

Inequalities in the use of health services in a municipality in Southern Brazil in 2019: a cross-sectional study

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ABSTRACT

Objective: to assess inequalities in the use of health services in a municipality in Southern Brazil. **Methods:** This was a population-based cross-sectional study conducted with adults living in the urban area of the municipality of Criciúma, state of Santa Catarina, Brazil, between March and December 2019; the research outcomes were medical consultation, dental visit, nutritional counseling and the use of the Brazilian National Health System (*Sistema Único de Saúde* – SUS); the exposures were age, schooling and income; inequalities were analyzed using the Slope index of inequality and equiplots. **Results:** A total of 820 individuals were studied; medical consultation was higher (14.2 percentage points [p.p.]), and dental visit was lower (-29.5 p.p.), in older adults, when compared to young people; dental visit (41.1 p.p.) and nutritional counseling (18.0 p.p.) were higher in individuals with higher level of education, when compared to those with lower level of education; the use of SUS was higher in older adults (21.3 p.p.), with lower level of education (-61.2 p.p.) and lower income (-51.6 p.p.), when compared to their peers. **Conclusion:** in order to develop public policies, these inequalities should be taken into consideration.

Palavras-chave: Health Inequality; Use of Health Services; Brazilian National Health System; Slope Index of Inequality; Cross-sectional studies.

INTRODUCTION

Individual and collective health can be influenced by contextual and territorial differences, as well as by social distinction.¹ In order to cope with these differences, health services are tools that have the potential to reduce health inequalities, and intersectoral actions and health policies are essential for the full performance of interventions aimed at changing the health status of the population.¹⁻³

Use of health services is defined as the user's contact with such services, for the purpose of preventing, promoting maintenance or health recovery, and the reasons for seeking these services can vary and depend on individual needs and the community context.³ In Brazil, the public and private sectors offer health services to the population.⁴

The Brazilian National Health System (*Sistema Único de Saúde – SUS*) corresponds to the health services provided by the public sector, with the possible participation of the private sector in a complementary manner. Unlike the previous Brazilian health system, which was characterized by fragmentation and inequalities in care, SUS aims to provide universal health coverage, taking into consideration the principles of universality, integrality, equity, social participation, decentralization, hierarchization and regionalization.^{4,5}

The analysis of social inequalities regarding the quality, access and use of health services is of utmost importance for assessing the performance of health systems.² Since its implementation, SUS has contributed significantly to the reduction of health inequalities in Brazil; however, taking into consideration the social and economic differences among the macro-regions of the country, inequalities in population access and health care are still present.²

An individual's health conditions are not determined solely by biological and individual issues. Social determinants of health are social, cultural, behavioral, economic, political and racial conditions that also influence population health,

Study contributions	
Main results	Medical consultations were the most frequent services and dental visits were the least frequent services among older adults. Dental visits and nutritional counseling were the most frequent services among those with higher level of education. Use of the the Brazilian National Health System (<i>Sistema Único de Saúde – SUS</i>) was most frequent in older adults, with lower level of education and lower income.
Implications for services	To increase interdisciplinarity in health care, joint actions between professionals and management are necessary, emphasizing and disseminating to the population, the importance and availability of multidisciplinary care for health care.
Perspectives	The findings highlight the importance of developing interdisciplinarity in health care, by expanding access to multidisciplinary services and directing health policies and actions to groups at higher risk for inequalities.

highlighting that a disease process is not only determined by a relationship between cause and effect, but also by inequities.⁵

In this sense, the development of population-based research is of utmost importance for the evaluation of socioeconomic inequalities related to the use of health services.² This type of research aims to promote improvements in the functioning of health systems and policies, as well as to establish relationships between the

hierarchical levels of social determinants and their impact on population health.¹⁵

This study aimed to assess inequalities in the use of health services in a municipality in Southern Brazil.

METHODS

This was a population-based cross-sectional study conducted in the municipality of Criciúma, state of Santa Catarina, between March and December 2019. Criciúma has 219,393 inhabitants, a population density of 815.87 inhabitants per km², a human development index of 0.788 and a gross domestic product *per capita* of BRL 36,073.31.6 The data used in this study were derived from the research entitled *Health of the Population of Criciúma*, the first population-based study conducted among adults and older adults living in the municipality, with the objective of analyzing their health and associated factors.

All individuals aged 18 years or older living in the urban area of Criciúma were considered eligible for the study. Individuals unable to answer and/or conclude the interview due to cognitive deficits were excluded.

The sample estimation was based on data from the 2010 Population Census and was performed in two stages: first, (i) the selection of census tracts (primary units), and then (ii) the selection of households (secondary units) from primary units.⁷ All 306 census tracts located in the urban area of Criciúma with private households were listed, in ascending order and according to the code determined by the Brazilian Institute of Geography and Statistics (*Instituto Brasileiro de Geografia e Estatística* – IBGE), of these, 25% were randomly selected, totaling 77, in which 15,218 households were identified, 618 of them systematically selected to take part in the study. All eligible residents of the selected households were invited to participate.

For data collection, a single face-to-face, pre-coded and standardized questionnaire was administered, whose average administration time

was 30 minutes, addressing sociodemographic, behavioral, anthropometric and health questions.

The outcomes studied were: medical consultation (yes; no); dental visit (yes; no); receiving nutritional counseling by a nutritionist, doctor or nurse (yes; no); and use of public or private health services. Use of SUS (yes; no), corresponding to the performance of one of the services provided by SUS, was also an outcome assessed. The information was reported by the participants and had as reference the year prior to the interview.

The independent variables were: sex (male; female); age (in years: 18 to 29; 30 to 39; 40 to 49; 50 to 59; 60 or older); race/skin color (White; Black; mixed-race/Asian/Indigenous); income (in Brazilian Real [BRL]: up to 500.00; 500.00 to 1,000.00; 1,001.00 to 2,000.00; 2,001.00 or more); and schooling (in years of study: 0 to 4; 5 to 8; 9 to 11; 12 or more).

Descriptive analyses of absolute and relative frequencies were performed and 95% confidence intervals (95%CI) were calculated for all variables studied. In order to assess the outcomes (use of SUS; medical consultation; dental visit; and receiving nutritional counseling) according to sex, age, race/skin color, income and schooling, prevalences and 95%CI were calculated and the differences were tested using Pearson's chi-square test; and adjusted analyses, by means of Poisson regression with robust variance.⁸ As a measure of effect of the adjusted analysis, the prevalence ratio (PR) was presented. The significance level of 5% and 95%CI were considered.

For the adjusted analyses, a hierarchical model was built to identify possible confounders.⁹ In the first level of this model, sex, race/skin color and age were included; and income and schooling were included in the second level. The variables that presented a significance level of 20% (p-value < 0.20) remained in the final analysis model.

Inequalities were assessed taking into consideration the variables age, income and schooling. In order to measure such inequalities, the Slope Index of Inequality (SII) was used. In this index, the difference in percentage points of the

prevalence of outcomes in the extreme groups of the independent variables included were calculated, thus comparing the most favored with the least favored groups (in this study: age 18-29 versus ≥ 60 years; income \geq BRL 2,001.00 versus < 500.00 ; schooling ≥ 12 versus 0-4 years of study). Positive values indicate a higher prevalence of the outcome in the most favored group of the independent variable, while negative values indicate a higher prevalence of the outcome in the least favored group of the independent variable.¹⁰⁻¹³ Equiplots were also built, with the aim of illustrating inequalities.

All statistical analyses were performed using Stata software, version 16.0, and considered complex sampling employed using the `svy` command.

The project was approved by the Research Ethics Committee of the Universidade do Extremo Sul Catarinense on December 14, 2018: Protocol No. 3,084,521 [Certificate of Submission for Ethical Appraisal (*Certificado de Apresentação para Apreciação Ética* – CAAE) No. 04033118.4.0000.0119]. All interviewees agreed to participate in the research by signing the Free and Informed Consent Form before the interview.

RESULTS

A total of 820 individuals were interviewed, mostly female (63.78%) and of white race/skin color (82.50%). Approximately half of them were ≥ 60 years of age (45.00%) and had completed up to 8 years of education (53.60%); as for income, about one third (31.19%) received between BRL 1,001.00 and 2,000.00 per month (data not shown in the tables). Losses and refusals accounted for 13.9%.

Regarding the use of health services, 96.32% of the interviewees had used at least one of the services assessed in the previous year. Among those who used them, 40.43% used public services and 35.97% private services, while the use of services provided by both public and private sectors was mentioned by 23.60% of the participants. As for consultations, 88.30% of the sample had a medical consultation, 64.44% of whom in SUS. The frequency of dental visits

was 68.79%, most of them in the private sector (71.70%). Just over a quarter of the interviewees had received nutritional counseling (29.78%), 58.82% of them in SUS (Table 1).

The prevalence of use of SUS was higher among females (p -value = 0.002), in older adults (p -value = 0.001), with lower monthly income (p -value < 0.001) and lower level of education (p -value < 0.001). After adjustment, the lower the income and schooling, the higher the use of SUS (p -value < 0.001 for the two variables) (Table 2).

Younger individuals showed a lower prevalence of medical consultations (p -value = 0.002), and higher prevalence of dental visits (p -value < 0.001). Lower level of education was associated with lower prevalence of dental visits (p -value < 0.001) and receiving nutritional counseling (p -value = 0.008). After adjustment, younger individuals (18-29 years) presented lower prevalence (PR = 0.88; 95%CI 0.79;0.97) and higher dental visits (PR = 1.14; 95%CI 1.00;1.30) of medical consultations when compared to older adults (≥ 60 years). The lower the level of education, the lower the prevalence of dental visits (p -value < 0.001). Those who had completed up to 4 years of education had lower prevalence (PR = 0.62; 95%CI 0.45;0.86) of receiving nutritional counseling when compared to those with a higher level of education (≥ 12 years).

The inequalities in the use of SUS, assessed by the SII according to age, income and schooling, can be seen in Table 4, and are graphically illustrated in Figure 1. The frequency of medical consultations was 14.2 percentage points (p.p.) higher in older adults, when compared to younger people (18-29 years old). Dental visits, on the other hand, were mostly concentrated among younger people with higher level of education. Individuals aged 18 to 29 years had a prevalence 29.5 p.p. higher than older adults; this same prevalence, among those with higher level of education was 41.1 p.p. higher when compared to those with lower level of education. Receiving nutritional counseling was more concentrated in individuals with higher level of education, i.e.: they presented a prevalence of 18.0 p.p. when

Table 1 – Use of health services in the last year by individual living in Criciúma, state of Santa Catarina, Brazil, 2019 (n = 820)

Variables	n	% (95%CI) ^a
Use of health services^b		
No	30	3.68 (2.58;5.22)
Yes	785	96.32 (94.78;97.42)
Nature of health service^c		
Public	317	40.43 (37.04;43.92)
Private	282	35.97 (32.68;39.40)
Public and private	185	23.60 (20.75;26.70)
Performance of medical consultations		
No	95	11.70 (9.66;14.10)
Yes	717	88.30 (85.90;90.34)
Nature of service where the medical consultation was performed^d		
Public	462	64.44 (60.85;67.86)
Private	255	35.56 (32.14;39.15)
Performance of dental consultation^e		
No	242	31.31 (28.13;34.67)
Yes	531	68.79 (65.33;71.87)
Nature of service where the dental consultation was performed^f		
Public	150	28.30 (24.62;32.30)
Private	380	71.70 (67.70;75.40)
Received nutritional counseling		
No	573	70.22 (66.99;73.26)
Yes	243	29.78 (26.73;33.01)
Nature of service where he or she received nutritional counseling^{g,h}		
Public	90	58.82 (50.80;66.40)
Private	63	41.18 (33.60; 49.20)

a) 95%CI: 95% confidence interval; b) Medical consultation, dental consultation or receiving nutritional counseling, in the public or private sector, in the last year; c) For those who answered "yes" to the variable "use of health services"; d) For those who answered "yes" to the variable "medical consultation"; e) Maximum percentage of unknown observations for dental consultation: 5.7% (n = 47); f) For those who answered "yes" to the variable "dental consultation"; g) For those who answered "yes" to the variable "nutritional counseling"; h) The answers "other", "media" and "hospital" were excluded from the analysis, because they did not consider the sector of the service.

Table 2 – Prevalence and prevalence ratio (PR) adjusted for the use of Brazilian National Health System's services by the sociodemographic characteristics of the population, Criciúma, state of Santa Catarina, Brazil, 2019

Variables	n	% (95%CI) ^a	p-value ^b	PR (95%CI)	p-value ^c
Sex			0.002		0.772
Male	100	44.84 (38.41;51.46)		1.00	
Female	217	57.71 (52.64;62.63)		0.98 (0.83;1.15)	
Age (years)			0.001		0,280
18-29	22	33.85 (23.26;46.34)		0.78 (0.54;1.12)	
30-39	26	39.39 (28.21;51.81)		0.89 (0.65;1.22)	
40-49	38	60.32 (47.60;71.78)		1.15 (0.92;1.43)	
50-59	72	58.54 (49.56;66.98)		1.05 (0.88;1.25)	
≥ 60	159	56.38 (50.51;62.08)		1.00	
Race/skin color^d			0.098		0,169
White	246	51.04 (46.57;55.49)		1.00	
Black	24	66.67 (49.38;80.39)		1.27 (0.98;1.64)	
Mixed-race/Asian/ Indigenous	40	59.70 (47.40;70.90)		1.09 (0.91;1.32)	
Income (Brazilian Real – BRL)			< 0.001		< 0,001
< 500.00	72	68.57 (58.98;76.80)		2.00 (1.56;2.57)	
Between 500.00 and 1,000.00	89	68.99 (60.42;76.43)		1.76 (1.36;2.27)	
Between 1,001.00 and 2,000.00	96	56.80 (49.18;64.12)		1.63 (1.27;2.10)	
≥ 2,001.00	54	30.17 (23.85;37.33)		1.00	
Schooling (years of study)			< 0.001		< 0,001
0-4	118	71.08 (63.68;77.51)		3.36 (2.07;5.43)	
5-8	107	68.59 (60.83;75.43)		3.24 (2.00;5.25)	
9-11	76	39.58 (32.87;46.71)		2.00 (1.22;3.28)	
≥ 12	16	18.82 (11.78;28.71)		1.00	

a) 95%CI: 95% confidence interval; b) Pearson's chi-square test; c) Wald test; d) Missing data in 7 participants.

Table 3 – Prevalence and prevalence ratio (PR) of medical consultations, dental consultations and receiving nutritional counseling according to the sociodemographic characteristics of the population, Criciúma, state of Santa Catarina, Brazil, 2019

Variables	Performance of medical consultation (n = 717)					Performance of dental consultation (n = 531)					Receiving nutritional counseling (n = 243)				
	n	% (95%CI ^a)	p-value ^b	PR (95%CI ^a)	p-value ^c	n	% (95%CI ^d)	p-value ^b	PR (95%CI ^a)	p-value ^c	n	% (95%CI ^d)	p-value ^b	PR (95%CI ^a)	p-value ^c
Sex			0.075		0.077			0.288		0.670			0.097		0.054
Male	250	85.62 (81.09;89.21)		1.00		201	71.02 (65.44;76.03)		1.00		78	26.26 (21.55;31.59)		1.00	
Female	467	89.81 (86.89;92.12)		1.05 (0.99;1.11)		330	67.35 (63.05;71.37)		0.98 (0.89;1.08)		165	31.79 (27.92;35.94)		1.25 (0.99;1.57)	
Age (in years)			0.002		0.001			< 0.001		0.012			0.774		0.452
18-29	81	82.65 (73.73;89.00)		0.88 (0.79;0.97)		79	83.16 (74.13;89.48)		1.14 (1.00;1.30)		32	31.68 (23.27;41.48)		0.87 (0.62;1.21)	
30-39	73	78.49 (68.86;85.77)		0.84 (0.75;0.94)		77	84.62 (75.53;90.74)		1.19 (1.05;1.35)		32	34.41 (25.38;44.73)		0.97 (0.69;1.36)	
40-49	75	89.29 (80.51;94.38)		0.96 (0.88;1.04)		56	68.29 (57.32;77.55)		1.04 (0.88;1.23)		23	27.38 (18.82;38.02)		0.84 (0.57;1.22)	
50-59	151	88.30 (82.52;92.35)		0.95 (0.90;1.02)		109	66.46 (58.84;73.31)		1.04 (0.91;1.19)		47	27.49 (21.28;34.71)		0.87 (0.65;1.16)	
≥ 60	337	92.08 (88.81;94.45)		1.00		210	61.58 (56.29;66.62)		1.00		109	29.70 (25.23;34.59)		1.00	
Race/skin color			0.960		0.918			0.819		0.772			0.262		0.208
White	582	88.72 (86.05;90.92)		1.00		428	68.70 (64.94;72.22)		1.00		194	29.53 (26.16;33.14)		1.00	
Black	41	89.13 (75.95;95.51)		1.02 (0.92;1.13)		30	65.22 (50.13;77.76)		0.92 (0.74;1.13)		12	24.49 (14.26;38.74)		0.82 (0.49;1.38)	
Mixed-race/Asian/Indigenous	79	87.78 (79.12;93.16)		1.00 (0.92;1.08)		60	70.59 (59.92;79.39)		1.04 (0.90;1.20)		33	36.67 (27.27;47.21)		1.28 (0.95;1.72)	

To be continue

Continuation

Table 3 – Prevalence and prevalence ratio (PR) of medical consultations, dental consultations and receiving nutritional counseling according to the sociodemographic characteristics of the population, Criciúma, state of Santa Catarina, Brazil, 2019

Variables	Performance of medical consultation (n = 717)					Performance of dental consultation (n = 531)					Receiving nutritional counseling (n = 243)				
	n	% (95%CI ^a)	p-value ^b	PR (95%CI ^a)	p-value ^c	n	% (95%CI ^d)	p-value ^b	PR (95%CI ^a)	p-value ^c	n	% (95%CI ^d)	p-value ^b	PR (95%CI ^a)	p-value ^c
Income (Brazilian Real – BRL)			0.351		0.276			0.050		0.332			0.946		0.602
< 500.00	130	86.09 (79.55;90.79)		1.03 (0.95;1.12)		99	68.75 (60.66;75.84)		0.95 (0.83;1.09)		44	29.33 (22.55;37.17)		0.92 (0.66;1.27)	
Between 500.00 and 1,000.00	152	92.12 (86.86;95.39)		1.06 (0.99;1.14)		91	59.87 (51.83;67.41)		0.92 (0.79;1.07)		46	27.88 (21.53;35.26)		0.94 (0.68;1.31)	
Between 1,001.00 and 2,000.00	214	88.43 (83.72;91.91)		1.03 (0.96;1.10)		157	68.86 (62.52;74.56)		0.98 (0.87;1.10)		71	28.74 (23.42;34.73)		0.96 (0.73;1.28)	
≥ 2,001.00	200	87.34 (82.34;91.07)		1.00		166	73.45 (67.28;78.83)		1.00		70	30.57 (24.92;36.87)		1.00	
Schooling (years of study)			0.624		0.144			< 0.001		< 0.001			0.008		0.001
0-4	196	90.32 (85.58;93.62)		0.95 (0.87;1.04)		101	49.51 (42.66;56.37)		0.64 (0.54;0.76)		55	25.35 (19.97;31.59)		0.62 (0.45;0.86)	
5-8	188	86.24 (80.97;90.23)		0.94 (0.87;1.03)		140	68.97 (62.23;74.98)		0.86 (0.76;0.98)		54	24.66 (19.37;30.83)		0.61 (0.44;0.85)	
9-11	232	88.21 (83.70;91.60)		0.99 (0.91;1.07)		197	77.87 (72.30;82.58)		0.95 (0.85;1.06)		89	33.46 (28.02;39.37)		0.84 (0.63;1.11)	
≥12	100	88.50 (81.09;93.24)		1.00		92	82.14 (73.83;88.24)		1.00		45	39.82 (31.14;49.20)		1.00	

a) 95%CI: 95% confidence interval; b) Pearson's chi-square test; c) Wald test.

Table 4 – Absolute inequalities in medical consultation, dental consultation, receiving nutritional counseling and use of Brazilian National Health System's (*Sistema Único de Saúde – SUS*) services according to age, income and schooling, Criciúma, state of Santa Catarina, Brazil, 2019

Outcome	Coefficient ^{a,b}	p-value
Performance of medical consultation		
Age ^c	14.2	0.001
Income ^d	-1.2	0.779
Schooling ^e	-1.8	0.636
Performance of dental consultation		
Age ^c	-29.5	< 0.001
Income ^d	11.0	0.061
Schooling ^e	41.1	< 0.001
Receiving nutritional counseling		
Age ^c	-2.8	0.632
Income ^d	2.3	0.687
Schooling ^e	18.0	0.001
Use of SUS service		
Age ^c	21.3	0.003
Income ^d	-51.6	< 0.001
Schooling ^e	-61.2	< 0.001

a) Analysis performed using the Slope index of inequality (SII); b) Unit of measurement: Percentage points; c) Age: 18-29 versus ≥ 60 years old; d) Income: < BRL 500.00 versus ≥ BRL 2,001.00; e) Schooling: 0 to 4 versus 12 years or more of study.

compared to those with lower level of education. The frequency of use of SUS was higher among older adults with lower income and lower level of education. Older adults, specifically, presented a 21.3 p.p. higher prevalence of use of public sector when compared to younger individuals. Finally, those who earned up to BRL 500.00 per month and had up to 4 years of education presented, respectively, 51.6 and 61.2 p.p. higher prevalence of use of SUS, when compared to those with higher income and higher level of education.

DISCUSSION

This study found important inequalities when taking into consideration the variables age, income and schooling in the profile of use of health services. Older adults had a higher frequency

of medical consultations and lower frequency of dental visits, when compared to younger individuals, while individuals with higher level of education presented a higher frequency of receiving nutritional counseling and dental visits, when compared to those with fewer years of education. In turn, a higher frequency of use of SUS was found in older adults, individuals with lower level of education and lower income, when compared to their peers.

The National Health Policy (*Política Nacional de Saúde – PNS*), a Brazilian survey of national coverage, conducted with the population aged 14 years or older, in 2019, and a representative study of Brazilian older adults, conducted with data from the *Global Burden of Disease Study 2017*, also conducted in the national territory, indicate that aging is accompanied by an increase

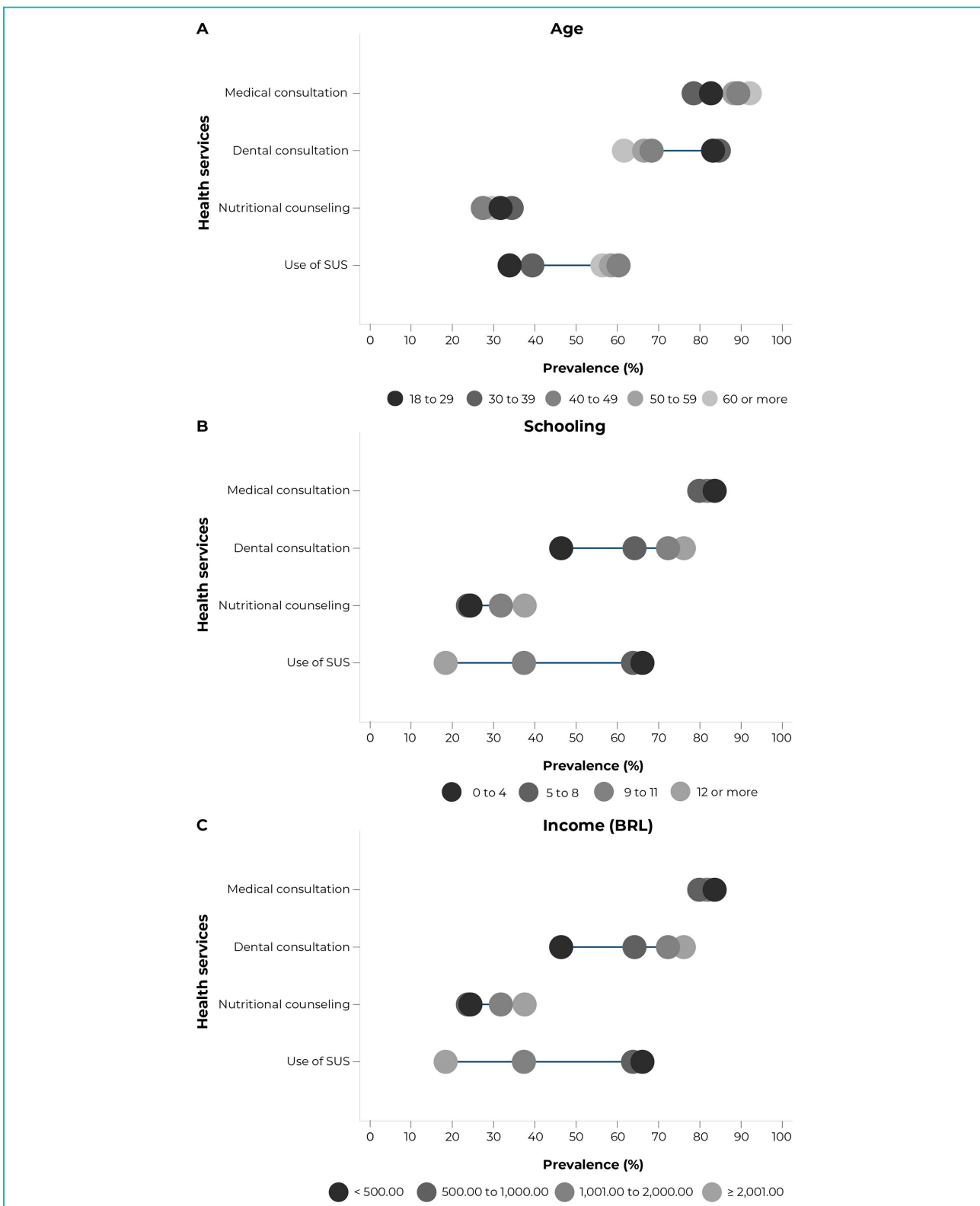


Figure 1 – Percentage of medical consultation, dental consultation, receiving nutritional counseling and use of Brazilian National Health System's (*Sistema Único de Saúde - SUS*) according to age (A), education (B) and income (C), Criciúma, state of Santa Catarina, Brazil, 2019

in the prevalence of chronic non-communicable diseases, in mortality and in the rise in disability due to such diseases, with 60- year-or-older age group being the most affected. This fact probably occurs due to increased life expectancy and increased access to health,^{14,15} which could facilitate the development and identification of these diseases. The existence of such diseases, as well as a greater number of comorbidities, is related to a greater use of health services, including medical consultation, which is most likely due to the need for treatment and monitoring of their health conditions. Accordingly, another study, on data from the 2013 PNS, shows that having any chronic health condition, functional limitation and a worse health perception¹⁵ is associated with a greater demand for medical care.

It could be seen that older adults had a lower frequency of dental visits, while those with higher level of education presented a higher frequency of this service. In Brazil, a research evaluating the trend of inequality in the use of dental services, estimated by the SII index based on the periods 1998 and 2013, on data from the National Household Sample Survey (*Pesquisa Nacional por Amostra de Domicílios*) conducted by IBGE, from 1998 to 2008, and 2013 PNS (both conducted in the national territory, the first one with data from all residents in selected households and the second one only with individuals aged 18 years or older), observed that, for all age groups analyzed, there was a reduction in the lack of access to dental visits between 1998 and 2008, due to the implementation of the National Oral Health Policy (*Política Nacional de Saúde Bucal – PNSB*). The PNSB has expanded access to public oral health care throughout the country.¹⁶ As for education, a cross-sectional study with individuals aged 30 years and older, conducted in the United States, on data from the *National Health and Nutrition Examination Survey, 2015-2016*, also using the SII, showed that, as the level of education increased, the frequency of not having a dental visit in the last year decreased.¹⁷ However, the findings of the North American study should not serve as a reference for the Brazilian reality, given the

socioeconomic and health system differences between the two countries.

One of the reasons reported for not seeking dental services is tooth loss,¹⁸ which may be related to the lower frequency of dental care among older adults. This finding is worrisome, taking into consideration the decline in oral health with aging, which may affect food intake, nutritional status and, consequently, the health of older adults, although the quality of such evidence is considered weak.¹⁹ In addition, greater knowledge about oral health, an outcome also related to higher level of education,²⁰ seems to be associated with greater demand for dental services, including preventive dental care, and perform a lower number of invasive dental treatments, such as tooth extractions and endodontics²¹ – which may explain the finding of the present study, that is, individuals with higher level of education presented higher frequency of dental visits.

Another important result of this research is related to the frequency of receiving nutritional counseling, which was higher among those with higher level of education. A population-based cross-sectional study with adults, also conducted in a municipality in the South region, in 2016, found a higher prevalence of nutritional counseling in males with higher level of education; however, this association was not found in females.²² Nutrition literacy may play an important role in elucidating this result, a hypothesis discussed below.

Nutrition literacy is an individual's capacity to understand nutrition information, and if this ability does not exist, its absence can hinder the access, choices and construction of a nutrition knowledge.²³ This may be related to inequality in receiving nutritional counseling according to schooling, given that lower level of education seems to be associated with lower nutrition literacy.²⁴ However, most nutrition education programs and actions, despite being aimed at people with lower socioeconomic status, do not in fact take into consideration issues of socioeconomic access, which influences the achievement of a nutritionally adequate diet by these individuals.²⁵

A systematic review on interventions promoting healthy eating in developing countries, such as Brazil, demonstrated the importance of food and nutrition education to reduce social inequality in diet.²⁵ Therefore, it is evident the importance of receiving nutritional counseling for the population health and, consequently, the adoption of healthy eating, reducing the risk for NCDs.²⁵

Inequality in receiving nutritional counseling is also a worrisome result, given the current scenario of double burden of malnutrition – coexistence of malnutrition and overweight in the same population – described in low- and middle-income countries, such as Brazil.²⁶ The double burden of malnutrition has important associations with socioeconomic inequalities in the Brazilian population²⁶ and nutrition education is one of the intersectoral actions necessary to address it. Nutrition education, through actions, programs and interventions aimed at promoting healthy eating, can favor the change of this nutritional scenario.²⁷

Older adults with lower level of education and lower-income presented a higher frequency of use of the services provided by SUS. A population-based cross-sectional study, conducted in São Paulo, in 2003 and 2008, with individuals of all ages, also found an association between schooling, income and use of SUS, i.e.: lower prevalence of use of health services provided by SUS in 2003 and 2008 among individuals with 12 or more years of education and income of 5 or more minimum wages, when compared to those with lower level of education and lower income, respectively.²⁸

SUS offers several health services, such as multidisciplinary care (including home care), distribution of medicines, immunization, surgical procedures and health surveillance; in addition to having policies aimed at specific aspects and vulnerable populations, such as older adults and people with lower socioeconomic status, and allowing easier access to health services, given its free and universal character.^{4,29}

The inequalities observed in the utilization of SUS reflect how its services constitute a reference

of belonging to the most vulnerable population, which, however, does not mean inequity. While the term "inequality" points to the difference found between population groups in the evaluation of an outcome, the expression "inequity" is used to refer to inequalities considered unfair and avoidable.¹¹

Knowing individual health determinants is not enough. It is also necessary to identify the social determinants responsible for conditioning individual behaviors and, consequently, health, given their mediation in the access to food, information, work, health, education and income. Socioeconomic disadvantage exposes individuals to the worst health outcomes and vulnerabilities in health care.⁵

Identifying determinants that influence health inequality is necessary in order to plan interventions with greater impact. Public policies, despite being developed in different sectors, need intersectoral action to ensure adequate social conditions for all individuals, reaching mainly the most vulnerable groups.⁵

It is worth highlighting some limitations of this study. The cross-sectional design does not allow establishing causality in the results found. The sample studied had a higher proportion of women and older adults, populations that may present a higher demand for health services; and found socioeconomic differences when compared to data from the 2010 Population Census.³⁰ This is possibly due to business hours when the interviews were conducted. Furthermore, the outcomes were reported by the participants and may be subject to information bias. The scarcity of studies using SII to assess health inequalities, in turn, hinders the comparison of the results found with findings on other regions of the country. Taking into consideration that the results are related to a sample of a single municipality, more studies are needed to assess inequalities in the use of health services, using specific indicators for this purpose.

As strengths of this study, we highlight the fact that this population-based study represents

the adult and older adult population of the municipality of Criciúma. It is worth mentioning the use of SII, an important and complex measure of inequality, widely used in epidemiological and economic studies,^{10,11} although little explored in research conducted in the public health field.

It can be concluded that important socioeconomic inequalities in the use of medical and dental services, in receiving nutritional counseling and in the use of SUS were found, affecting mainly older adults with low-income and lower level of education. These results reinforce the importance of assessing health inequalities and the need for public health policies and actions that take into account the most vulnerable socioeconomic

groups, in order for them to be developed and implemented.

To expand population access to health care, joint actions between managers and professionals are necessary in order to emphasize and disseminate the importance and availability of multidisciplinary care in a more effective health care. Health care based on the interdisciplinarity and horizontality of SUS, aspects that are reinforced from continuing and permanent education for professionals, and from a management that analyzes and develops actions according to the needs of its territory, can contribute to the expansion of access and use of its medical, dental and nutritional services, promoting the health of the general population.

AUTHOR CONTRIBUTIONS

Meller FO and Schäfer AA collaborated with the study conception and design. Quadra MR, Schäfer AA and Meller FO collaborated with the analysis and interpretation of the results, drafting and critical reviewing of the manuscript content. All authors have approved the final version of the manuscript and declared themselves to be responsible for all aspects of the work, including ensuring its accuracy and integrity.

CONFLICTS OF INTEREST

The authors declare they have no conflicts of interest.

ASSOCIATE ACADEMIC WORK

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REFERENCES

1. Arcaya MC, Arcaya AL, Subramanian SV. Inequalities in health: definitions, concepts, and theories. *Glob Health Action*. 2015;8:27106. doi: 10.3402/gha.v8.27106
2. Viacava F, Oliveira RAD, Carvalho CC, Laguardia J, Bellido JG. SUS: oferta, acesso e utilização de serviços de saúde nos últimos 30 anos. *Cien Saude Colet*. 2018;23(6):1751-62. doi:10.1590/1413-81232018236.06022018
3. Travassos C, Martins M. Uma revisão sobre os conceitos de acesso e utilização de serviços de saúde. *Cad Saude Publica*. 2004;20(supl 2):190-8. doi: 10.1590/S0102-311X2004000800014
4. Brasil. Ministério da Saúde. Lei no 8.080, de 19 de setembro de 1990. Dispõe sobre as condições para a promoção, proteção e recuperação da saúde, a organização e o funcionamento dos serviços correspondentes e dá outras providências [Internet]. *Diário Oficial da União, Brasília (DF), 1990 Set 20 [citado 1990 Set 19], Seção 1:182*. Disponível em: http://www.planalto.gov.br/ccivil_03/leis/l8080.htm
5. Buss PM, Pellegrini Filho A. A saúde e seus determinantes sociais. *Physis: Ver Saude Colet*. 2007;17(1):77-93. doi: 10.1590/S0103-73312007000100006
6. Instituto Brasileiro de Geografia e Estatística. Conheça cidades e estados do Brasil: Içara [Internet]. Rio de Janeiro: Instituto Brasileiro de Geografia e Estatística; 2021 [citado 2020 Set 23]. Disponível em: <https://cidades.ibge.gov.br/brasil/sc/icara/panorama>
7. Instituto Brasileiro de Geografia e Estatística. Metodologia do Censo Demográfico 2010 [Internet]. Rio de Janeiro: Instituto Brasileiro de Geografia e Estatística; 2013 [citado em 15 de julho de 2021]. 712 p. Disponível em: https://ftp.ibge.gov.br/Censo_Demografico_2010.pdf
8. Barros AJ, Hirakata VN. Alternatives for logistic regression in cross-sectional studies: an empirical comparison of models that directly estimate the prevalence ratio. *BMC Med Res Methodol*. 2003;3(1):21. doi:10.1186/1471-2288-3-21
9. Victora CG, Huttly SR, Fuchs SC, Olinto MT. The role of conceptual frameworks in epidemiological analysis: a hierarchical approach. *Int J Epidemiol*. 1997;26(1):224-7. doi:10.1093/ije/26.1.224
10. Barros AJD, Victora CG. Measuring Coverage in MNCH: Determining and Interpreting Inequalities in Coverage of Maternal, Newborn, and Child Health Interventions. Madise N, organizador. *PLoS Med*. 2013;10(5):e1001390. doi: 10.1371/journal.pmed.1001390
11. Silva ICM, Restarepo-Mendez MC, Costa JC, Ewerling F, Hellwig F, Ferreira LZ, et al. Mensuração de desigualdades sociais em saúde: conceitos e abordagens metodológicas no contexto brasileiro. *Epidemiol Serv Saude*. 2018;27(1):e000100017. doi:10.5123/s1679-49742018000100017
12. Instituto Brasileiro de Geografia e Estatística. Pesquisa nacional de saúde. 2019. Percepção do estado de saúde, estilos de vida, doenças crônicas e saúde bucal. Brasil e grandes regiões [Internet]. Rio de Janeiro: Instituto Brasileiro de Geografia e Estatística; 2020 [citado 2021 Jan 25]. 113 p. Disponível em: <https://biblioteca.ibge.gov.br/index.php/biblioteca-catalogo?view=detalhes&id=2101764>
13. Passos VMA, Champs APS, Teixeira R, Lima-Costa MFF, Kirkwood R, Veras R, et al. The burden of disease among Brazilian older adults and the challenge for health policies: results of the Global Burden of Disease Study 2017. *Popul Health Metr*. 2020;18(Supl 1):14. doi:10.1186/s12963-020-00206-3
14. Malta DC, Bernal RTI, Lima MG, Araújo SSC, Silva MMA, Freitas MIF, et al. Noncommunicable diseases and the use of health services: analysis of the National Health Survey in Brazil. *Rev Saude Publica*. 2017;51(Supl 1):4. doi:10.1590/S1518-8787.2017051000090
15. Meier JG, Cabral LPA, Zanesco C, Grden CRB, Fadel CB, Bordin D, et al. Factors associated with the frequency of medical consultations by older adults: a national study. *Rev Esc Enferm USP*. 2020;54:e03544. doi:10.1590/S1980-220X2018048103544

16. Galvão MHR, Roncalli AG. Does the implementation of a national oral health policy reduce inequalities in oral health services utilization? The Brazilian experience. *BMC Public Health*. 2021;21:541. doi:10.1186/s12889-021-10586-2
17. Ju X, Mejia GC, Wu Q, Luo H, Jamieson LM. Use of oral health care services in the United States: unequal, inequitable—a cross-sectional study. *BMC Oral Health*. 2021;21(1):370. doi:10.1186/s12903-021-01708-8
18. Monteiro CN, Beenackers MA, Goldbaum M, Barros MBA, Gianini RJ, Cesar CLG, et al. Socioeconomic inequalities in dental health services in Sao Paulo, Brazil, 2003-2008. *BMC Health Serv Res*. 2016;16(1):683. doi: 10.1186/s12913-016-1928-y
19. Zelig R, Goldstein S, Touger-Decker R, Firestone E, Golden A, Johnson Z, et al. Tooth Loss and Nutritional Status in Older Adults: A Systematic Review and Meta-analysis. *JDR Clin Trans Res*. 2020;7(1):4-15. doi:10.1177/2380084420981016
20. Marquez-Arrico CF, Almerich-Silla JM, Montiel-Company JM. Oral health knowledge in relation to educational level in an adult population in Spain. *J Clin Exp Dent*. 2019;11(12):e1143-e1150. doi:10.4317/jced.56411
21. Amarasena N, Spencer AJ, Roberts-Thomson KF, Brennan DS. Dental knowledge and dental service utilization: A 2-year follow-up study. *Community Dent Oral Epidemiol*. 2018;46(4):336-42. doi: 10.1111/cdoe.12371
22. Simões MO, Dumith SC, Gonçalves CV. Recebimento de aconselhamento nutricional por adultos e idosos em um município do Sul do Brasil: estudo de base populacional. *Rev Bras Epidemiol*. 2019;22:e190060. doi:10.1590/1980-549720190060
23. Krause C, Sommerhalder K, Beer-Borst S, Abel T. Just a subtle difference? Findings from a systematic review on definitions of nutrition literacy and food literacy. *Health Promot Int*. 2018;33(3):378-89. doi: 10.1093/heapro/daw084
24. Michou M, Panagiotakos DB, Lionis C, Costarelli V. Socioeconomic inequalities in relation to health and nutrition literacy in Greece. *International Journal of Food Sciences and Nutrition*. 2019;70(8):1007-13. doi: 10.1080/09637486.2019.1593951
25. Mayén AL, Mestral C, Zamora G, Paccaud F, Marques-Vidal P, Bovet P, et al. Interventions promoting healthy eating as a tool for reducing social inequalities in diet in low- and middle-income countries: a systematic review. *Int J Equity Health*. 2016;15(1):205. doi: 10.1186/s12939-016-0489-3
26. Meller FO, Schäfer AA, Santos LP, Quadra MR, Miranda VIA. Double Burden of Malnutrition and Inequalities in the Nutritional Status of Adults: A Population-Based Study in Brazil, 2019. *Int J Public Health*. 2021;66:609179. doi: 10.3389/ijph.2021.609179
27. Menon S, Peñalvo JL. Actions Targeting the Double Burden of Malnutrition: A Scoping Review. *Nutrients*. 2019;12(1):81. doi: 10.3390/nu12010081
28. Monteiro CN, Beenackers MA, Goldbaum M, Barros MBA, Gianini RJ, Cesar CLG, et al. Use, access, and equity in health care services in São Paulo, Brazil *Cad Saude Public*. 2017;33(4):e00078015. doi:10.1590/0102-311X00078015
29. Cantalino JLR, Scherer MDA, Soratto J, Schäfer AA, Anjos DSO. Satisfação dos usuários em relação aos serviços de Atenção Primária à Saúde no Brasil. *Rev Saude Publica*. 2021;55:22. doi: 10.11606/s1518- 8787.2021055002533
30. Instituto Brasileiro de Geografia e Estatística. Censo Demográfico 2010. [Internet]. Rio de Janeiro: Instituto Brasileiro de Geografia e Estatística; 2022 [citado em 03 de setembro de 2022]. Disponível em: <https://censo2010.ibge.gov.br/resultados.htm>