LONG-TERM CARE FACILITIES FOR OLDER ADULTS: SPATIAL DISTRIBUTION IN THE BELO HORIZONTE METROPOLITAN AREA, MINAS GERAIS, BRAZIL

Instituições de longa permanência para idosos: a distribuição espacial na região metropolitana de Belo Horizonte

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ABSTRACT

OBJECTIVE: To present the geographical distribution and profile of long-term care facilities (LTCFs) for older adults in the Belo Horizonte Metropolitan Area, Minas Gerais, Brazil. **METHOD:** Data collection was based on secondary sources from five institutions and government departments, followed by an electronic search on websites and blogs, phone calls, and/or on-site visits. A descriptive analysis of the characteristics of the facilities was performed, as well as georeferencing and spatial analysis of Belo Horizonte's LTCFs. The sample consisted of 156 LTCFs in 21 municipalities. **RESULTS AND CONCLUSION:** There were philanthropic facilities in all the mapped places, and 12 municipalities with smaller populations had only one facility each. There was no record of public facilities. Private LTCFs prevail in large municipalities, which are characterized by an accelerated growth of social facilities. The spatial distribution analysis, compared with the Belo Horizonte's urban life quality index, allowed the discussion of availability of services according to the location of social facilities and the needs of the population, a topic not yet addressed by the municipalities.

KEYWORDS: homes for the aged; elderly; geographic mapping; continuity of patient care.

RESUMO

OBJETIVO: Discutir a distribuição geográfica e o perfil das instituições de longa permanência para idosos (ILPI) na região metropolitana de Belo Horizonte (MG), com 156 ILPI em 21 municípios. **MÉTODO:** A coleta de dados partiu de fontes secundárias de cinco instituições/setores governamentais, seguida da busca em *sites* e *blogs* e ligações e/ou visitas *in loco*. Foram realizados análise descritiva das características das instituições, georreferenciamento e análise espacial das ILPI de Belo Horizonte. **RESULTADOS E CONCLUSÃO:** Há instituições filantrópicas em todos os locais mapeados, com destaque para 12 municípios com menor contingente populacional, que possuem apenas uma instituição. Não houve registro de instituição pública. Prevalecem nos municípios de grande porte instituições privadas, revelando a densidade de equipamentos sociais com crescimento acelerado. A distribuição espacial, comparada ao índice de qualidade de vida urbana de Belo Horizonte, permitiu a discussão da oferta de serviços segundo a localização dos equipamentos sociais e as necessidades da população, tema ainda não apropriado pelos municípios.

PALAVRAS-CHAVE: instituição de longa permanência para idosos; idoso; mapeamento geográfico; acompanhamento dos cuidados de saúde.

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INTRODUCTION

The growth of the older population has increased the demand for long-term care facilities (LTCFs). The demand is sustained by a number of increasingly complex family needs and social issues associated with demographic changes.[1] LTCFs are the most well-known modality and main alternative for older adults requiring these services in Brazil. In addition, the Brazilian government has developed scarcely any care programs for older people with little or no family support, or no financial means, contributing thus to the countrywide expansion of that type of facility in recent decades.[2]

Because of the lack of public facilities to meet the growing demand, older adults are usually institutionalized through philanthropic or private services. A LTCF is not easily recognizable in this context. Not only does the precariousness of reliable records and of public regulation affect the management process by government departments but also contributes to the insecurity of families who need this resource.

A LTCF record provides detailed information on location, infrastructure, type of care provided, type of contract, nature, specialized services provided, and quality of a set of related resources available in a given territory. The request for exclusion and inclusion of registration of new LTCFs, which are identified by the Brazilian Registry of Legal Entities (*Cadastro Nacional de Pessoa Jurídica*, CNPJ), allows to survey variations in the profile of the facilities and, in itself, justifies the study of geographical distribution and of referral and counter-referral in the health care system of a given municipality or region. These data, if updated, can be used to guide the population about location, profile, and quality of those services.

However, public authorities seem to struggle with identifying where there is a lack of services and how the older population is distributed, with designing care programs for LTCF users, and with planning counter-referral of high-complexity care at the secondary and tertiary care levels. The official registration of information is a complex subject, and its definition shows variations. In a conceptual review, Gómez (2012)[3] uses the term "information regime" as a way to deal with the social processes of information according to the actors involved, their rules, instruments, and organization in a given time, place, and circumstance.

The different types of information regime are often born in the absence of formal government actions and do not follow clear criteria. In the case of LTCFs, a similar phenomenon is caused by their exponential growth, especially of private services, and by the lack of clarity about who is responsible for controlling, monitoring, managing, and establishing universal evaluation criteria for these services within the public sector. The Institute for Applied Economic Research (IPEA)[4] performed one of the first surveys on LTCFs and identified 694 functioning units in Minas Gerais in 2008 and 2009, while the state of São Paulo ranked first with 1,219 facilities. Thus, Minas Gerais and São Paulo accounted for, respectively, 30.8 and 54.1% of LTCFs in southeastern Brazil.

Georeferencing is a geographic information system (GIS) tool that allows the management of health data concerning the geographic characteristics of a given territory, utilizes information from official sources, and has been used by several municipalities as a strategy to analyze the existing health facility capacity for planning and management purposes. This electronic process makes it possible to search, save, manipulate, analyze, present, and describe geographically referenced data. It is also used for spatial identification of health or social facilities and allows planning, monitoring, and evaluating health actions, in addition to being an important tool for analyzing the relationship between the environment and health-related events.[5] Considering the weaknesses in LTCF mapping in a given territory, georeferencing is a support tool for obtaining more accurate information, thus providing better management control by government institutions and contributing to the search and selection of services by older adults and/or their families.

In this context, this study aimed to present the geographical distribution and the profile of LTCFs in the Belo Horizonte Metropolitan Area (BHMA), Minas Gerais, Brazil.

METHODS

The sample consisted of 156 LTCFs located in 21 out of the 34 municipalities comprising the BHMA. The study was previously approved by the local Research Ethics Committee (Approval No. 31471114.4.0000.5137), and informed consent was obtained from all participants. Data were collected at three stages, from September 2014 to December 2015. At the first stage, the following secondary sources from five institutions/government departments were searched:

1. LTCF register of the Federal Prosecution Service from 2008;
2. Electronic spreadsheets of the Office of Aging Services at the State Health Department of Minas Gerais from 2008 to 2014;
3. List of LTCFs of the Minas Gerais Prosecution Service, Belo Horizonte, 2013;
4. Spreadsheets of the Division of Health Surveillance at the State Health Department of Minas Gerais from 2014;
5. Records of the Health Surveillance at the Municipal Health Department of Belo Horizonte from 2014.

The second stage consisted of an electronic search on LTCF institutional websites and blogs using registration data (e.g., address, CNPJ number, owner). The third stage involved on-site visits to the LTCFs identified in the electronic search but not included in the official records, to confirm that they existed.

A database was then created using Microsoft Office Excel 2007 electronic spreadsheets. The characteristics of the facilities were analyzed descriptively, and some of the variables were analyzed by measures of central tendency and proportions. The characteristics of the Belo Horizonte's LTCFs that would allow the process of georeferencing, territorial identification, and location were selected. The addresses of the facilities were converted to longitude and latitude coordinates for the analysis of LTCF spatial distribution.

RESULTS AND DISCUSSION

Data collection and LTCF information regime

Initially, 231 LTCFs were identified. After the geographic characteristics were refined considering the BHMA delimitation and the services were screened to determine whether they were still available, 170 LTCFs were confirmed. Of these, 156 facilities agreed to participate and were included in the study.

The 156 participating LTCFs are distributed among 20 of the 34 BHMA municipalities. Most of them are located in Belo Horizonte (106 / 68%), followed by Contagem (15 / 10%), Santa Luzia (7 / 4.5%), Ribeirão das Neves (5 / 3%), Betim and Lagoa Santa (3 each / 1.9%), and Caeté, Ibirité, and Sabará (2 each / 1.3%). The other municipalities had 1 LTCF each (0.64%).

The comparison between the number of LTCFs in the two municipalities with higher LTCF concentration (Belo Horizonte and Contagem) and in the other ones showed that 121 (77.5%) of the facilities are found in those largest urban centers, especially in Belo Horizonte. The results indicate that the presence of social facilities is more common in high population density areas, with large numbers of older adults. The IPEA study (2011)[6] reported similar findings, attributing the fact to better economic conditions in large urban centers.

The higher concentration of LTCFs in the largest BHMA municipalities may be related to the homogeneity of the region and to the proximity of the municipalities to the state capital. In those places, ways of life typically found in great metropolises decrease the availability of home care and increase the pressure for government action.

It should be noted that the choice of a LTCF should be made by the family with the participation of the older adult. In this sense, checking how close the facility and the family's house are, ensuring compliance with legal obligations such as registration and permit, knowing the facility and the older adult's routine there, as well as its physical structure and professional staff, are fundamental strategies to minimize the impacts of institutionalization and allow the integration of the family in this context.[7] It is worth highlighting the absence of other shelter and care facilities such as day centers, which do not exist in the BHMA but are provided for in the National Health Policy for Older Adults.[8] As a consequence, there is an impact on the increased demand for institutionalization regarding the lack of support for families.

The analysis of data obtained from the five institutions/government departments allowed the identification of different types of official registration of LTCFs. Except for one spreadsheet, all the other sources lacked some information. A parallel between 2008 and 2014 data revealed an absolute increase of 36 facilities in Belo Horizonte according to a nominal analysis, while the situation in the other municipalities remained practically the same. In addition, 10 LTCFs listed in 2008 were not included in the 2014 spreadsheet, suggesting that they closed or that reliable information was not available.

A comparison between 2014 spreadsheets from the Division of Health Surveillance and the Office of Aging Services, both linked to the State Health Department of Minas Gerais, also showed divergences. Thus, the results demonstrate that differences in the process of data collection, recording, analysis, and disclosure affect the diagnosis of facilities currently available for the care of older adults in the BHMA.

During this study, no standardized instrument for description of services or interconnected information system between LTCFs and regulatory bodies was identified. That is, the existing registration instruments are not standardized, preventing an intersectoral approach by the regulatory bodies.

Additionally, incomplete, unreliable, unverified, or non-validated data hinder the creation of quality information and thus the formulation of assertive actions to manage older adults in the context of the study. Therefore, federal, state, and municipal authorities, LTCF managers, health professionals, older people and their families do not seem to have objective or clear information available for decision-making.

A possible strategy to obtain such data would be registering LTCFs in the public health information system. The Information Technology Department of the Brazilian Unified Health System (DATASUS) is a system created in 1977 with the initial purpose of recording morbidity and

mortality data. In 2000, the DATASUS included the National Register of Health Facilities, incorporating characteristics of physical areas, human resources, equipment, and services of both public and private health systems.[9] However, the register does not cover the LTCFs because these facilities are not considered health care services but rather collective homes for people aged 60 years or over, with or without family support. Moreover, such facilities are linked to the social care network and integrate the Brazilian Unified Social Care System. They are included in the National Register of Social Care Entities, a database created by the Ministry of Social Development and Fight against Hunger in 2014.

It is worth mentioning that this study did not analyze LTCF records from the National Register of Social Care Entities because during the period of data collection they were not publicly available. Of all the participating facilities, 52.5% (82) reported having registration with the State Council on Aging and 75.5% (118) with the Municipal Council on Aging. However, both councils do not disclose LTCF profiles.

LTCF nature and expansion

In terms of nature, considering the 156 facilities that participated in the study, 96 are private (61.5%) and 60 (38.5%) are philanthropic. Philanthropic LTCFs are present in all municipalities mapped in this study, and 12 of them with smaller populations had only one philanthropic facility each. No municipal facility was found in the sample.

Most philanthropic LTCFs, i.e., 56 (93.3%), had aging benefits to pay for the expenses. Of those, 44 (79%) used up to 70% of the monthly income of the older adult, while 12 (21%) used more than 70%. Only 38 (63%) of the philanthropic LTCFs reported receiving government funding, of which 35 (92%) relied on municipal resources.

Regarding private LTCFs, a significant expansion was observed by stratifying the facilities by year of creation, with an accelerated growth especially since the 1990s, increasing from eight to 50 private LTCFs in 2010. In the present study, 118 facilities were mapped in Belo Horizonte, with 106 participating in the study, while Chaimowicz and Greco (1999)[10] identified 40 facilities in Belo Horizonte. More recently, an investigation conducted by Camargos (2013)[2] found 68 LTCFs in the capital, showing that in a period of 15 years, 78 new LTCFs were created there. Camarano and Kanso (2010)[11] observed the expansion of LTCFs in Brazil since 1980, especially of private facilities, which increased by six times in the period. Thus, there is a strong need for more public LTCFs and other care facilities considering the socioeconomic profile of the Brazilian population and the legal responsibilities of the government.

Identification of LTCFs for older adults in Belo Horizonte

In Belo Horizonte, the 106 LTCFs included in the study sample were mapped according to the nine administrative regions/sanitary districts forming the municipality: Barreiro, Mid-South, East, Northeast, Northwest, North, West, Pampulha, and Venda Nova. The history of the division of Belo Horizonte into administrative regions started in 1973, when Barreiro and Venda Nova were created. Then, in 1985, seven new regions were established to meet the need for decentralization and coordination of programs and activities suited to the characteristics of each region. The limits of the regions were revised by the Municipal Law no. 10,698/2014.[12]

The distribution of LTCFs across the nine Belo Horizonte's administrative regions (Figure 1) is consistent with IPEA studies,[4] revealing that high-income regions offer a greater number of facilities. This study showed that 62 LTCFs (58.5%) are located in Pampulha and Mid-South regions. Regarding the nature of the LTCFs in Belo Horizonte, 79 (74.5%) are private and 27 (25.5%) are philanthropic. Thus, the two highest-income regions, consisting of Pampulha (4 LTCFs) and Mid-South (1 LTCF), are the ones with fewer philanthropic facilities.

To confirm the growth trend, a new Belo Horizonte LTCF register prepared in 2017 by Health Surveillance was collected. An absolute increase of 76 new LTCFs was found, equivalent to 42% when compared to 2014. Pampulha and Mid-South remained the leading regions. Additionally, the records showed that seven LTCFs were created in the West (70%), 16 in the Northeast (57%), and three in the North (50%). The expansion, which has been discussed by Camarano and Kanso (2010),[11] was announced by the public sector to increase the benefit coverage provided by the Social Care Department.[13] However, the growing number of private LTCFs is evident, reinforcing the urgent need for new public facilities for older adults in the BHMA, especially because of the projected population aging.

Comparing availability of services with urban life quality index (ULQI) of the Belo Horizonte's administrative regions (Table 1) may be the first step to discuss social inequities and indicate the most vulnerable regions. The ULQI is an indicator consisting of sociodemographic and health data about Belo Horizonte's administrative regions and quantifies spatial inequality in terms of availability and access to urban goods and services.[14]

In Belo Horizonte, lowest ULQI scores were identified in Barreiro and North regions (0.55), with eight and three LTCFs respectively, followed by Northeast and Venda Nova regions (0.59), the former with six LTCFs and the latter with one philanthropic facility. There were inconsistencies in the

georeferencing of Venda Nova addresses in relation to the division with Pampulha because of alterations in the neighborhood map, made in accordance with Law No. 10,698/2014, with no changes in the references of the sanitary districts.[11]
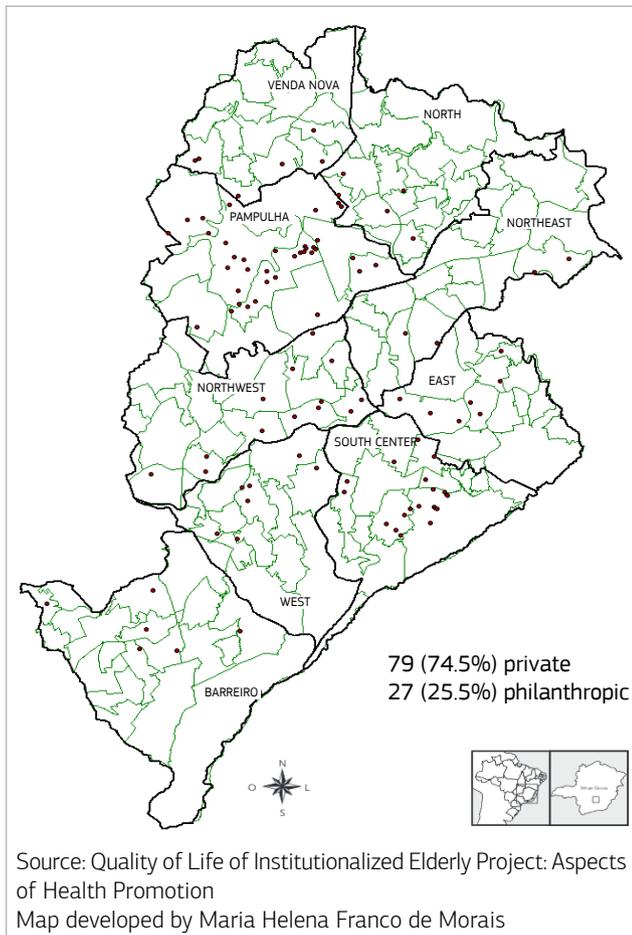
The human development index (HDI) and the ULQI use spatial reference systems that allow the development of health indicators and establish differences in access to services and life opportunities in the territory.[15] In this sense, Campos et al. (2009)[16] performed a spatial analysis considering income and education level of older adults in Botucatu, São Paulo. They found a relationship between location of family health units and low-income population, demonstrating that supply is adjusted to demand for aging services. Expanding those analyses in the context of LTCFs is highly important because this type of facility is increasingly necessary for the care of older adults and has been used only in the perspective of a niche market, and not as a guarantee of rights and comprehensive and shared care.

Philanthropic LTCFs are homogeneously distributed across the administrative regions. Private LTCFs, in turn, are unequally distributed, prevailing in the regions with highest ULQI. The Mid-South region has a high ULQI (0.72) and the second largest number of private facilities (19), while the Pampulha region has an ULQI of 0.66 and 38 private facilities. This relationship can be explained by the availability of urban space and by the high purchasing power of people living in the neighborhoods forming those regions. In those neighborhoods, there is a concentration of mansions usually rented with the commercial purpose of housing LTCFs, which require large physical space, according to the guidelines set by the Resolution of the Collegiate Board of Directors No. 283/2005,[17] which regulates the operation of these services.

CONCLUSIONS

Differences in the data provided by the institutions responsible for guiding and regulating LTCFs show flaws in the information regime, sometimes even within the same institution. The inconsistency compromises the diagnosis of the current situation of LTCFs available for older adults in the BHMA and may interfere with care action planning, especially at the local level. There is a clear need for exchange of information among government institutions, which is crucial for policy and care decision-making that affects the care provided for institutionalized older adults. Considering the importance of the state of Minas Gerais and its capital with regard to this matter, effective regulation systems are urgently required to allow transparency of LTCF management, as well

Source: Quality of Life of Institutionalized Elderly Project: Aspects of Health Promotion
Map developed by Maria Helena Franco de Morais

Figure 1 Spatial distribution of long-term care facilities for older adults in Belo Horizonte, Minas Gerais, by sanitary district, 2015.

Table 1 Distribution of long-term care facilities for older adults, according to their nature (philanthropic or private), by administrative region, Belo Horizonte, Minas Gerais, 2015.

Administrative region	ULQI 2014	2015		
		Philanthropic	Private	Total
Barreiro	0.55	5	3	8
Mid-South	0.72	1	19	20
East	0.61	6	5	11
Northeast	0.59	2	4	6
Northwest	0.63	5	7	12
North	0.55	1	2	3
West	0.63	2	1	3
Pampulha	0.66	4	38	42
Venda Nova	0.59	1	0	1
Total	0.61	27	79	106

ULQI: urban life quality index.

as provision of quality information to older adults, their families, and health services.

The occupation of the urban territory is a transformation process and should be evaluated through the perspective of attention to the diversity of socioeconomic conditions and health needs of the population. Health service planning and management should be based on a fair resource allocation, which justifies the use of tools for analysis of spatial distribution of events. Finally, the relationship between availability of services and ULQI scores of Belo Horizonte's administrative regions revealed the cruel market reality that has been established in this context.

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CONFLICT OF INTEREST

The authors declare no conflicts of interest.

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