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REVIEW

COST AND EFFECTIVENESS OF HOME CARE SERVICES MODALITIES FOR THE OLDER POPULATION: INTEGRATIVE LITERATURE REVIEW

CUSTO E EFETIVIDADE DE MODALIDADES DE SERVIÇOS DE ATENÇÃO DOMICILIAR PARA A POPULAÇÃO IDOSA: REVISÃO INTEGRATIVA DA LITERATURA

COSTO Y EFECTIVIDAD DE LAS MODALIDADES DE SERVICIOS DE ATENCIÓN DOMICILIARIA PARA LA POBLACIÓN MAYOR: REVISIÓN INTEGRADORA DE LA LITERATURA

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ABSTRACT

Objective: to analyze the modalities of AD services aimed at the older people, identifying the offer of services at home and its results regarding costs and effectiveness. Method: literature review carried out in the databases of Literatura Latino-americana e do Caribe em Ciências da Saúde (LILACS) and Indice Bibliográico Español en Ciencias de la Salud (IBECS) via Biblioteca Virtual da Saúde (BVS), Medline via Pubmed, Scopus, Web of science, Cumulative Nursing and Allied Health Literature (CINAHL) and Cochrane. Sixteen studies published from 2008 to 2017 were included and submitted to content analysis. Results: the analysis showed that there are different types of services that can be offered to the older population, including home care. The modalities identified were home visiting services, home hospitalization; long-term institutional services; long-term support services that combine home and community care, and institutional care transition services. These modalities varied according to the forms of organization, target audience, results achieved, and associated costs. The most cost-effective services for the older adults were those that included home intervention for both acute and chronic conditions; home care; combined home and community intervention services, transitional care institutions, and long-term care facilities. Conclusion: home care, especially those that offer interventions at home, showed better results capable of reducing overall costs for health systems and can be effective as it responds to the demands for care required by older people.

Keywords: Home Care Agencies; Home Care Services; Health Care Costs; Costs and Cost Analysis; Health Expenditures; Aged.

RESUMO

Objetivo: analisar as modalidades de serviços de AD direcionadas ao público idoso, identificando a oferta de serviços no domicílio e seus resultados referentes aos custos e a efetividade. Método: revisão da literatura realizada nas bases de dados Literatura Latino-americana e do Caribe em Ciências da Saúde (LILACS) e Indice Bibliográico Español en Ciencias de la Salud (IBECS) via Biblioteca Virtual da Saúde (BVS), Medline via Pubmed, Scopus, Web of science, Cumulative Nursing and Allied Health Literature (CINAHL) e Cochrane. Foram incluídos 16 estudos publicados no período de 2008 a 2017, submetidos à análise de conteúdo. Resultados: a análise evidenciou que há diferentes modalidades de serviços que podem ser ofertados para a população idosa, incluindo o cuidado no domicílio. As modalidades identificadas foram serviços de visitas domiciliares, internação domiciliar; serviços institucionais de longa permanência; serviços de suporte de longo prazo que associam cuidado no domicílio e cuidado comunitário e serviços institucionais de transição de cuidado. Essas modalidades variaram segundo as formas de organização, público-alvo, resultados alcançados e custos associados. Os serviços mais custo-efetivos para os idosos foram os que incluem intervenção no domicílio tanto para condições agudas quanto crônicas; internação domiciliar; serviços combinados de intervenção domiciliar e comunitária, instituições de transição de cuidado e instituições de longa permanência. Conclusão: a atenção domiciliar, especialmente aquelas que ofertam intervenções no domicílio, mostrou-se com melhores resultados capazes de reduzir os custos gerais para os sistemas de saúde e pode ser efetiva na medida em que responde às demandas por cuidados requeridas pelos idosos.

Palavras-chave: Assistência Domiciliar; Serviços de Assistência Domiciliar; Custos de Cuidados de Saúde; Custos e Análise de Custo; Gastos em Saúde; Idosos.

RESUMEN

Objetivo: analizar las modalidades de los servicios de AD dirigidos al público anciano, identificando la oferta de servicios a domicilio y sus resultados en cuanto a costos y efectividad. Método: revisión de la literatura realizada en las bases de datos de Literatura Latinoamericana y Caribeña en Ciencias de la Salud (LILACS) e Índice Bibliográfico Español en Ciencias de la Salud (IBECS) vía Biblioteca Virtual en Salud (BVS), Medline vía Pubmed, Scopus, Web of science, Cumulative Nursing and Allied Health Literature (CINAHL (CINAHL) y Cochrane. Se incluyeron 16 estudios publicados de 2008 a 2017, sometidos a análisis de contenido. Resultados: el análisis mostró que existen diferentes tipos de servicios que se pueden ofrecer a la población anciana, incluida la atención domiciliaria. Las modalidades identificadas fueron servicios de visitas domiciliarias, atención domiciliaria; servicios institucionales a largo plazo; servicios de apoyo

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a largo plazo que combinan atención domiciliaria y atención comunitaria, y servicios de transición de atención institucional. Estas modalidades variaron según las formas de organización, público objetivo, resultados obtenidos y costos asociados. Los servicios más rentables para los ancianos fueron los que incluían intervención domiciliaria tanto para enfermedades agudas como crónicas; cuidados en el hogar; servicios combinados de intervención en el hogar y la comunidad, instituciones de atención de transición e instalaciones de atención a largo plazo. Conclusión: la atención domiciliaria, especialmente aquellos que ofrecen intervenciones en el hogar, ha demostrado tener mejores resultados capaces de reducir los costos globales para los sistemas de salud y puede ser eficaz en la medida en que responda a las demandas de atención que requieren las personas mayores.

Palabras clave: Agencias de Atención a Domicilio; Servicios de Atención de Salud a Domicilio; Costos de la Atención en Salud; Costos y Análisis de Costo; Gastos en Salud; Anciano.

INTRODUCTION

The growth in the number of older people in the world and Brazil is a reality that demands health services and social policies. The provision of health services with cost-effective results for this population is a challenge in different parts of the world, constituting global issues.[1-3]

It is estimated that in 2030 the older adults will represent 1.4 billion of the world population and in 2050 they will be 2.1 billion when one in six people will be 65 years old or more. In 2100, the planet could reach 3.1 billion older people, considering a growth rate of approximately 3% per year, which is faster than in the younger age groups.[4] In the region of the Americas, in the next three decades, the number of people aged 60 and over with long-term care needs will triple, from 8 million today to approximately 30 million by 2050.[5]

Brazil continues to maintain the trend towards aging. According to the projection of the Instituto Brasileiro de Geografia e Estatística (IBGE),[5] it is estimated that in 2060 this segment will represent 73.5 million of the population. In this context, it is necessary to have a health care model for the older population that incorporates a set of actions and services to preserve the quality of life and social participation, centered on the person, his needs, and characteristics.[6] This model indicates home care (HC) as one of the care possibilities.[6]

HC is a caring alternative to expand the access of the older population, especially people with disabilities or dependencies, chronic diseases, and in situations of social vulnerability and/or context of precarious social and economic conditions.[3,7,8] The HC is also a potential offer to strengthen bonds, reduce complications related to comorbidities, reduce hospitalizations and provide a dignified death option for older adults.[8]

HC is organized in different modalities. In the Brazilian health system, outpatient home care with home care provided by a multidisciplinary team through home care services (HCS) and home hospitalization prevail, adopted by hospitals, private companies, or health plan operators. Outpatient home care is more widespread in the country and home hospitalization is concentrated in certain regions.[9]

Apesar da sua expansão, nos últimos anos questiona-se se o domicílio é de fato o melhor lugar para envelhecer, devido à falta de recursos de apoio, escassez de cuidadores informais qualificados e possibilidade de abusos físicos, verbais e financeiros.[2] Assim, questiona-se quais os custos e a efetividade de modalidades de serviços de AD para atendimento à população idosa quando comparadas a outras modalidades de atenção?

Despite its expansion, in recent years it has been questioned whether the home is the best place to grow old, due to the lack of support resources, lack of qualified informal caregivers, and the possibility of physical, verbal, and financial abuse.2 Thus, it questions What are the costs and effectiveness of AD service modalities to care for the elderly population when compared to other care modalities?

This study aimed to analyze the modalities of HC services aimed at the older adult population, identifying the offer of services and their results regarding costs and effectiveness. The study is justified by the need to produce evidence on the cost-effectiveness of home care, especially for the older population. Despite the growing production on the potential of home services as a less expensive alternative to other care modalities, there is still insufficient evidence on the clinical and economic benefits of this intervention.

METHOD

Type of study

This is an integrative literature review. The guiding question of the review was created considering the acronym PICO[10] in an adapted way, in which the population (older adults) was used; intervention (home care); control (other care modalities) and result/outcomes (costs and effectiveness). Thus, the question formulated was: what are the costs and effectiveness of HC service modalities to care for the older population when compared to other care modalities?

Searching strategy

The descriptors adopted in Portuguese and English were: Assistência Domiciliar/Serviços de Assistência Domiciliar / Serviços Hospitalares de Assistência Domiciliar/ Avaliação de Custo-Efetividade/Custos e Análise de Custo/Gastos em saúde/Análise Custo-Benefício/Análise Custo-Eficiência/Custos de Cuidados de Saúde/Tempo de Internação/Home Nursing/Home Care Services/Home Care Services, Hospital-Based/Cost-Benefit Analysis/Health Expenditures/Health Care Costs/Costs and Cost Analysis/ Length of Stay.

The searching was carried out in the Literatura Latino-Americana e do Caribe em Ciências da Saúde (LILACS) and Indice Bibliográico Español en Ciencias de la Salud (IBECS) via Biblioteca Virtual da Saúde (BVS), Medline via Pubmed, Scopus, Web of Science, Cumulative Nursing and Allied Health Literature (CINAHL) and Cochrane, according to the searching strategies defined with the help of a librarian, shown in Figure 1.

The search took place between August and September 2018. The strategy included the retrieval of articles from the 10-year period - from 2008 to 2018 -, when the search was carried out.

The search took place between August and September 2018. The strategy included the retrieval of articles in 10 years - from 2008 to 2018 -when the search was carried out.

Sample selection and definition criteria

The inclusion criteria defined were: addressing the cost and length of stay comparing HC to other care services; published in Portuguese, English, and Spanish in the last 10 years.

In the first phase, we examined the articles found in the defined bases after applying the searching strategies, based on the title and abstract. In this phase, we excluded duplicate records. In the second, we excluded articles that, when reading the titles or abstract, did not address elements of cost and effectiveness in HC. In the third phase, we excluded articles that, after reading in full, did not allow the comparison of HC with other care modalities. Finally, in the fourth phase, we excluded articles that did not specifically deal with modalities aimed at the elderly population.

In the analysis process for the inclusion of the articles, two reviewers analyzed the texts independently. In the case of possible disagreements, we included a third reviewer in the process and he analyzed the results of the first two reviewers, deciding whether or not to in-

Figure 1 - Database searching strategies, Belo Horizonte, 2020

Database	Strategies
LILACS, IBECS (BVS)	"Assistência Domiciliar" OR "Home Nursing" OR "Atención Domiciliaria de Salud" OR "Assistência Domiciliária" OR "Cuidados Domiciliares de Saúde" OR "Serviços de Assistência Domiciliar" OR "Home Care Services" OR "Servicios de Atención de Salud a Domicilio" OR "Cuidado Domiciliar" OR "Serviços de Cuidados Domiciliares" OR "Serviços Residenciais Terapêuticos" OR "Serviços Hospitalares de Assistência Domiciliar" OR "Home Care Services, Hospital-Based" OR "Servicios de Atención a Domicilio Provisto por Hospital" OR "Serviços de Assistência Hospitalar no Domicílio" OR "Assistência Domiciliar Oferecida por Hospital" OR "Serviços de Assistência Domiciliar Oferecida por Hospital" OR "Internação domiciliar") AND (tw: "Custos de Cuidados de Saúde" OR "Health Care Costs" OR "Costos de la Atención en Salud" OR "Custos de Cuidados Médicos" OR "Custos de Tratamento" OR "Cost-Effectiveness Evaluation" OR "Evaluación de Costo-Efectividad" OR "Avaliação de Custo-Efetividade" OR "Costs and Cost Analysis" OR "Costos y Análisis de Costo" OR "Custos e Análise de Custo" OR "Gastos em Saúde" OR "Health Expenditures" OR "Gastos en Salud" OR custeio OR despesas OR gastos OR "Análise Custo-Benefício" OR "Cost-Benefit Analysis" OR "Análisis Costo-Beneficio" OR "Análise de Custo-Benefício" OR "Análise de Custo-Efetividade" OR "Custo-Efetividade" OR "Dados de Custo-Benefício" OR "Cost Efficiency Analysis" OR "Análisis Costo-Eficiencia" OR "Análise Custo-Eficiência" OR "Custos de Cuidados de Saúde" OR "Health Care Costs" OR "Costos de la Atención en Salud") AND (tw: "Tempo de Internação" OR "Length of Stay" OR "Tiempo de Internación")) AND (instance:"regional") AND (year_cluster:("2014" OR "2016" OR "2015" OR "2013" OR "2017" OR "2018" OR "2012" OR "2011" OR "2010" OR "2009" OR "2008"))) AND (instance:"regional")) AND (instance:"regional")
MEDLINE (PUBMED)	"Home Nursing"[Mesh:NoExp]) OR "Home Care Services"[Mesh:NoExp]) OR "Home Care Services, Hospital-Based"[Mesh])) OR ("Home Nursing"[Title/Abstract] OR "Home Care Services"[Title/Abstract] OR "Home Care Services, Hospital-Based"[Title/Abstract]))) AND (((((("Cost-Benefit Analysis"[Mesh]) OR "Costs and Cost Analysis"[Mesh:NoExp]) OR "Health Care Costs"[Mesh:NoExp])) OR ("Cost-Benefit Analysis"[Title/Abstract] OR "Costs[Title/Abstract] AND Cost Analysis"[Title/Abstract] OR "Health Care Costs"[Title/Abstract] OR "Cost Efficiency Analysis"[Title/Abstract] OR "Cost-Effectiveness Evaluation"[Title/Abstract] OR "Health Expenditures"[Title/Abstract]))) AND (("Length of Stay"[Mesh]) OR "Length of Stay"
SCOPUS, WEB OF SCIENCE, CINAHL e COCHRANE	"Home Nursing" OR "Home Care Services" OR "Home Care Services, Hospital-Based") AND ("Cost-Benefit Analysis" OR "Cost Efficiency Analysis" OR "Cost-Effectiveness Evaluation" OR "Health Expenditures" OR "Health Care Costs" OR "Costs And Cost Analysis") AND ("Length of Stay")

clude the article. The process was performed manually from an Excel spreadsheet.

Data collection and analysis

To extract data from the articles in full, we elaborated an analysis matrix containing the following information: participant characteristics, study location, type of study and data collection and analysis techniques, HC modality, cost components, outcome/effectiveness, the perspective of the analysis and main findings of the study. The texts included were critically analyzed considering relevance, validity, and reliability[10]. They were also categorized according to the level of evidence.[10]

The analysis was built considering the guiding question of the study and organized into two categories: modalities of services aimed at the older population and home care and service provision and the situations and health conditions of the older population assisted at home: aspects regarding costs and effectiveness. Then, the data extracted from the included articles and the authors' knowledge were compared to synthesize the evidenced knowledge and reveal the elements that can contribute to the policies and practices in home care for older people.

Figure 2 shows the flow of the review process.

RESULTS

Figure 3 shows a summary of the results.

We excluded 77 of the 210 found because they were duplicated in other databases. Thus, 133 articles remained for reading titles and abstracts. Of these, 62 were excluded for not addressing the theme of the review, leaving 71 for the stage of data collection and analysis. Of these, 19 were excluded in the reading phase in full because they did not address cost or effectiveness data. Of the remaining 52, 16 specifically addressed mo-

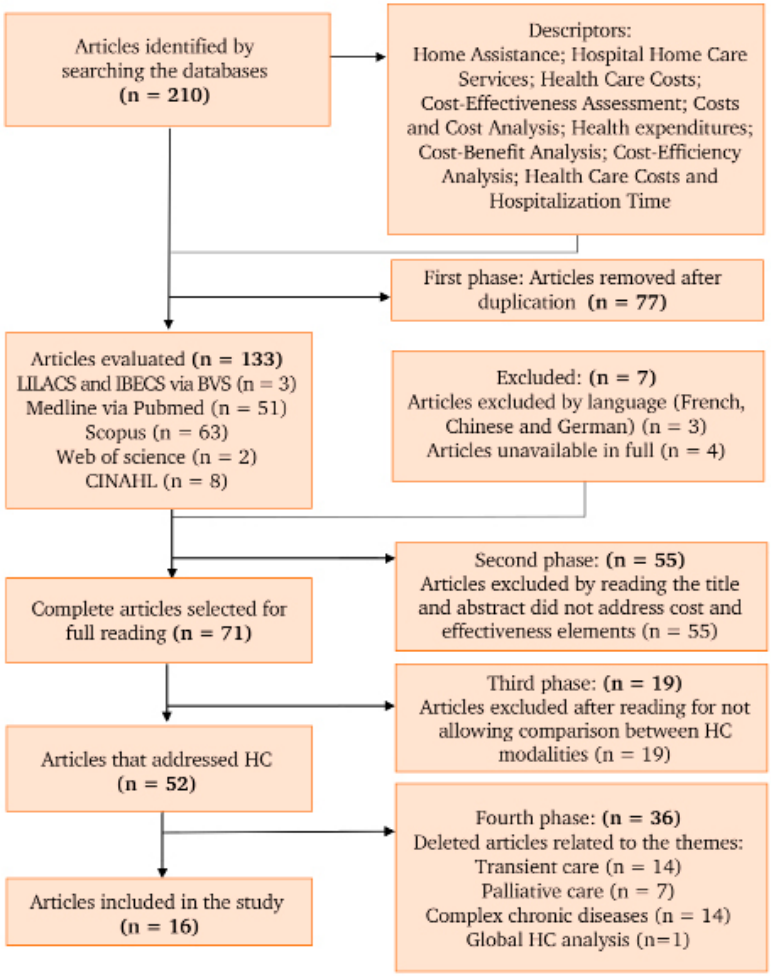

Figure 2 - Flowchart of article selection. Belo Horizonte, 2020
Source: elaborated by the researchers (own authorship).

Figure 3 - Characterization of the studies included in the review

Code	Type of study/ evidence level	Nature of the care required	HC modality	Scenario	Sample	Cost and effectiveness results
I[11]	Meta-analysis (I)	Chronic and treble	Home hospitalization	12 countries (Australia, Canada, Norway, Sweden, Thailand, UK, Chile, Spain, Netherlands, Italy, New Zealand, Turkey)	4,746	It did not reduce mortality, hospital readmissions, or functionality. Average reduction of 7 days of hospitalization. Improved patient satisfaction.
II[12]	Retrospective Cohort (IV)	Intensive acute care in general	Home care/care services with home visits x Older adults institutionalization services	USA	1,291	The home intervention model proved to be less effective than institutionalization for the length of stay, hospitalizations, and demand for emergency services. Long-term care costs were US$4,582 higher for Nursing home residents than for home care recipients.
III[13]	Quasi-experimental longitudinal (III)	Chronic orthogeriatric conditions	Home hospitalization	Spain	367	There are no significant differences in functional gain between home and hospital patients. Lower average cost of care in hospitalization at home compared to hospital care.
IV[14]	Retrospective cohort (IV)	Chronic conditions in general	Long-term institution vs. long-term home support services combined with community services	USA	84,883	Lower immediate expenses, but higher long-term expenses. Monthly expenses were US$ 3,833 higher for those hospitalized in an institution, for an extended period, when compared to the in-home support services.
V[15]	Randomized controlled trial (II)	Cardiac insufficiency	Home care/care services with home visits	Australia	280	Significant reduction in hospitalization days and health care costs.
VI[16]	Randomized controlled clinical trial (II)	Chronic conditions with addiction	Home care/care services with home visits	Western Australia	750	30% reduction in demand for emergency services. 31% reduction in risk of unplanned hospital admission. Reduced length of stay in HC, increased functional independence, and quality of life for the older patient. Minimum average savings of 30% in 2 years.
VII[17]	Retrospective cohort (IV)	Acute conditions with antimicrobial use	Home hospitalization	Spain	1,190	Costs were reduced by 80% for patients who received treatment at home compared to treatment at the hospital.
VIII[18]	Descriptive, prospective study (VI)	Chronic conditions with addiction	Long-stay institutions	England	131	Reduced hospitalizations and improved quality of life for the older patient.

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Figure 3 - Characterization of the studies included in the review

Code	Type of study/ evidence level	Nature of the care required	HC modality	Scenario	Sample	Cost and effectiveness results
IX[19]	Control case, prospective, randomized (IV)	Postoperative of total hip arthroplasty	Convalescent Homes	Canada	50	28% reduction in costs. Reduction of up to 5 days of hospital stay.
X[20]	Meta-analysis (I)	Rehabilitation Demands	Home and community rehabilitation programs	Canada	2,364	Lower total cost of home care.
XI[21]	Retrospective cohort (IV)	Hip fracture	Rehabilitation through home and community services	USA	7,778	Reduced institutionalization of low-income older people. For every 1% of the budget allocated to household and community services, there is a subsequent reduction of 0.17% for long-stay residents. The allocation of home and community services has more effect than the general increase in per capita spending on long-term services (Nursing homes).
XII[22]	Clinical, controlled, randomized trial (II)	Rehabilitation Demands	Home Rehabilitation x Hospital Rehabilitation Day	England	89	There are no significant differences between the two models. Cost analysis provides insufficient evidence to support the hypothesis that rehabilitation is cheaper in a home setting.
XIII[23]	Retrospective study (VI)	Cardiac insufficiency	Home visit and telemonitoring	Israel	196	The home care service reduces the use of health services and health care costs. There was a statistically significant decrease in the monthly hospitalizations (-55.8%), the total number of days of hospitalization (-41.3%), number of visits to the emergency service. Trend towards overall cost reduction of 20.7% compared to the corresponding monthly rates for the six months before entering home care.
XIV[24]	Prospective cohort (IV)	Multimorbidities and/or palliatives	Home care/care services with home visits	Spain	261	Reduction in the number of hospital admissions and length of stay, reduction in complications, and prolonged hospital stays. High patient and caregiver satisfaction Cost reduction by 67.1%.

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Figure 3 - Characterization of the studies included in the review

Code	Type of study/ evidence level	Nature of the care required	HC modality	Scenario	Sample	Cost and effectiveness results
XV[25]	Clinical, randomized trial (II)	Cardiac insufficiency	Intervention through home visits x specialized outpatient clinical intervention	Australia	280	Average reduction of 2 days in hospitalization due to worsening. Lower costs for the household group.
XVI[26]	Clinical, controlled, randomized trial (II)	Chronic obstructive pulmonary disease	Home hospitalization	Italy	104	Lower readmission rate and longer time to readmission for patients hospitalized at home. Improvements in depression and quality of life scores. There were no differences in functional, cognitive, nutritional, or caregiver burden outcomes. The average total cost was U$S 1,175.9 for each patient treated at home and U$S 1,390.9 for patients treated at the hospital.

Source: elaborated by the researchers (own authorship).

dalities of care in HC, targeting the older people, and were then analyzed in this manuscript. The others (36) dealt with HC for different people but did not include care modalities for the older population.

The 16 texts included were critically analyzed considering relevance, validity, and reliability.[10] In this analysis, they were categorized according to the level of evidence[10]: two refer to level I studies (systematic review), five to level II studies (randomized clinical trials), one to level III studies (clinical trial without randomization), six to level IV studies (well-conducted cohort or case-control) and two to level VI studies (described studies and qualitative studies), indicating variation in the strength of the evidence analyzed.

Types of service modalities aimed at the older population and home care

The results indicated different types of services that are offered to the older population, varying by the forms of organization, target audience, results achieved, and associated costs.

The analysis allowed the grouping of five types of services with different characteristics: home visiting services and other home-based intervention services; home hospitalization (hospital at home); long-term institutional services (Nursing home); long-term support services that combine home and community-based care and institutional care transition services (convalescent home and day hospital rehabilitation). Also, remote monitoring and management actions were mentioned, which do not constitute a specific modality but were presented in this review, with an offer that is associated with different modalities.

Home-based intervention services[12,15-16,19,20,22-25] include home visits performed alone by a professional category or by a multidisciplinary team (Nursing, Physiotherapy, Occupational Therapy, Social assistance, and medical staff). In general, actions at home consist of providing guidance, care, managing health conditions, and developing care plans. This modality includes care provision activities for a fixed period, usually for a short period, in the face of acute conditions or for home support and management of the chronic condition[12,23,25] in a situation of rehabilitation and restoration,[15,16,19,20,22] and may include palliative actions.[24]

Home care is the second most identified modality in the studies.[11,13,17,26] It is characterized by the provision of services of high intensity and complexity of care, in general with the transfer of technological apparatus and prolonged multi-professional assistance at home for patients in complex chronic conditions, such as cerebrovascular accident (CVA)[11] or chronic obstructive pulmonary disease (COPD);[26] orthogeriatric problems[13] or for antimicrobial treatment.[17] The main characteristic of this modality is daily visits/care, in general by the Nursing team.

Long-term support services[14,21] include home and community-based services (HCBS), with actions of personal care and rehabilitation services at home, management of cases and chronic conditions, and

access to community healthcare services. They are offered to patients living in the community, with multiple conditions of prolonged illness or after the occurrence of an acute event,[21] with a focus on rehabilitation and aiming to prevent the transfer to a long-term institutional service.

Two of the institutional modalities were identified with a focus on household actions: long-term household services[12,18] and transitional household services.[19,22]

Long-term or long-term care institutional services (Nursing home or residential care home)[12,18] correspond to services known in Brazil as Nursing homes, or long-term care homes. They are institutions for dependent older people who need 24-hour care. In the context of the analyzed studies, these institutions are linked to the health system and have different types of assistance: the Nursing home is offered for the most dependent older patients; for the older person with more independence there is the option of the residential care home. This residential care home works in houses with a small number of residents for whom there is the provision of supervision and assistance in activities of daily living and some level of assistance, such as administration of medication and transportation.

The institutional care transition services (convalescent home and day hospital rehabilitation)[19,22] correspond to a temporary type of care, in a home-based model that combines medical services and a support team for monitored recovery, generally for post-surgical rehabilitation. They also offer functional assessment, medical and Nursing procedures, social assistance, and rest for one shift or over a day, with transportation to and from the home.

Remote telemonitoring or remote management was identified as a strategy for HC.[15,23-25] Thet are actions offered at a distance, through telephone contact associated with different modalities of care, predominantly as part of home visiting or other based services in the home intervention of short duration or with a fixed term.

Offer of services and health situations and conditions of the older population assisted at home: aspects related to costs and effectiveness

The different types of services included in this review provided care for the older population in different situations of illness, whether due to acute events or chronic conditions.

Among the acute events, we find the parenteral antimicrobial treatment[19] and integrated care for older patients after acute orthopedic trauma.[13] Both studies show the modality of home care with a daily visit by the Nursing team and with clinical results and functional gain as effective as it is traditionally offered in the hospital, in addition to an 80% cost reduction with the home model.[17]

The chronic conditions assisted at home were: CVA;[11] congestive heart failure (CHF);[15,23,25] and COPD.[26] Situations of multiple chronic conditions were also reported,[24] older people with functional and cognitive limitations,[14] with different degrees of functional dependence.[12,18]

The prevalent modality is home-based intervention through home visits associated with telemonitoring or services that combine home and community-based actions (home and community-based services). The community based-services are associated with lower costs when destined for acute and post-acute events, but there are higher costs when offered to patients in need of long-term care. Despite this difference, a study[14] revealed that keeping the older patient at home generates monthly savings of US$ 3,833.00 when compared to staying in a long-term care institution.

In the chronic conditions group, the cost analyzes of treating older patients with CHF at home are highlighted[15,23,25] whose offer is organized with a nurse's home visit to prepare and maintain a care plan that includes evaluation of the clinical stability; assessment of the home environment; counseling of family/caregivers; assessment of social support and disease coping skills; guidance on medication use; narrowing of the connection with the family doctor, among other activities.[15] In this study, HC was associated with a reduction in the duration of recurrent hospitalization and the longer hospital-free survival of patients with CHF, which contributed to the approximate reduction of one-third in costs.[15]

Telemonitoring is designed to ensure continuous communication with the patient, including combined house calls from the doctor and the nurse; telephone conversations, and regular team meetings held at least once a month.[23] There is a reduction in the use of services, with a statistically significant decrease of 59.2% in the average number of hospitalizations in the group of home care patients,[23] increases in survival, and a reduction of daily care costs.[25]

Telemonitoring is also cited as a home care strategy for older patients with multiple severe, progressive, and potentially disabling chronic conditions with a reduction in the number of hospital admissions; reduction of the length of stay in the hospital from 3.5 to one day/month.[24] In situations in which stabilization at home was not possi-

ble, interventions were carried out in the initial phases of exacerbation, reducing complications and prolonged hospitalizations, reaching a 67.1% reduction of costs.[24]

Home hospitalization is an HC modality for older patients with CVA[11] and COPD.[26] For the older person with different degrees of functional dependence[12,18] the option was for the long-term institutional service (home Nursing). For older patients with CVA, home hospitalization contributes to results in improving the functional status and patient satisfaction, reducing the length of stay. However, in this study, no effects on mortality or the percentage of readmissions were found.[11] For older patients with COPD, this model was able to reduce readmission (42 vs 87%), extend the time for readmission, improve symptoms of depression and increase the quality of life scores. The average total cost of hospitalization varied by US$214.00 in favor of HC.[26]

Long-term institutional services or long-term care[12,18] are aimed at dependent older people who need 24-hour care. In general, they are high-cost services when compared to other modalities of home care, with worse indicators of the patients' functional status.[12]

Among the studies, we highlight the offer of rehabilitation for different orthogeriatric conditions[13,16,20,22] and fracture or hip arthroplasty[19,21] in modalities of isolated or combined home intervention services with community services, home hospitalization, or institutional transition services of care.

Rehabilitation in the home care model for older patients with orthogeriatric conditions[13] has a lower cost with the same effectiveness than hospitalized patients, without significant differences in the indicators of functional gain. On the other hand, rehabilitation through the combined strategy of home and community services results in benefits for the older patient with hip fractures,[21] culminating in lower rates of institutionalization.

In general, rehabilitation for older patients is offered in a home-based intervention modality, with short or long-term home visits and care in a program called 4R: reablement (training/adjustment); restoration, rehabilitation, and reactivation.[16] The combined association of functionality recovery, restoration of self-care capacity, reactivation of the person to resume their life, and readjustment/training for the routines of the home and the community has positive results in the recovery of patients and reduction of costs.[16]

This rehabilitation model is more cost-effective than institutional models of transition of care, especially rehabilitation/convalescence homes and day hospitals.[19] In general, home intervention, in a program of two to nine visits, was able to reduce up to five days of hospital stay compared to the convalescent home model. In this study, the mean total costs were $ 8,550 for patients who received home visits and $ 11,952 for the conventional rehabilitation group, representing a 28% reduction in costs.[19] There was also a cost-effectiveness gain of 40% with a reduction in hospitalization days (average of five days per patient); improvement in the quality of life of patients attended at home; increased treatment effectiveness (with fewer resources to use on the patient); increased turnover and efficiency; and reducing the waiting list for new surgeries.

DISCUSSION

The results of this review show that the most cost-effective services for the older people were those that include home intervention (for example, home visits); home hospitalization; combined home and community intervention services; care transition, and long-stay institutions, in this sequence. The modalities are offered for different conditions, which has implications and variations in the cost and effectiveness of care.

Home care services and those with predominantly home-based intervention had lower costs and better results. The modality is offered with few interventions at home, almost strict to home visits, for chronic conditions, especially for CHF and for orthogeriatric conditions that need rehabilitation. The cost reduction in this modality is due to the characteristic of the work focused almost exclusively on the visit to assess health conditions; gathering information for the care plan or providing transient and low complexity assistance. This modality is also combined with other strategies, such as telemonitoring and remote management, whose results are due to the identification and early intervention in the face of risks and the exacerbation/aggravation of diseases.[27] Thus, we expect a lower cost than in other modalities that act with a component of treatment and rehabilitation, whose expenses are higher.

The results indicate that the service modality in long-term institutions has higher costs and worse indicators. This result corroborates another study.[28] The profile of the population assisted in these services is composed of older people with a high degree of dependence, in general with multiple chronic conditions, which implies an increase in care costs.

The profile of older people eligible for home care services is those who exhibit a degree of dependence for self-care related to chronic diseases; compromised func-

tionality; with a history of the previous hospitalization; and who have a family caregiver. The actions offered include personal care related to basic and instrumental activities of daily living and the guidance of health professionals, highlighting Nursing procedures and others that require the use of high hospital technology - from the diagnostic or therapeutic support network - and community support. Home visits are an adopted strategy.[8,9,29,30]

A study carried out in Canada indicates that the modality of care for older patients in long-term institutions has been growing and the interventions of an advanced nurse are capable of improving the quality of care and impacting costs due to the reduction of medications, falls, the occurrence of pressure ulcers, use of restrictions and transfers to emergency services.[31]

Rehabilitation is a strategy present in different modalities aimed at the older population. The models of the rehabilitation program included in this review demonstrate cost reduction and positive results in the recovery of the older population, whose intervention at home is a modality that allows early intervention; active user participation; and ongoing training and support for caregivers for holistic, person-centered care.[20]

Properly funded preventive services, such as rehabilitation, can provide cost savings to health services, and improve the quality of life of older patients.[1] The rehabilitation and restoration model should be implemented as part of policies for the older population considering its effectiveness, the positive impact observed in several countries[1,] and minimization of personal expenses.32 Home rehabilitation has a 94% probability of cost reduction (on average £2,061) when compared to the HC modality nonspecific pattern for rehabilitating the older person.[32]

Long-term support services are an expanded and responsive strategy, with an extensive network of government-funded support services, to reduce the rates of institutionalization of older people.[33] However, it has challenges such as limited support to family caregivers, a workforce with high turnover rates, low recruitment and retention, and concerns about the quality of the work environment, in a scenario of shortage of direct workers and technological innovation and incorporation.[33] Technological assistance by robotics, monitoring devices, and adaptive aids can represent an important element to improve and maintain the independence of the older person at home.[33]

In the Brazilian context, the care network for older people still presents challenges. There is a lack or insufficiency of transitory services on a large scale. There is also a lack of specificity in the home interventions offered. In general, home care is offered to other population groups by multidisciplinary home care teams (MDHCT) or as part of primary care services.[7] However, studies indicate the need to form specific teams and/or the performance of specialized professionals, as demonstrated with the reablement strategy or for the care of complex chronic conditions, such as CHF, COPD, CVA.

One possibility for the older population in Brazil may be to combine home and community services, a premise already included in our model of health and primary care system.[7] Keeping older people with chronic conditions and reduced mobility at home and in community environments requires cooperation and integration between services and the creation of long-term support services capable of supporting personal care and health care.

We must consider that home care for the older patients depends on the family structure, the presence of caregivers, the nature of long-term care practices, and the accommodation to the difficulties of the financial burden and hidden costs for caregivers.[2]

The study findings can guide the practices and policies for older adult care in the Brazilian scenario, and subsidize the decisions of managers and contribute to thinking about the offer of HC to the older population. Therefore, the findings indicate the need to allocate specific funding for long-term support services, whether in the modalities of long-term care at home or in the modalities of institutionalization. These services for older people with functional limitations and chronic diseases should include support for activities of daily living; home care support; assistive technologies; case management; temporary institutional care, providing relief to their usual caregivers; Nursing-assisted accommodation covering household chores and provision of meals as needed, among others.

As a limitation of the study, we recognize that the results of this review cannot be generalized considering the diversity of methodologies of the articles included and the specificity of local health systems in the research scenarios that were part of this review. Seeking to minimize these difficulties before the in-depth analysis of the articles included, we carried out a careful study of the local health systems of the research scenarios that made up this research, which allowed contextualized interpretations of the findings. We are aware that evidence about the costs to the family involving home care could contribute to more complete conclusions about the costs and effectiveness of the care model under analysis, suggesting the need for future research on this topic.

CONCLUSION

We concluded that there are different types of services that can be offered to the older population, which vary according to the forms of organization, target audience, results achieved, and associated costs. Services for the older adults that include the most cost-effective home care, in descending order, are those with temporary intervention for both acute and chronic conditions; home hospitalization; combined home and community intervention services; care transition institutions; and long-term care institutions.

These findings indicate that, in Brazil, for decisions about the provision of home care for older people, it is necessary to analyze which offers may be cost-effective for the population. Therefore, effective articulation between network services is required, especially primary care, and investment in the provision of specialized services, such as specific rehabilitation services, which can be opportune strategies.

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