Factors associated with the evaluation of quality of primary health care by older adults living in the Metropolitan Region of Belo Horizonte, Minas Gerais, Brazil, 2010*

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Abstract

Objective: to analyze factors associated with the perception of quality of primary health care (PHC) services by older adults. **Methods**: this was a cross-sectional survey with 893 older adults aged 60 years and over living in the Metropolitan Region of Belo Horizonte, MG, Brazil; the study's outcomes were the indicators of the essential attributes of PHC, while explanatory variables included sociodemographic conditions, use of health services and health conditions; Poisson regression with robust variance was used. **Results**: older adults aged 80 years and over, women and those with higher education levels gave better evaluations for access and longitudinality, while evaluation was worst among those who reported greater use of health services and chronic health conditions, especially for the PHC attributes of coordination of care and family and community orientation. **Conclusion**: poorer health conditions and higher use of services are associated with a more negative perception of PHC attributes among the elderly.

Keywords: Primary Health Care; Health of the Elderly; Epidemiologic Factors; Quality of Health Care; Cross-Sectional Studies, Health evaluation.

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Epidemiol. Serv. Saude, Brasília, 28(1):e2018128, 2019

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Introduction

Primary Health Care (PHC) plays an important role in the structuring of a region's health system, acting on people over time rather than on specific diseases. Well structured PHC carries out prevention, treatment and rehabilitation actions, so as to improve the health and well-being of the population of interest.[1,2] A Public Health system based on quality PHC is associated with lower overall disease and mortality incidence coefficients, a falling proportion of premature and avoidable deaths, as well as reduced hospitalizations and greater heath equity.[2]

In Brazil, the Family Health Strategy (FHS), which is the main PHC program, has been responsible for reducing ambulatory care-sensitive condition hospitalizations, reducing health system costs and confirming the importance of PHC for the improved performance of the Brazilian National Health System (SUS).[3] As such, PHC plays an essential role in care for elderly people and in controlling risk factors and chronic conditions most prevalent among this population.[1]

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Rapid population aging taking place in Brazil, together with increased prevalence of chronic diseases, is an important challenge for SUS, given that the greater the number of illnesses the greater the use of health services – including appointments with general practitioners and specialists –, thus raising health system expenditure.[4] Between 1998 and 2008, according to data from the National Household Sample Survey (PNAD) conducted by the Brazilian Institute of Geography and Statistics (IBGE), an increase was found among the elderly Brazilian population with regard to hypertension and diabetes prevalence, the number of their medical appointments, as well as a reduction in their hospitalization. Together these data indicate an increase in the demand for PHC services, possibly associated with the reduction in hospitalizations among this population.[5]

Among elderly people with chronic health conditions living in Brazil's Southern and Northeastern regions, having medical appointments in primary health care centers was greater among those with lower levels of schooling and those living in regions covered by the FHS, thus illustrating its importance as a strategy for promoting access to health services. Notwithstanding, one study identified a lower proportion of appointments among older elderly people, aged 80 or more. This draws attention to the greater vulnerability of this growing segment of the population in relation to health service use.[6]

Perception of the quality of health services provided is determined by different factors inherent to the health service itself. Standing out among these factors are service user sociodemographic characteristics and health conditions, so that there may be considerable variation in this perception among populations with differing health and sociodemographic characteristics.[7-11] For this reason, considering the increase in the prevalence of chronic conditions, especially among the elderly, perception of health service quality, from the point of view of those using them, takes on measurable importance to be considered when seeking to evaluate these services.[10,11]

The objective of this study was to analyze factors associated with perception of PHC service quality by elderly people who do not have private health insurance, living in the Metropolitan Region of Belo Horizonte, capital of the state of Minas Gerais, Brazil.

Methods

For our analysis we used data from the Belo Horizonte Metropolitan Region Employment and Unemployment Survey (PED/RMBH) which was conducted between May and July 2010.[12] The participants were selected by means of probabilistic sampling, including urban area of the municipality of Belo Horizonte, and the urban area of further 26 municipalities which comprise the Metropolitan Region of Belo Horizonte (RMBH). In 2010, RMBH had a municipal human development index (HDI-M) of 0.774, an infant mortality rate of 13.9 per 1,000 live births and life expectancy at birth of 75.9 years, with 7.6% of the population in the age range above 64 years old.[13]

Data were collected by administering a questionnaire that was supplementary to the PED/RMBH questionnaire. This was conducted by the João Pinheiro Foundation, a body of the Government of the State of Minas Gerais.

It is a probabilistic cluster sample stratified in two stages. The 3,136 IBGE urban census tracts that comprise RMBH were used as the primary selection unit. The second stage was based on households selected according to systematic random sampling criteria and these comprised the sampling unit. The sampling design aimed to select a representative sample of the population living in the municipalities that comprise RMBH. This sample was based on 7,500 households, 5,798 (77.3%) of which took part in the PED/RMBH.[12]

The survey – Belo Horizonte Metropolitan Region Health Survey – included all elderly people resident in the selected households: 2,271 individuals aged 60 or over, of whom 1,175 (51.7%) were exclusive SUS users (they did not have private health insurance). Of these, 893 (76.0%) reported being linked to a PHC professional or reference service (health center, doctor, nurse or health center or FHS community health agent) and, consequently, were those who were included in our analysis.

The set of dependent variables sought to portray the perception of these elderly people with regard to the health service they attended or the professional they were seen by, based on the theoretical framework proposed by Starfield.[1] We therefore asked the following questions related to PHC attributes:

How often do you find it easy to get an appointment? (first-contact access)
How often are you seen by the same health professional? (continuity)
How often is the health professional who sees you capable of solving the majority of your health problems? (comprehensiveness)
How often does the health professional who sees you help you to make an appointment with a specialist or an appointment to have examinations? (care coordination)
How often does the health professional who sees you ask about the health of other members of your family? (family orientation), and
How often does the health professional who sees you carry out activities that improve the living conditions of your community? (community orientation)

There were four options for answering these questions, which were then grouped together in two blocks:
(1) 'always or most of the time'. This was considered to be a better evaluation or good perception of the quality of the PHC attribute; and
(2) 'rarely or never'. This indicated poor evaluation.

The explanatory variables included:
a) sociodemographic conditions
- sex (male; female);
- age range (in years: 60-69; 70-79; 80 and over);
- self-reported skin color (White; non-White [Black, brown and yellow]);
- schooling (in years of study: <4; 4-7; 8 or more); and
- participant's place of residence (Belo Horizonte; other Metropolitan Region municipalities);
b) use of health services
- having attended at least one medical appointment in the last 12 months;
- hospitalization in the last 12 months;
- blood pressure checked in the last 2 years;
- cholesterol levels checked in the last 5 years; and
- blood sugar levels checked in the last 2 years;
c) self-reported health conditions
- arterial hypertension;
- diabetes;
- angina or heart attack;
- stroke;
- arthritis; and
- depression.

These diseases were also grouped together in a single variable, namely number of chronic conditions (none; one; two or more), with the aim of estimating the influence of multimorbidity on the evaluation of the health services. The selection of these health conditions for our study is justified by their considerable prevalence in the population and because they are more frequent in studies dedicated to similar analyses. Furthermore, these conditions appear to influence people's evaluation of health services, as previously described in the literature.[7-11]

We described all the variables considered, expressed as proportions, with their respective 95% confidence intervals (95%CI). We then performed Poisson regression with robust variance to estimate association between each of the six PHC attributes under consideration and the explanatory variables studied; we calculated the prevalence ratios (PR) and respective 95%CI, taking into consideration adjustment by the sociodemographic variables and place of residence, regardless of the p-value, given the important influence of these characteristics on the associations studied.

All the analyses were performed with Stata 13.0, using the procedures for analysis of surveys with complex samples and adopting a 5% significance level.

The Belo Horizonte Metropolitan Region Health Survey was approved by the Instituto René Rachou, Fiocruz/Minas Gerais Research Ethics Committee (Approval No. 10/2009), on June 24th 2009, and all participants signed a Free and Informed Consent form in accordance with National Health Council (CNS) Resolution No. 196, dated October 10th 1996.

Results

The characteristics of the sample of 893 elderly people and their evaluation of PHC attributes are shown in Table 1. The majority of the elderly participants were aged under 70 (58.3%), were female (62.0%), had up to seven years of schooling (85.4%) and lived in Belo Horizonte (53.7%); most of them had attended a medical appointment in the last year (77.6%), 8.8% had been hospitalized in the same period and use of preventive health services was reported by 90% of the interviewees: 98.3% reported having measured their blood pressure and 93.3% had measured their blood sugar in the last two years; 98.5% reported having checked their blood cholesterol in the last five years. The majority reported having one or more chronic diseases (72.3%), with arterial hypertension being the most prevalent (60.5%), followed by arthritis (18.5%) and diabetes (17.6%).

Regarding service users' perception of PHC attributes, with the exception of community orientation, the results showed that the majority evaluated the services they used as being good. The attributes with the best evaluations were first-contact access (73.9%: good evaluation) and care coordination (76.9%) (Table 1).

Association between the six PHC attributes investigated and the sociodemographic variables is shown in Table 2. After adjustment by all the variables listed in the table, better perception of PHC quality was found among the elderly aged 80 or over, compared to those aged 60-69, and also among those with eight or more years of schooling, compared to those with fewer than four years of schooling, both for first-contact access ([PR=1.13 – 95%CI 1.00;1.27] and [PR=1.18 – 95%CI 1.04;1.33], respectively) and also for continuity ([PR=1.32 – 95%CI 1.16;1.52] and [PR=1.24 – 95%CI 1.05;1.46], respectively).

Better perception of first-contact access was also found among females (PR=1.09 – 95%CI 1.00;1.19), compared to males; while better perception of continuity was found among those with non-White skin color (PR=1.15 – 95%CI 1.02;1.30), compared to those with White skin color. On the other hand, when compared to the inhabitants of the other Metropolitan Region municipalities, those who resided in Belo Horizonte had a poorer perception of first-contact access (PR=0.89 – 95%CI 0.80;0.98).

The adjusted associations between PHC attributes and use of health services and health conditions are shown in Table 3. Poorer perception of first-contact access, continuity and community orientation were found among the elderly who attended at least one medical appointment in the last year ([PR=0.86 – 95%CI 0.78;0.94], [PR=0.84 – 95%CI 0.75;0.95] and [PR=0.80 – 95%CI 0.64;0.99], respectively), in relation to those who did not have such an appointment. Poorer perception of family orientation was found amongst those who had measured their blood pressure (PR=0.76 – 95%CI 0.63;0.92) and blood sugar (PR=0.79 – 95%CI 0.70;0.90) in the last two years.

With regard to association between evaluated PHC attributes and health conditions, those who reported having hypertension, compared to those who did not report having this condition, had the worst perception of care coordination (PR=0.91 – 95%CI 0.84;0.99); while the elderly with diagnosed arthritis, compared to those without arthritis, had the worst perception of family orientation (PR=0.80 – 95%CI 0.67;0.95) and community orientation (PR=0.75 – 95%CI 0.57;0.97). Those who reported angina or heart attack, when compared to those who did not report these conditions, had better perception of community orientation (PR=1.42 – 95%CI 1.07;1.90). Furthermore, having one or more chronic diseases, compared to no reported diseases, showed significant association regardless of sociodemographic conditions and place of residence, with poorer evaluation of care coordination for one disease ([PR=0.91 – 95%CI 0.84;1.00] and for two or more diseases [PR=0.88 – 95%CI 0.79;0.98], poorer evaluation of family orientation for one disease ([PR=0.85 – 95%CI 0.76;0.96] and for two or more diseases [PR=0.84 – 95%CI 0.74;0.95]), and poorer evaluation of community orientation ([PR=0.80 – 95%CI 0.64;0.99] for one chronic disease.

Discussion

The results of this study showed that PHC evaluation from the perspective of the elderly was better for variables indicating the PHC attributes of care coordination, first-contact access and comprehensiveness, while community orientation was found to have the worst evaluation. Furthermore, greater influence of sociodemographic variables and attending appointments could be seen in the

Table 1 – Characteristics of the elderly population exclusively using the Brazilian National Health System and evaluation of the primary health care attributes in the Metropolitan Region of Belo Horizonte, 2010

Variables	Percentage (95%CIª)
Age range (in years)	
60-69	58.3 (54.6;62.0)
70-79	31.0 (27.8;34.5)
≥80	10.6 (8.6;13.1)
Female sex	62.0 (58.6;65.3)
Non-white skin color	58.9 (54.7;63.0)
Schooling (in years of study)	
<4	39.8 (36.0;43.6)
4-7	45.6 (41.8;49.4)
≥8	14.7 (12.0;17.8)
Residing in the municipality of Belo Horizonte	53.7 (50.2;57.2)
Medical appointment in the last 12 months	77.6 (73.9;80.8)
Hospitalization in the last 12 months	8.8 (7.0;11.0)
Blood pressure measured in the last 2 years	98.3 (97.2;98.9)
Cholesterol measured in the last 5 years	98.5 (97.4;99.1)
Blood sugar measured in the last 2 years	93.3 (91.3;94.8)
Self-reported diseases	
Arterial hypertension	60.5 (57.0;63.9)
Diabetes	17.6 (15.0;20.6)
Angina or heart attack	6.1 (4.6;8.1)
Stroke	5.2 (3.8;7.1)
Arthritis	18.5 (15.7;21.7)
Depression	8.5 (6.7;10.7)
Number of self-reported diseases	
0	27.7 (24.5;31.2)
1	39.7 (36.1;43.5)
≥2	32.6 (29.2;36.0)
Good perception of attributes	
First-contact access	73.9 (70.1;77.5)
Continuity	63.2 (59.3;66.9)
Comprehensiveness	69.0 (65.3;72.5)
Care coordination	76.9 (73.5;80.1)
Family orientation	67.1 (63.5;70.5)
Community orientation	40.6 (36.8;44.5)

a) 95%CI: 95% confidence interval
Note: Percentage and 95%CI estimated considering sample weighting and design effect.

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Table 2 – Association between good perception of primary health care attributes and sociodemographic variables and place of residence among the elderly population exclusively using the Brazilian National Health System in the Metropolitan Region of Belo Horizonte, 2010

Variables	First-contact access	Continuity	Comprehensiveness	Care coordination	Family orientation	Community orientation
	PR (95%CI)[a]	PR (95%CI)[a]	PR (95%CI)[a]	PR (95%CI)[a]	PR (95%CI)[a]	PR (95%CI)[a]
Age range, in years (reference age range: 60-69 years)						
70-79	1.04 (0.95;1.15)	1.09 (0.95;1.25)	1.00 (0.89;1.13)	0.98 (0.89;1.08)	0.95 (0.84;1.08)	1.03 (0.84;1.27)
≥80	1.13 (1.00;1.27)[b]	1.32 (1.16;1.52)[b]	1.08 (0.93;1.27)	0.98 (0.85;1.13)	0.94 (0.78;1.14)	0.97 (0.71;1.33)
Female sex (reference: male)	1.09 (1.00;1.19)[b]	1.05 (0.94;1.17)	1.04 (0.94;1.15)	0.98 (0.91;1.06)	0.93 (0.84;1.03)	0.96 (0.81;1.14)
Non-White skin color (reference: White)	1.07 (0.96;1.19)	1.15 (1.02;1.30)[b]	1.11 (0.99;1.23)	1.07 (0.98;1.17)	1.02 (0.92;1.14)	0.91 (0.75;1.11)
Schooling, in years of study (reference: <4 years)						
4-7	1.06 (0.96;1.17)	1.06 (0.93;1.20)	1.09 (0.97;1.23)	1.08 (0.98;1.19)	1.08 (0.95;1.21)	1.17 (0.95;1.44)
≥8	1.18 (1.04;1.33)[b]	1.24 (1.05;1.46)[b]	1.12 (0.96;1.32)	1.12 (0.99;1.27)	1.03 (0.86;1.22)	1.04 (0.75;1.44)
Resident in Belo Horizonte (reference: other Metropolitan Region municipalities)	0.89 (0.80;0.98)[b]	1.05 (0.93;1.19)	1.02 (0.92;1.14)	0.97 (0.89;1.06)	1.05 (0.94;1.17)	1.17 (0.95;1.45)

a) PR (95%CI): prevalence ratio (95% confidence interval), adjusted by the variables listed in the table, estimated considering sample weighting and design effect.
b) P-value<0.05.

perception of the elderly with regard to first-contact access and continuity, whereas having chronic diseases was more important for their perception in relation to care coordination, family orientation and community orientation.

As with our study, another study also conducted in Belo Horizonte, found that continuity, comprehensiveness and care coordination were evaluated well by the municipality's Family Health team nurses and managers.[14] The similarities between the results of both studies suggest the existence of characteristics peculiar to the work process adopted by PHC services in the region, thus justifying the agreement in the evaluation by health service users and also by health professionals, above all with regard to aspects related to community orientation.

Better perceived evaluation was found for first-contact access and continuity among the older elderly and among those with more schooling. Association between more schooling and better perception of PHC quality has also been reported by studies conducted in other countries.[15,16] This may be related to the patient's ability to obtain, understand and communicate basic health information.[16] With regard to better perception of PHC quality among older individuals, some studies have found results in the same direction as those found among the

elderly in RMBH.[7,8] However, the opposite has also been reported, with poorer evaluation of some PHC attributes by the older elderly.[17] These possible differences may be related to different degrees of knowledge of service organization according to the population in question, so that it important to take this aspect into consideration when interpreting results regarding PHC quality. A study conducted by Brandão, Giovanella and Campos,[11] which used a different instrument to evaluate PHC services from the perspective of service users (EUROPEP), also found better evaluation of services by the more elderly and by those with more schooling, thus reinforcing the evidence described in relation to the RMBH elderly, even using just one question for each attribute evaluated.

Prevalence of better perception of the quality of first-contact access was greater among females than males. This result is different to that obtained in a study conducted with elderly people living in Northeastern Brazil, when no difference was found between the sexes with regard to this attribute.[17] Be that as it may, the results found in RMBH may reflect greater use of services by females[18,19] and, consequently, their better evaluation of access. Better perception of the quality of continuity by the elderly with non-White skin color suggests that the health services evaluated here promote equity, this being one of the principles

Table 3 – Association between good perception of primary health care attributes and use of health services and self-reported health conditions among the elderly population exclusively using the Brazilian National Health System in the Metropolitan Region of Belo Horizonte, 2010

Variáveis	First-contact access	Continuity	Comprehensiveness	Care coordination	Family orientation	Community orientation
	PR (95%CI)[a]	PR (95%CI)[a]	PR (95%CI)[a]	PR (95%CI)[a]	PR (95%CI)[a]	PR (95%CI)[a]
Medical appointment in the last 12 months (reference: no appointment)	0.86 (0.78;0.94)[b]	0.84 (0.75;0.95)[b]	0.99 (0.88;1.12)	0.95 (0.87;1.04)	0.95 (0.84;1.08)	0.80 (0.64;0.99)[b]
Hospitalization in the last 12 months (reference: not hospitalized)	0.98 (0.84;1.15)	0.99 (0.81;1.20)	1.05 (0.90;1.24)	1.05 (0.92;1.20)	1.04 (0.87;1.24)	0.96 (0.70;1.30)
Blood pressure measured in the last 2 years (reference: not measured)	1.02 (0.76;1.36)	0.95 (0.68;1.34)	1.34 (0.85;2.11)	0.90 (0.74;1.09)	0.76 (0.63;0.92)[b]	0.66 (0.43;1.03)
Cholesterol measured in the last 5 years (reference: not measured)	0.92 (0.71;1.19)	0.93 (0.64;1.37)	1.06 (0.71;1.57)	1.05 (0.78;1.41)	0.93 (0.68;1.27)	0.86 (0.48;1.56)
Blood sugar measured in the last 2 years (reference: not measured)	0.93 (0.80;1.08)	0.90 (0.74;1.09)	1.02 (0.85;1.24)	1.00 (0.86;1.17)	0.79 (0.70;0.90)[b]	0.84 (0.62;1.16)
Arterial hypertension (reference: not measured)	0.97 (0.89;1.05)	1.04 (0.93;1.17)	0.94 (0.85;1.04)	0.91 (0.84;0.99)[b]	0.91 (0.82;1.01)	0.86 (0.73;1.02)
Diabetes (reference: not measured)	0.93 (0.82;1.05)	1.10 (0.95;1.26)	0.97 (0.85;1.12)	0.95 (0.84;1.07)	0.87 (0.74;1.02)	0.85 (0.66;1.10)
Angina or heart attack (reference: not reported)	0.96 (0.80;1.15)	1.05 (0.86;1.28)	0.92 (0.74;1.14)	0.89 (0.73;1.10)	1.08 (0.89;1.31)	1.42 (1.07;1.90)[b]
Stroke (reference: not reported)	0.89 (0.70;1.13)	0.90 (0.67;1.20)	1.07 (0.87;1.32)	1.04 (0.87;1.23)	0.79 (0.58;1.06)	0.93 (0.61;1.44)
Arthritis (reference: not reported)	0.89 (0.78;1.02)	1.05 (0.91;1.21)	1.05 (0.93;1.19)	0.95 (0.85;1.06)	0.80 (0.67;0.95)[b]	0.75 (0.57;0.97)[b]
Depression (reference: not reported)	0.95 (0.80;1.14)	1.10 (0.92;1.31)	0.96 (0.80;1.16)	0.89 (0.76;1.05)	1.14 (0.98;1.33)	1.26 (0.97;1.64)
Number of self-reported diseases (reference: none)						
1	1.00 (0.91;1.11)	0.98 (0.85;1.13)	0.91 (0.80;1.02)	0.91 (0.84;1.00)[b]	0.85 (0.76;0.96)[b]	0.80 (0.64;0.99)[b]
≥2	0.90 (0.80;1.02)	1.12 (0.97;1.29)	0.95 (0.84;1.08)	0.88 (0.79;0.98)[b]	0.84 (0.74;0.95)[b]	0.86 (0.69;1.07)

a) PR (95%CI): prevalence ratio (95% confidence interval), adjusted by age range, sex, schooling and municipality of residence, estimated considering sample weighting and design effect.
b) P-value<0.05.

of SUS and a premise of PHC services. This is an aspect of quality capable of being achieved by primary health care services, as demonstrated by a study conducted in the United States between 1980 and 1995.[20]

When analyzing place of residence, it can be seen that the elderly living in the municipality of Belo Horizonte had a poorer perception of first-contact access when compared to the elderly living in the other municipalities of the Metropolitan Region. The results of a previously mentioned study evaluating PHC in the municipality of Belo Horizonte point in the same direction, showing that access is also poorly evaluated from the perspective of health center managers and nurses.[14] It is therefore plausible that this PHC attribute

is not adequately present in Belo Horizonte, given that Public Health service users, managers and workers had the same perception of it. Evaluation by different stakeholders therefore appears as an appropriate strategy for gaining knowledge of service quality.

In our study, greater use of health services, taking into consideration both medical appointments and preventive services (blood pressure and blood sugar measurement), was associated with poorer service user perception of some attributes, such as first-contact access, continuity and community orientation in the case of medical appointments, and poorer perception of family orientation among those using preventive services. On the other hand, according to studies with

patients from different countries, individuals who gave a better evaluation of access, continuity and health worker communication ability were more inclined to seek a PHC service when they needed it.[15,21] Similarly, checking weight, blood pressure and cholesterol levels in the last year showed positive correlation with satisfaction with the PHC service provided to patients in Estonia, Lithuania, Finland, Hungary, Italy, Spain and Germany,[22] on the contrary to what we found among the elderly in RMBH. We suppose that these differing results are due to a higher disease burden in the population we analyzed, which is to be expected among the elderly, leading to a poorer evaluation of services.

In our study, association was predominant between chronic health conditions and poorer perception of PHC performance with regard to the care coordination, family orientation and community orientation attributes. Predominance of poorer PHC evaluation from the perspective of patients with chronic health conditions is also found in other populations,[23] notwithstanding a study conducted in the United States with women treated for breast cancer having shown better evaluation of PHC services.[24] A study conducted in China with patients with hypertension reinforces these contrasting results, as they evaluated some attributes as being good and others as poor.[25] Moreover, studies evaluating care quality based on process indicators (prescribing medication in accordance with the patient's health conditions, for instance) rather than from the patient's perspective, found better quality of care among elderly people with multiple chronic conditions.[26] It is therefore clear yet again that the results of evaluation studies need to be interpreted based on the context of the service that is being evaluated, although among the elderly in RMBH there appears to be a relationship between a higher number of diseases and poorer perception of care quality, bearing in mind that a person with multiple morbidities tends to use the service more.[27]

The comparisons mentioned should be analyzed with caution. Consideration needs to be given to the differences, possibly substantial, in the methodology used to evaluate PHC, as well as differences in the organization of health systems in each country/ region and differences in the sociodemographic characteristics of the populations studied. Differing health system characteristics may also hinder comparisons. The majority of European countries have a public health system providing universal coverage and the private sector, when it exists, is restricted to a very small amount of services.[28] In our study, in order for PHC to be evaluated with propriety among SUS users, we deemed it necessary not to include participants who had private health insurance. Furthermore, most studies recorded in the literature have not just evaluated the elderly population, as was the case in our study.

A limitation of our study lies in its cross-sectional nature as this does not allow evaluation of the temporal relationship between the variables examined. Another aspect to be considered is the method used to evaluate PHC attributes, consisting of a single question for each of them. We emphasize that these questions were prepared based on the same theoretical reference used to define the standardized evaluation instrument for SUS Primary Care, namely PCA-Tool Brasil, one of the tools most used in studies intending to evaluate PHC services in Brazil.[29] Even so, the results obtained by our study cannot be directly compared with others that used PCA-Tool Brasil, given that among other things that some of the questions are different, which may also explain the differing results. However, a recent study used a similar approach, except for the questions about care coordination and community orientation, demonstrating that this is a possible methodological alternative.[30] Although different studies have used diverse ways of evaluating PHC, and although there is no one predominant instrument in particular, the use of the same concepts employed in defining the evaluation instruments used can be seen, so that, invariably, all of them refer to PHC attributes. At the end of the day, the results presented should be interpreted in the light of the questions used and the answers obtained by administering the questionnaire have served to demonstrate the perception of elderly people living in RMBH regarding important aspects of PHC.

The methodology used in our study was capable of characterizing PHC services adequately, at least with regard to the perception of the population that used them. Moreover, it is a population-based study conducted with a representative sample of the elderly population of a large Brazilian metropolitan area, and can contribute to knowledge of PHC evaluation in this context.

The results found enable the conclusion to be reached that PHC services received good evaluation

from the perspective of elderly people living in RMBH, with the exception of the community orientation attribute. It was not possible to establish a consistent pattern for the associations we studied but, overall, it appears that greater use of curative or preventive services and reporting of chronic conditions lead to a poorer perception of PHC quality, above all in relation to care coordination, family orientation and community orientation. It is noteworthy that the older elderly with those with more schooling demonstrated better perception of first-contact access and continuity.

The results do not just reflect the perception of the elderly people interviewed regarding the structuring of health services in the Belo Horizonte Metropolitan Region. They can also serve to assist with identification of groups with greater care service needs and priorities,

in addition to guiding the implementation of policies to improve the quality of SUS primary health care, with the aim of achieving more adequate performance, especially in the case of the attributes that received the poorest evaluation.

Authors' contributions

Augusto DK, Lima-Costa MF, Macinko J and Peixoto SV took part in the conception of the study, data analysis and interpretation and critical revision of the contents of the manuscript. Augusto DK and Peixoto SV took part in writing the manuscript. All the authors have approved the final version of the manuscript and declare that they are responsible for all aspects of the study, vouching for its accuracy and integrity.

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