yes	2	20	22	46,8
No	5	16	21	44,7
Does not apply	2	2	4	8,5
Use of turning sheets				
Yes	0	4	4	8,5
No	9	34	43	91,5
Moving with help of two people				
Yes	5	8	13	27,6
No	4	30	34	72,4
Cushion/pillow under heel				
Yes	6	20	26	55,3
No	3	18	21	44,7
Cushion/pillow on chair				
Yes	4	21	25	53,2
No	3	15	18	38,3
Does not apply	2	2	4	8,5
Type of mattress used				
Common foam 8 - 20 cm height	3	27	30	63,9
Spring - 15 and 20 cm height	1	3	4	8,5
Pyramidal (Egg crate) 7- 8 cm height	5	6	11	23,4
Air	0	1	1	2,1
Water	0	1	1	2,1
Total	9	38	47	100,0

PU= pressure ulcer; f = frequency

pressure from the calcaneus and 25 (53.3%) used a cushion on the chair seat. Other important measures for moving, such as changing positions with the help of two people and using turning sheets were not often used by the patients. Thirteen (27.6%) used a special mattress (over the regular mattress) which was either of pyramidal foam, popularly referred to as egg crate mattress, or an air or water mattress. Among these patients, 5 (38.4%) had PU; however, it was not verified if the mattress had been used as a preventive measure before the wound appeared or as part of the treatment.

DISCUSSION

Considering the sociodemographic perspectives of the studied population, who were receiving homecare, most individuals (76.7 %) were of old age. This result is justified by the nature of the study, because the situations of restricted mobility, generally caused by chronic conditions and diseases, are most frequent in this age group. Furthermore, the predominance of female patients was also expected, considering that, in Brazil, women have greater survival rates than men[15].

As to their profession, 61.7 % of patients referred having a profession, but at the moment of the study, 46 (97.9%) did not have an occupation; 55.4% were retired, and most were aged individuals; 25.5 % received pensions (women).

In terms of family income, 23 patients (48.9%) received between 3 and 5 minimum salaries and 12 (25.5%) had an income between 1 and 2 minimum salaries. Only one patient (2.1%) has an income of less than one minimum salary and for that reason received government support (welfare). An important result was the identification of a family support network for homecare.

In Brazil, it is observed that longevity permits living longer with the family and with several generations, often involving four generations, with roles overlapping and being transferred

among family members, with possible direct implications in their lives[16]. In this context, the family is the source of informal support for the elderly, which is observed in situations of co-habitation or not, when family members help each other, seeking to achieve collective wellbeing. The observation that most family caregivers, as well as former caregivers, hired for homecare, were women is similar to what was found in national and international studies: most homecare is performed by women. The role of the caregiver women in the family is normative, and it is expected that she will take responsibility for that role[17].

As for the clinical profile, the most frequent diseases have common signs, such as fatigue, muscular weakness, motor and sensory loss and ataxia, which can cause a broad range of disabilities in patients. Chronic noninfectious diseases and chronic health conditions such as cerebral palsy, which was present in two patients and paraplegia in one, can also imply other impairments, such as emotional lability, depression, reduced tolerance to stressful situations and a lack of cooperation in the treatment, which puts them at risk for secondary complications[18].

Reduced mobility is associated with the reduction in the individuals' functional capacity to perform activities of daily living (ADL) and to lead their lives independently, which causes a great impact on the patient, family, and health system, with direct consequences on the individuals' quality of life[19]. The long period of immobilization leads to disuse syndrome, with implications on several body systems that need to be avoided by the caregivers and individuals themselves, as long as they have the conditions to do this[18].

Several studies have found there is a linear relationship between the increase in patients' age and the occurrence of PU. In addition to the prevalence of chronic conditions that lead to a reduced functional capacity in the elderly, the physiology of aging, *per se*, contributes to increasing that risk. Aging also affects all stages of healing, regardless of the comorbidities that, alone, also interfere in the process of tissue repair[20-21].

A study performed with elderly individuals living in Homes for the Aged found that the anatomic regions that most frequently developed PU were the malleolus and *ischial tuberosity*; the highest percentage (66.6%) was found for stage I PU[21]. In this study, most PU had appeared four months before the evaluation, five of which were in stage IV. Hence, with time, since when the wound appeared, the anatomic depth of the PU also increased, thus evidencing the persistence of risk factors and, possible, the absence of any protection measures. Not all PU can be prevented, but preventive measures should be known and used by all patients at risk and their caregivers. Furthermore, the characteristics of the wounds, such as anatomical location, stage description and aspects evidencing its improvement or worsening should also be taught not only to health professionals but also to patients and caregivers, as all of them are responsible for prevention, regardless of the healthcare context[5,10,11].

To determine the adequacy of the treatment plan for the PU, it is necessary for the wounds to be monitored every time the dressing is changed, and reevaluated and measured at least once a week[11]. It is recommended that a PU, without the presence of infection, with appropriate blood supply and treatment, should present signs of healing between two and four weeks. For patients who do not have healing as a possible goal, the treatment should prevent infections and any further deterioration of the wound, thus providing comfort as a way of maintaining the quality of life[5]. The nutritional status also requires frequent evaluation, because patients with malnutrition or a nutrient-deficient diet will face difficulties to heal, besides having greater risks for developing new PU. Therefore, it is recommended to include a nutritionist in the specialized health team, who would be responsible for the prevention and treatment of the PU, in every context of care[5,11].

Taking into consideration the characteristics of each patient that presented PU, such as age, referred morbidity and score on the Braden Scale, it is understood that these factors worked in synergy for developing the wound and that the measures could reduce the impact of excessive pressure, such as reducing the time the patient stays in one position, as on the back or sitting, were not often used.

These results evidenced the characteristics of the patient and the healthcare process; however, aspects regarding the family structure and that offered by homecare services need to be studied more closely, so as to permit a better understanding of the problem. The combined work between the different healthcare levels is essential for this population if comprehensive and continuing care is to be made available. Furthermore, the development of support networks among families, community and services would facilitate solving the identified problems.

CONCLUSION

The present study results showed that patients who were bed-ridden and restrained to chairs were mostly aged individuals, most of them being older than 70 years, vulnerable to the development of ulcers, compromised by multiple comorbidities, with established chronic conditions, leading to reduced functional capacity and the need for care, thus depending on caregivers.

As for the evaluation of risk and presence of PU, the elderly had the lowest scores, hence the highest risks of developing PU. There was an expressive relationship between increased age and the occurrence of PU.

In terms of the evaluation of the basic measures for the prevention of PU, most participants did not use any, although 70% of the studied individuals were at risk of developing the wound, which implies that family members and caregivers lacked the necessary preparation for performing these prevention measures. In view of these results, it was identified there is a need for educational interventions among the studied population and health services. To do this, existing protocols and scales can be used by nurses for intervention measures that include prevention, treatment and rehabilitation. Therefore, it is central that the professionals involved in homecare as well as family members and caregivers receive the necessary education, as well as patients, when possible so this problem can be avoided or reduced.

REFERENCES

1. Organização Mundial da Saúde. Cuidados inovadores para condições crônicas: componentes estruturais de ação - relatório mundial. Brasília: Organização Mundial da Saúde; 2002.
2. Paz AA, Santos BRL. Programas de cuidado de enfermagem domiciliar. Rev Bras Enferm. 2003;56(5):538-41.
3. Pereira MJB, Mishima SM, Fortuna CM, Matumoto S, Teixeira RA, Ferraz CA, et al. Assistência domiciliar - Instrumento para potencializar processo de trabalho na assistência e na formação. In: Ministério da Saúde. Organização Pan-Americana da Saúde. Observatório de recursos humanos em saúde no Brasil: estudos e análises. Brasília: Ministerio da Saúde; 2004. v. 2. p. 71-80.
4. World Health Organization. Home-based long-term care: report of a WHO Study Group. Geneva; 2000. (WHO Technical Report Series 898).
5. Chaves LM, Grypdonck MH, Defloor T. Pressure ulcer prevention in homecare: do Dutch homecare agencies have an evidence-based pressure ulcer protocol? J Wound Ostomy Continence Nurs. 2006;33(3):273-80.
6. Prefeitura Municipal de Ribeirão Preto. Secretaria Municipal da Saúde. Plano de Saúde da Secretaria Municipal de Saúde de Ribeirão Preto, período 2005-2008. Ribeirão Preto: Secretaria Municipal da Saúde; 2005.
7. Chayamiti EMPC, Yano TK, Mabtum A, Carmo DHP, Garcia MLB, Villiod MCL, et al. Dificuldades para o uso de inovações: assistência às pessoas com feridas crônicas nas Unidades de Saúde de Ribeirão Preto. Rev Estima. 2007;5(3):22-8.
8. Landi F, Onder G, Russo A, Bernabei R. Pressure ulcer and mortality in frail elderly people living in community. Arch Gerontol Geriatr. 2007;44 Suppl 1:217-23.
9. Bergquist S. The quality of pressure ulcer prediction and prevention in home health care. Appl Nurs Res. 2005;18(3):148-54.
10. Caliri MHL. A utilização da pesquisa na prática clínica de enfermagem: limites e possibilidades [tese]. Ribeirão Preto: Escola de Enfermagem de Ribeirão Preto da Universidade de São Paulo; 2002.
11. Wound, Ostomy and Continence Nurses Society (WOCN). Guideline for prevention and management of pressure ulcers. Glenview, IL: Wound, Ostomy and Continence Nurses Society (WOCN); 2003. (WOCN Clinical Pratice Guideline; n. 2).
12. Santos VLCG, Caliri MH. Conceito e classificação de úlcera por pressão: atualização do NPUAP: tradução. Rev Estima. 2007;5(3):43-4.
13. Paranhos WY, Santos VLCG. Avaliação de risco para úlceras de pressão por meio da Escala de Braden, na língua portuguesa. Rev Escol Enferm USP. 1999;33(N Esp):191-206.
14. Ayello EA. Predicting pressure ulcer risk [Internet]. New York: New York University College of Nursing; 2007. [cited 2008 June 19]. Available from: http://www.hartfordign.org/publications/trythis
15. Camarano AA. Envelhecimento da população brasileira: uma contribuição demográfica. Rio de Janeiro: IPEA; 2002. (Texto para discussão, 858). [cited 2009 Mar 20]. Available from: http://www.alzheimer.med.br/demografia.pdf
16. Herédia VBM, Casara MB, Cortelletti IA. Impactos da longevidade na família multigeracional. Rev Bras Geriatr Gerontol. 2007;10(1):7-28.
17. Gordilho A, Nascimento JS, Silvestre J, Ramos LR, Freire MPA, Espindola N, et al. Desafios a serem enfrentados no terceiro milênio pelo setor saúde na atenção integral ao idoso. Rio de Janeiro: UnATI; 2000.
18. Smeltzer SC, Bare BG. Brunner & Suddarth: tratado de enfermagem médico-cirúrgica. 10a. ed. Rio de Janeiro: Guanabara Koogan; 2005. v. 2.
19. Lima FD, Lebrão ML, Duarte YAO. Contribuição dos arranjos domiciliares para o suprimento de demandas assistenciais dos idosos com comprometimento funcional em São Paulo. Rev Panam Salud Publica. 2005;17(5/6):370-8.
20. Stotts NA, Hopf HW. Facilitating positive outcomes in older adults with wounds. Nurs Clin North Am. 2005;40(2):267-79.
21. Souza DMST, Santos VLCG. Incidência de úlceras por pressão e fatores de risco em idosos institucionalizados. Rev Estima. 2006;4(1):45.