doi.org/10.1590/ce.v29i0.95807 Cogitare Enferm. 2024, v29:e95807

Cogitare Enfermagem

ORIGINAL ARTICLE

MICRO-COSTING OF THE DIRECT LABOR OF PAID HOME CARE WORKERS: A SINGLE CASE STUDY

HIGHLIGHTS

1. Micro-costing for paid home care workers.
2. Home care procedures for a dependent elderly woman.
3. Single case study on the cost of home care.
4. Direct labor costs for home care workers.

Cátia Correia Lima[1]
Antônio Fernandes Costa Lima[2]

ABSTRACT

Objective: To calculate the average direct costs related to the labor of a paid home caregiver in carrying out the procedures that make up comprehensive care for a dependent elderly woman. **Method:** quantitative, exploratory-descriptive micro-costing, in the form of a single case study, with data collected from August to September 2023 in a residence in a municipality in São Paulo, Brazil. **Results:** the average costs were US$ 0.39 for upper airway aspiration; US$ 1.41 for bed baths, bed-making, and dressing; US$ 0.43 for enteral catheter diet; US$ 0.07 for eye hygiene; US$ 0.13 for oral hygiene; US$ 0.15 for washing hair in bed; US$ 0.08 for enteral catheter medication; US$ 0.07 for decubitus changes; US$ 0.17 for diaper changes. It amounted to US$6.37/day. **Conclusion:** The contribution of this study is to propose a rational basis for establishing a fair price for procedures that are part of comprehensive care for the dependent elderly, carried out by paid home caregivers.

KEYWORDS: Aged; Caregivers; Activities of Daily Living; Direct Service Costs; Cost Control.

HOW TO REFERENCE THIS ARTICLE:
Lima CC; Lima AFC. Micro-costing of the direct labor of paid home care workers: a single case study. Cogitare Enferm. [Internet]. 2024 [cited "insert year, month and day"]; 29. Available from: https://doi.org/10.1590/ce.v29i0.95807.

[1]Universidade de São Paulo, Grupo de Pesquisa Dimensão Econômica do Gerenciamento em Enfermagem, São Paulo, SP, Brasil.
[2]Universidade de São Paulo, Escola de Enfermagem, São Paulo, SP, Brasil.

INTRODUCTION

The United Nations General Assembly declared the period from 2021 to 2030 as the Decade of Healthy Ageing, which collectively seeks to reduce health inequalities and improve the lives of older people, their families, and communities in four areas: changing the way we think, feel and act about age and age bias; developing communities in ways that promote the skills of older people; providing integrated person-centered care and responsive primary health services for older people; and providing older people who need it with access to quality long-term care[1].

Worldwide, the dependence on care due to the lack of autonomy of elderly individuals, as well as the type of diseases and illnesses that affect them, highlight the need for public policies that address the change in the epidemiological picture, physical and mental disabilities, and dependence on care to carry out basic daily actions, among other vicissitudes of this population. In Brazil, the exponential growth in elderly people will impact the financing of pensions, the Unified Health System (SUS), and family incomes. Among the actions required are developing appropriate methods and resources for managing diseases prevalent in this population[2].

As the population ages, caring for dependent elderly becomes a major societal problem. Nowadays, unpaid informal care provided by family and friends, most women, is more frequent, intense, and diversified than formal care provided by paid professional caregivers[3].

Many families are unable to take on the responsibility of caring for the elderly, either because of physical difficulties and limitations, given that the family members who stay at home may be other elderly people, or because they don't have time because they are adults who need to go away to work. As a result, they need to hire a professional to provide the care they need, and due to the limited family budget, they have often hired paid caregivers who help or carry out basic daily tasks for the elderly at a more affordable cost.

The Brazilian Classification of Occupations (CBO)[4] classifies caregivers for the elderly as CBO 5162-10, with the synonyms "Companion for the elderly", "Home caregiver for the elderly", "Institutional caregiver for the elderly", "Caregiver for the elderly and dependent". The general conditions for working in this occupation are: working in homes or institutions caring for the elderly, activities carried out with some form of supervision, as self-employed or salaried work, whose working hours can be full-time, shift work or fixed periods.

This occupation can be carried out by people with two years of experience in supervised roles in homes, public or private care institutions, or non-governmental organizations through basic professional training courses and training concurrent with or after the minimum training that ranges from the fourth grade of elementary school to high school[4].

It is regulated by Complementary Law 150 of June 1, 2015, which provides for the domestic work contract[5], defining the rights and duties of the category, including the minimum wage and the payment of overtime and explaining, in its second article states that the normal duration of domestic work shall not exceed eight hours a day and 44 hours a week.

The federal government sets the minimum wage annually, considering various economic and social factors. Therefore, the monthly salary paid to caregivers who work 44 hours a week must be at least that established by law[6].

It should be reiterated that, at certain times, families with budget restrictions may need the occasional help of a paid caregiver. However, it is difficult for family members and paid caregivers to establish a fair price for these activities. Given the contribution of proposing a rational basis for this purpose, this study aimed to calculate the average direct costs (ADC)

related to the direct labor (DHL) of a paid home caregiver in carrying out the procedures that comprise comprehensive care for a dependent elderly woman.

METHOD

This is a quantitative, exploratory-descriptive micro-costing study[7-8] , in the form of a single-case study[9], carried out at the home of a family living in one of the following areas municipality in the Metropolitan Region of São Paulo, Brazil, in the Microregion of Itapecerica da Serra, in the state of São Paulo.

The household, selected for convenience, has a family nucleus made up of three retired elderly people, two with chronic illnesses and regular medical care (a 73-year-old wife and 82-year-old husband); a 98-year-old woman (the wife's sister), in palliative care, totally dependent, with impaired verbal and non-verbal communication, who is periodically monitored by the municipal Home Health Care Service (SADS); and two adults (the couple's daughter and granddaughter), who work Monday to Friday during business hours, with the couple's daughter being legally responsible for monitoring medical issues relating to her parents and aunt's treatments. During the week, in the absence of her niece and great-niece, the 98-year-old is looked after entirely by a paid home care worker; at weekends, the couple's daughter takes over the care of her aunt.

The objectives of the SADS are a) to provide patients and caregivers with home care autonomy; b) to provide security and clarification regarding the care to be provided; c) to improve the quality of life of patients and caregivers; d) to reduce the length of stay in emergency rooms and hospitals; and f) to avoid hospitalizations and readmissions.

To receive SADS care, the patient must be referred by one of the municipality's health services. The SADS establishes a therapeutic plan for each patient with a beginning, middle, and end. On discharge, the patient is referred to the Basic Health Unit of reference, where they will continue the required follow-up.

To be included in the SADS service, the patient must be a municipality resident, have one or more caregivers, and be of medium or high complexity. It is aimed at users who have health problems and find it difficult or impossible to travel to a health unit and who need more frequent care, health resources, and continuous monitoring. Users may come from different services in the care network and need more frequent and intense care than the capacity of the basic network.

The SADS provides the material resources (e.g., diet bottles, macro-drop infusion equipment, syringes, gloves, suction probes, and diapers) and equipment needed to provide the care (e.g., portable aspirator) required at home.

The sample consisted of opportunities for direct, non-participant observation of the procedures involved in comprehensive care for an elderly woman in palliative care, provided by a paid home caregiver, in the mornings and afternoons, from Monday to Friday, according to the therapeutic plan established by the SADS. The sample size of observations to subsidize the costing, as previously advised by a professional statistician, was based on non-probabilistic sampling, given that the same paid home caregiver provided comprehensive care and, therefore, there were no significant variations in the time spent.

Data was collected in August and September 2023. Initially, the invitation to participate was formalized by presenting the research and clarifying doubts with the elderly woman's family members (sister, brother-in-law, and niece with legal responsibility) and paid home

caregiver. When the elderly woman's legal guardian and paid home caregiver agreed to participate, they were asked to sign the respective Free and Informed Consent forms.

The dates and times for the non-participant observations were agreed in advance with the family and the paid caregiver, respecting the habits and routines of the home, as well as the ethical precepts regarding the privacy of the elderly woman and maintaining the anonymity of all those involved.

The procedures that comprise the comprehensive care provided by the paid caregiver were observed remotely and at a previously agreed-upon location in the morning and afternoon to document the (timed) time spent. The timer started when the paid caregiver began organizing the resources required to carry out each procedure and stopped once the environment had been organized. Non-participant observation could be interrupted at any time at the request of the paid caregiver, family members (sister and brother-in-law), and the legal guardian (niece).

The study was based on micro-costing methodology, a cost estimate that uses detailed data on resource utilization and unit costs to generate accurate estimates of economic costs[7-8]. It measured the costs related to the paid caregiver's DHL and was subsidized by the direct costs benchmark.

Direct costs can be quantified and identified; they refer to monetary expenditure consumed in producing a product/service, in which identification with the product or department is possible[10].

In hospital organizations, direct costs consist of DHL, inputs, and equipment used in the care process[11]. DHL is related to the personnel who work directly on a product/service provided, making it possible to measure the time spent and identify the person doing the work[10].

To calculate the DHL costs for the procedures [] to be observed, the average dedication time of the professional category [] and the average unit wage bill [] were identified using equation[12]: .

The Brazilian currency, the real (R$), was used to calculate the DHL for each and for comprehensive care, and the data was processed using descriptive statistics.

Based on the amount paid by the contracting family to the paid home caregiver, R$2,000.00 (US$406.50), the values of R$85.40 (US$17.36)/day, R$12.20 (US$2.48)/hour and R$0.20 (US$0.04)/minute were calculated, considering a weekly working day of 41 hours. The DHL values were converted from reais (R$) to US dollars (US$) based on the exchange rate provided by the Central Bank of Brazil on August 31, 2023 (R$4.92/US$1.00).

The Research Ethics Committee of the School of Nursing of the Universidade de São Paulo approved the project under protocol number 6.254.981.

RESULTS

During August and September 2023, non-participant observations were made of the execution of the procedures that were part of the assistance required by Mrs. ACM by the paid home caregiver LP.

Mrs. ACM, 98, is black, single, and has no children; she has lived with her sister, brother-in-law, niece, and grandniece since 2010. She has the sequelae of two hemorrhagic strokes, one in 2018 and the other in 2019; she has swallowing difficulties, hemiplegia on the right, and total impairment of verbal and non-verbal communication and movement of upper and lower limbs; dementia, systemic arterial hypertension, and dyslipidemia. Bedridden since 2019, she was classified by the SADS interprofessional health team, which has been accompanying her at home since May 12, 2021, with total dependence on basic activities of daily living; she continues to use an enteral catheter to administer her diet and medications, and an egg-box mattress to prevent pressure injuries. They are unresponsive to verbal and tactile stimuli; there is a medium amount of secretion in the upper airways; bladder and intestinal elimination are preserved.

LP, 44, black, married with four children, has been working as a paid home caregiver since the end of the Informal Caregivers for the Elderly and Dependent People Course in 2019, given by a University Hospital linked to a public university, in the Diffusion modality.

Ten observations were made of each procedure: upper airway suctioning (with a range of 8 to 11 minutes and an average of 9.5 minutes), bed bath, bed-making, and dressing (with a range of 30 to 40 minutes and an average of 34.8 minutes); enteral catheter diet (with a range of 10 to 12 minutes and an average of 10.7 minutes); eye hygiene (with a range of 1.5 to 2 minutes and an average of 1.8 minutes); oral hygiene (with a range of 3 to 4 minutes and an average of 3.3 minutes); washing hair in bed (with a variation of 3 to 5 minutes and an average of 3.6 minutes); medication via enteral catheter (with a variation of 1.5 to 3 minutes and an average of 1.9 minutes); changing decubitus and positioning with pillows (with a variation of 1.5 to 2 minutes and an average of 1.85 minutes); and changing diapers (with a variation of 3 to 5 minutes and an average of 4.1 minutes).

As shown in Table 1, the procedures with the highest ADCs were bed bathing, bed-making, and dressing (US$1.41 – SD=0.14); enteral catheter diet administration (US$0.43 - SD=0.03); and upper airway suction (US$0.39 - SD=0.04).

Table 1 - Distribution of the procedures that make up comprehensive care for an elderly woman dependent, according to the average costs, standard deviations, minimums, and maximums in dollars related to the DHL of the paid home caregiver. São Paulo, SP, Brazil, 2023.

Procedures	Average Cost - Standard Deviation (US$*)	Minimum Cost (US$*)	Maximum Cost (US$*)
Upper airway aspiration	0.39 - 0.04	1.60	2.20
Bathing in bed, tidying the bed, and dressing	1.41 - 0.14	1.22	1.62
Enteral catheter feeding	0.43 - 0.03	0.40	0.49
Eye hygiene	0.07 - 0.01	0.06	0.08
Oral hygiene	0.13 - 0.02	0.12	0.16
Bed hair washing	0.15 - 0.03	0.12	0.20
Medication via enteral catheter	0.08 - 0.02	0.06	0.12
Change of decubitus and positioning with pillows	0.07 - 0.01	0.06	0.08
Changing diapers	0.17 - 0.04	0.12	0.20

* Central Bank of Brazil conversion rate, as of August 31, 2021, R$4.92/US$1.00.

Source: The authors (2023)

Considering the average frequency of procedures and the ADCs calculated, Chart 1 shows that the ADC for the daily care provided corresponded to US$6.37, with the following ADCs standing out: bed bathing, bed-making, and dressing (US$1.41); administration of diet via enteral catheter (US$1.29); upper airway suction (US$1.17); administration of medication via enteral catheter (US$0.72); and diaper change (US$0.68).

Chart 1 - Distribution of the procedures that make up comprehensive care for an elderly woman dependent on daily frequency and average and total direct costs in dollars. They are Paulo - SP, Brazil, 2023.

Procedures	Average frequency times/7 hours	ADC (US$*)	ADC Total (US$*)
Upper airway aspiration	3	0.39	**1.17**
Bathing in bed, tidying the bed, and dressing	1	1.41	**1.41**
Enteral catheter feeding	3	0.43	**1.29**
Eye hygiene	3	0.07	**0.21**
Oral hygiene	3	0.13	**0.39**
Bed hair washing	1	0.15	**0.15**
Medication via enteral catheter	9	0.08	**0.72**
Change of decubitus and positioning with pillows	5	0.07	**0.35**
Changing diapers	4	0.17	**0.68**
Total	-----	-----	**6.37**

* Central Bank of Brazil conversion rate on August 31, 2021, R$4.92/US$1.00.

Source: The authors (2023)

DISCUSSION

Population aging is an important global demographic challenge[1,13-16]. It requires careful preparation, encompassing behavioral changes, investment in human capital, infrastructure and technological innovations, and political and institutional reforms[13]. From this perspective, over time, the growing complexity of the care required by dependent older people has increased the scope of the responsibilities of caregivers who need access to high-quality, evidence-based interventions designed to mitigate or prevent adverse health effects[14].

By 2030, it is predicted that the real challenges of caring for older people will cover the following aspects: ensuring that society develops payment and insurance systems for long-term care that work better than existing ones; taking advantage of advances in medicine and behavioral health to keep older people as healthy and active as possible; changing the way society organizes community services so that care is more accessible; and altering the cultural view of aging to ensure that all ages are integrated into the fabric of community life[15].

Global population aging has required increasing attention to supporting older people to live at home in the community as they experience functional and health changes. Older people with frailty often need a variety of support and services. Still, the direct costs associated with them are often not accounted for in the literature on health and social care[16].

Given this knowledge gap, we demonstrated the applicability of the micro-costing method, which evaluates cost components from the bottom up[8], to measure the ADCs related to the DHL of a paid home caregiver assisting a totally dependent elderly woman. By detailing the resources required and unit cost data, this method generates accurate information on costs, which can be used to inform decision-making on changes to care processes[17-19].

Low ADCs were obtained for the DHL of paid home caregivers, which were conditioned and determined by the amount of pay they received and the time they spent carrying out the procedures that comprise comprehensive care. Notably, she has the training and experience to support her qualified performance, resulting in a rational use of the time spent.

During the non-participant observations, it was noted that the paid home caregiver carried out the procedures with technical adequacy, safeguarding the elderly woman's privacy and maintaining welcoming and respectful communication, even if the elderly woman didn't react. This performance is understood to be associated with the knowledge acquired in the Informal Caregivers of the Elderly and Dependent Persons Dissemination Course, previous work experience, and their values.

Between the observation of one procedure and another, the paid caregiver was attentive to the lighting and temperature conditions in the elderly woman's room, was concerned about her comfortable position in bed, and kept the television on a religious channel, which the elderly woman watched when she was in better health and interaction. It should be noted that the time spent on these activities was not timed but is part of comprehensive care and can be accounted for in future studies, as well as the direct supervision between procedures.

It appears that the paid caregiver's competent, empathetic, and welcoming approach had a favorable impact on reducing intangible costs, defined as those associated with pain and physical and psychological suffering resulting from a certain debilitated health condition. Measuring intangible costs is a challenge, given that, although they are identifiable, they are not easily quantified or measured in monetary terms[20-21].

This single-case study was a carefully delimited, clearly defined investigation with specifics of the subject explained in the real context in which it takes place. This approach was used to understand a specific process in the social complexity in which it manifests itself[9], highlighting the financial aspects associated with the work of a paid home caregiver for the elderly.

It should be reiterated that although the choice of home was made for convenience, it was based on the fact that the paid caregiver had adequate training and experience in caring for the elderly at home and developed care actions in line with the therapeutic plan established by SADS. Even during the non-participant observations, it was possible to follow visits by the SADS team and see how efficient the collaborative interaction between the caregiver and the health professionals, especially the nurses, was. It should be made clear that the comprehensive care required by the elderly woman could even be provided exclusively by a family caregiver, provided they are properly trained and have the support of the SADS team.

A study that aimed to understand the content and strategies that guided the formulation of the so-called "dependency policies" in the European Union, highlighting some countries in search of possible guidelines for the debate and formulation of actions on the same

issue in Brazil, states that successful countries in supporting dependent elderly people advocate the following guidelines: balance between public, private, social and family responsibilities; understanding that keeping the elderly in their own homes is preferable to institutionalization; but for home care to be adequate, it is necessary to invest in family caregivers (training in practices and financial support)[22].

It is known that Brazil still lacks the development of sustainable public policies to meet the progressive demands for care for the elderly, especially those who are dependent. Despite the demographic transition and the social and economic changes associated with aging, the Brazilian state still places the responsibility for care on families, adopting only specific actions to deal with specific situations in which it is impossible to delegate this duty to the family or the community[2].

Although it is not the central approach of this study, it should be noted that the work of paid home caregivers, with due regard for political, social, and cultural proportions and challenges, is also a strategy adopted in several other countries[23-24].

As an example, in Japan, the world's oldest society and with an aging population expected to progress even further, a study that explored unique data from the Long-Term Work and Family Care Survey indicated that although efforts are currently being made in many countries to create flexible work environments, little is known about their effectiveness in adapting to the needs of working caregivers[23].

When comparing the main points of convergence and divergence in the work of paid caregivers of the elderly in Brazil, France, and Japan, research indicated that in all three countries, this is a profession that is not highly valued, with relatively low salaries and little social recognition, possibly because care is traditionally carried out by women free of charge in the domestic and family spheres[24], similar to the profile of the paid home caregiver in this study.

Faced with this situation and considering the knowledge and skills required of paid caregivers in the home to provide assistance to frail elderly people with chronic illnesses and comorbidities who are dependent on them to carry out basic activities of daily living, more comprehensive micro-costing studies are needed. This will also support the necessary review of the low salaries currently practiced.

A limitation of this single-case study is that only one paid caregiver was observed. However, its implementation demonstrates the possibility of using the micro-costing methodology to calculate the ADCs relating to the DHL of paid caregivers in providing care for the elderly, which can be reproduced in other households or care contexts, such as long-term care institutions.

CONCLUSION

Considering the average frequency of procedures carried out on the elderly woman over a 7-hour day, the total ADC was US$6.37, with the most significant contributions coming from bed baths, bed-making, and dressing (US$1.41), diet administration via enteral catheter (US$1.29), upper airway suction (US$1.17), medication administration via enteral catheter (US$0.72), and diaper changes (US$0.68).

This study's contribution is to propose a rational basis for establishing the fair pricing of procedures that are part of comprehensive care for totally dependent elderly people carried out by paid home caregivers.

ACKNOWLEDGMENTS

This study was supported by the Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq) – Brazil, Program for Scientific Initiation and Initiation in Technological Development and Innovation of the University of São Paulo, CNPq/PIBIC, 2023.

REFERENCES

1. World Health Organization (WHO). Ageing and health. International Monetary Fund. [Internet]. 2022 [cited 2023 Apr. 25]. Available from: https://www.who.int/news-room/fact-sheets/detail/ageing-and-health

2. Lucchesi G. Envelhecimento populacional: perspectivas para o SUS. In: Pinheiro A, Andrés A, Deud CAF, Melo CVB, et al. Brasil 2050 [recurso eletrônico]: desafios de uma nação que envelhece. [Internet]. Brasília: Câmara dos Deputados, Edições Câmara; 2017 [cited 2023 Apr. 25]. (Série estudos estratégicos; n.8 PDF) Avaliable from: https://www5.pucsp.br/catedraignacysachs/downloads/brasil-2050-desafios-de-uma-nacao-que-envelhece.pdf#page=41

3. Roquebert Q, Fontaine R, Gramain A. Caring for a dependent elderly parent: care arrangements and sibling interactions in France. Population [Internet]. 2018 [cited 2023 Apr. 25] 73(2):307-32. Available from: https://www.cairn-int.info/journal-population-2018-2-page-307.htm

4. Ministério do Trabalho (BR). Classificação Brasileira de Ocupações - CBO [Internet]. 2002 [cited 2023 Apr 25]. Avaliable from: http://www.mtecbo.gov.br/cbosite/pages/pesquisas/BuscaPorTituloResultado.jsf

5. Brasil. Presidência da República. Casa Civil. Subchefia para Assuntos Jurídicos. Lei Complementar 150 de 01 de Junho de 2015. Dispõe sobre o contrato de trabalho doméstico [...]. [Internet]. 2015 [cited 2023 Apr. 25]. Avaliable from: https://legis.senado.leg.br/norma/572905#

6. SOS empregador doméstico. Salário cuidador de idosos: custos e remuneração [Internet]. 2023 [cited 2023 Apr. 25]. Avaliable from: https://blog.sosempregadordomestico.com.br/salario-cuidador-de-idosos/#

7. Xu X, Lazar CM, Ruger JP. Micro-costing in health and medicine: a critical appraisal. Health Econ Rev [Internet]. 2021 [cited 2023 Aug. 30];11:1-8. Avaliable from: https://doi.org/10.1186/s13561-020-00298-5

8. Ministério da Saúde (BR). Secretaria de Ciência, Tecnologia e Insumos Estratégicos. Departamento de Gestão e Incorporação de Tecnologias em Saúde. Diretriz metodológica: estudos de microcusteio aplicados a avaliações econômicas em Saúde. [Internet]. Brasília: Ministério da Saúde; 2021 [cited 2023 Aug. 30]. 71p. Avaliable from: https://rebrats.saude.gov.br/images/Documentos/2022/20220419_diretrizes_microcusteio_15062021.pdf

9. Yin, R. K. Case study research and applications: design and methods. 6. ed. Thousand Oaks, CA: Sage; 2018.

10. Martins E. Contabilidade de custos. 11. ed. São Paulo: Atlas; 2018.

11. Lima AFCL, Castilho V, Fugulin FMT. Gerenciamento de custos nos serviços de enfermagem. In: Kurcgant P, organizadora. Gerenciamento em enfermagem. 4. ed. Rio de Janeiro: Guanabara Koogan; 2023.p. 172-86.

12. Lima AFC. Direct costs of integrated procedures of conventional hemodialysis performed by nursing professionals. Rev Latino-Am Enfermagem [Internet]. 2018 [cited 2022 May 6];26:e2944. Available from: https://doi.org/10.1590/1518-8345.1812.2944

13. Bloom DE, Zucker LM. Aging is the real population bomb. International Monetary Fund. Finance & Development. Analytical Series [Internet]. 2023 [cited 2023 Apr. 25]. Available from: https://www.imf.org/en/Publications/fandd/issues/Series/Analytical-Series/aging-is-the-real-population-bomb-bloom-zucker

14. National Kibray od Medicine. National Center for Biotechnology Information. Families caring for an aging America. [Internet]. Washington (DC): National Academies Press (US); 2016 [cited 2023 Aug. 25]. Available from: https://www.ncbi.nlm.nih.gov/books/NBK396398/

15. Zucker LM, Bloom DE. Aging is the real population bomb. Finance & Development. [Internet]. 2023 Aug [cited 2023 Aug. 29];58-61. Avaliable from: https://www.imf.org/en/Publications/fandd/issues/Series/Analytical-Series/aging-is-the-real-population-bomb-bloom-zucker

16. Moody E, Ganann R, Martin-Misener R, Ploeg J, Macdonald M, Weeks LE, Orr E, McKibbon S, Jefferies K. Out-of-pocket expenses related to aging in place for frail older people: a scoping review. JBI Evid Synth. [Internet]. 2022 Feb [cited 2023 Aug. 30];20(2):537-605. Avaliable from: https://pubmed.ncbi.nlm.nih.gov/34738979/

17. Xu X, Lazar CM, Ruger JP. Micro-costing in health and medicine: a critical appraisal. Health Econ Rev. [Internet]. 2021 [cited 2023 Aug 30];11(1). Avaliable from: https://doi.org/10.1186/s13561-020-00298-5

18. Leemans SJJ, Partington A, Karnon J, Wynn MT. Process mining for healthcare decision analytics with micro-costing estimations. Artificial Intelligence in Medicine [Internet]. 2023 [cited 2023 Aug. 30];135. Avaliable from: https://doi.org/10.1016/j.artmed.2022.102473

19. Zanotto BS, Etges APB da S, Siqueira AC, Silva RS da, Bastos C, Araujo AL de, et al. Economic evaluation of a telemedicine service to expand primary health care in Rio Grande do Sul: TeleOftalmo's microcosting analysis. Ciênc saúde coletiva [Internet]. 2020 [cited 2023 Aug 30];25(4):1349–60. Available from: https://doi.org/10.1590/1413-81232020254.28992019

20. Fautrel B, Boonen A, Wit M de, Grimm S, Joore M, Guillemin F. Cost assessment of health interventions and diseases. RMD Open. [Internet]. 2020 [cited 2023 Aug. 30];6: e001287. Avaliable from: http://dx.doi.org/10.1136/rmdopen-2020-001287

21. Meng F, Nie P, Sousa-Poza A. The intangible costs of overweight and obesity in Germany. Health Econ Rev [Internet]. 2023 [cited 2023 Aug. 30];13:14. Avaliable from. https://doi.org/10.1186/s13561-023-00426-x

22. Minayo MCS, Mendonça JMB, Sousa GS, Pereira TFS, Mangas RMN. Support policies for dependent older adults: Europe and Brazil. Ciênc. Saúde Colet. [online]. 2021 [cited 2024 Apr. 23];26 (01):137-46. Available from: https://doi.org/10.1590/1413-81232020261.30262020

23. Niimi Y. Juggling paid work and elderly care provision in Japan: does a flexible work environment help family caregivers cope? J JPN Int Econ [Internet]. 2020 [cited 2024 Apr. 23];101171. Available from: https://doi.org/10.1016/j.jjie.2021.101171

24. Hirata H. Comparando relações de cuidado: Brasil, França, Japão. Estud av [Internet]. 2020 [cited 2024 Apr. 24];34(98):25–40. Available from: https://doi.org/10.1590/s0103-4014.2020.3498.003

Received: 17/10/2023
Approved: 30/04/2024
Editora associada: Dra. Susanne Betiolli

Associate editor:
Antônio Fernandes Costa Lima
Escola de Enfermagem da Universidade de São Paulo
Av. Dr. Enéas de Carvalho Aguiar, 419, Cerqueira Cesar, São Paulo, SP
E-mail: tonifer@usp.br

Role of Author:
Substantial contributions to the conception or design of the work; or the acquisition, analysis, or interpretation of data for the work - **Lima CC; Lima AFC**. Drafting the work or revising it critically for important intellectual content - **Lima CC; Lima AFC.** Agreement to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved - **Lima CC; Lima AFC**. All authors approved the final version of the text.

ISSN 2176-9133