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Time evolution of advice on healthy habits in Brazilians with hypertension and diabetes: National Health Survey

Evolução temporal de orientações sobre hábitos saudáveis em brasileiros com hipertensão e diabetes: Pesquisa Nacional de Saúde

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Abstract *To evaluate time evolution of receiving advice on healthy habits among Brazilians with hypertension and diabetes mellitus. Cross-sectional study with data from the 2013 and 2019 National Health Survey. We used linear regression weighted by least squares of variance to verify time evolution of the outcome estimating the annual percentage change (APC) presented according to sex, skin color, age group, and quintiles of wealth index. The analytical sample in 2013 was 11,129 individuals with hypertension and 3,182 individuals with diabetes, and in 2019 19,107 individuals with hypertension and 6,317 individuals with diabetes. For those with hypertension, there were statistically significant reductions in receiving advice for not smoking (APC: -1.49), not drinking excessive alcoholic beverages (APC: -1.48), ingesting less salt (APC: -0.56), and for all healthy habits (APC: -1.17). For those with diabetes, statistically significant reductions were observed only for not smoking (APC: -1.13) and not drinking excessive alcoholic beverages (APC: -1.11). The results suggest a reduction in all types of advice on healthy habits evaluated for hypertension and diabetes, with greater magnitude among individuals belonging to the richest quintiles.*

Key words *Hypertension, Diabetes mellitus, Monitoring of results, Research on health services, Cross-sectional studies*

Resumo *O objetivo foi avaliar a evolução temporal do recebimento de orientações sobre hábitos saudáveis entre brasileiros com hipertensão arterial e diabetes mellitus. Estudo transversal com dados da Pesquisa Nacional de Saúde de 2013 e 2019. Para verificar a evolução temporal das prevalências de orientações sobre hábitos saudáveis, realizadas por profissionais de saúde nos atendimentos para as morbidades, utilizou-se regressão linear ponderada pelos quadrados mínimos da variância, estimando a variação percentual anual (VPA) apresentada de acordo com sexo, cor da pele, faixa etária e quintis do índice de bens. A amostra analítica, em 2013, foi de 11.129 indivíduos com hipertensão e 3.182 com diabetes, e em 2019, de 19.107 indivíduos com hipertensão e 6.317 com diabetes. Para hipertensão, observou-se reduções nas orientações para não fumar (VPA: -1.49), não ingerir bebidas alcoólicas em excesso (VPA: -1.48), ingerir menos sal (VPA: -0.56) e, ainda, para todas as orientações (VPA: -1.17). Para diabetes, foram observadas reduções estatisticamente significativas apenas para não fumantes (APC: -1.13) e para os que não consomem bebidas alcoólicas em excesso (APC: -1.11). Os resultados sugerem redução de todas as orientações avaliadas para hipertensão e diabetes, com maior magnitude entre os indivíduos pertencentes aos quintis mais ricos.*

Palavras-chave *Hipertensão arterial, Diabetes mellitus, Monitoramento de resultados, Pesquisa sobre serviços de saúde, Estudos transversais*

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Introduction

The occurrence of diabetes mellitus (DM) and systemic arterial hypertension (SAH) has been increasing in Brazil[1]. According to data from the National Health Survey (*Pesquisa Nacional de Saúde* – PNS), the prevalence of DM was 6% in 2013 and 8% in 2019, and the occurrence of SAH increased from 21% in 2013 to 24% in 2019[1].The growth of these morbidities is directly impacted by changes in the population's lifestyle, such as unhealthy eating habits, physical inactivity, smoking, and alcohol consumption[2,3]from interviews with adults (≥ 18 years.

The prevention and management of these diseases and complications are mainly attributed to the Primary Health Care (PHC) network, which has a strategic character and potential to identify the population's health needs. This network performs risk stratification, health promotion and protection actions, disease prevention, diagnosis, treatment, rehabilitation, and harm reduction[4,5].

Encouraging the adoption of a healthy lifestyle is part of health promotion and disease prevention actions that can be implemented by offering this type of advice[6]. Giving advice is free of charge and can be performed by different health professionals. It may also influence the individual's behavior having a positive effect on the health of the population[7]. A study conducted in Southern Brazil, with a sample of individuals aged 60 years or older, identified that receiving advice from health professionals decreased the prevalence of salt and sugar consumption by 64% and 21%, respectively. This study also showed an increase in the prevalence of physical activity of 21%, compared to the older adults who did not receive advice[7].

However, the literature points out that offering advice does not affect the entire population[7,8], not even the total amount of individuals with chronic diseases[9,10]utilizando a escolaridade como indicador socioeconômico, no Brasil. Estudo transversal, com dados da Pesquisa Nacional de Saúde, em 2013. A atenção oferecida foi avaliada por meio dos indicadores: recomendações para alimentação saudável, manter o peso adequado, ingerir menos sal, praticar atividade física, não fumar, não ingerir bebida alcoólica em excesso, fazer acompanhamento regular e solicitação de exames de sangue e urina, eletrocardiograma e teste de esforço. As recomendações para ingerir menos sal (91%. In addition, receiving advice depends on individual characteristics, and it is strongly associated with socioeconomic status, with the poorest group of the population receiving recommendations less frequently[9,10]utilizando a escolaridade como indicador socioeconômico, no Brasil. Estudo transversal, com dados da Pesquisa Nacional de Saúde, em 2013. A atenção oferecida foi avaliada por meio dos indicadores: recomendações para alimentação saudável, manter o peso adequado, ingerir menos sal, praticar atividade física, não fumar, não ingerir bebida alcoólica em excesso, fazer acompanhamento regular e solicitação de exames de sangue e urina, eletrocardiograma e teste de esforço. As recomendações para ingerir menos sal (91%.

Considering the increasing prevalence of SAH and DM in Brazil[1], it is necessary to evaluate the care provided to the affected population and consider receiving advice as part of this care[11]. Furthermore, we highlight the importance of monitoring these indicators to formulate and restructure, when necessary, public policies. We should also make an effort to expand the practice of offering health advice to individuals with SAH and DM.

The aim of this study was to evaluate the time evolution of receiving advice on healthy habits among Brazilians with hypertension and diabetes mellitus from 2013 to 2019.

Methods

Sample

This study used data from two population-based cross-sectional surveys from the National Health Survey – PNS, collected in 2013 and 2019 by the Brazilian Institute of Geography and Statistics. The PNS sample is representative of the Brazilian population living in permanent private households, comprising all national territory, urban and rural areas, the five geographic macro-regions and the federation units, capitals and metropolitan regions.

This sample was selected by conglomerates in three stages. The first step was the selection of primary sampling units (census tracts or set of sectors). In the second step, a fixed number of permanent private households was selected within each primary sampling unit by simple random sampling. Finally, one resident was randomly selected in each household (18 years or more in 2013 and 15 years or more in 2019) to answer the questionnaire.

After the selected resident signed the informed consent form, trained interviewers col-

lected sociodemographic and health information using hand-computers in both surveys. The National Research Ethics Commission/ National Health Council approved the 2013 and 2019 data collection under protocol numbers 10853812.7.0000.0008 and 3.529.376, respectively.

Receiving advice on healthy habits

Participants with a medical diagnosis of hypertension or diabetes and who had received medical care in the last three years due to these diseases were asked about receiving advice on healthy habits from a doctor or other health professional. This practice was investigated using the following questions: "When was the last time you received medical care because of hypertension?" and "When was the last time you received medical care because of diabetes". Receiving advice on healthy habits was investigated using the following questions: "In any of the hypertension visits, did any doctor or other health professional give you any of these recommendations?" and "In any of the diabetes visits, did any doctor or other health professional give you any of these recommendations?". For both diseases, advice on health habits were the following: to maintain adequate weight, not to drink alcohol in excess, not to smoke, to maintain a healthy diet, and to practice regular physical activity. For hypertension only, the option "to intake less salt" was provided, and for diabetes only, "to decrease the consumption of carbohydrates/pasta and bread". To evaluate the set of received advice, the variable "All" was created from positive responses regarding receiving all types of advice for SAH and separately for DM.

Independent variables

Independent variables were sex (male and female), skin color (white, brown, black, and yellow/indigenous), age group (18-49, 50-59, and 60 years or more), and wealth index (in quintiles). The wealth index was calculated using the principal component analysis, which considers the number of rooms and bathrooms in the household, type of sewage, assets (color television, refrigerator, washing machine, telephone line, cell phone, microwave oven, computer, motorcycle, internet access and the number of cars), the existence of maid in the household and schooling of the head of the family. The last medical care for hypertension/diabetes was defined by asking whether the individual used the Unified Health System (Sistema Único de Saúde – SUS)? " (yes or no).

Statistical analysis

The prevalence and 95% confidence intervals (95% CI) for receiving advice on healthy habits were described according to the independent variables and stratified by the research year (2013 and 2019). Time evolution of receiving advice on healthy habits for hypertension and diabetes was estimated by linear regression weighted for least squares of variance, providing the annual percentage change (APC) in percentage points and 95%CI. The same annual variation was presented according to sex, skin color, age group, and wealth index quintiles. In a sensitivity analysis, the variation in receiving advice for hypertension and diabetes was evaluated according to the use of the Unified Health System in the last medical care.

All analyses were presented for hypertension and diabetes separately and performed in Stata 16.0 program (https://www.stata.com), using expansion factors or sample weights with the *svy command*.

Results

Of the 60,202 adults interviewed in 2013, 21.4% and 6.2% reported a medical diagnosis of hypertension and diabetes, respectively. Among the 88,531 individuals aged 18 years or older interviewed in 2019, the percentage of individuals with hypertension was 26.9% and with diabetes 8.8%. The analytical sample of this study was made up of individuals with SAH and DM who responded to the questionnaire module of chronic diseases. The prevalence of receiving advice on healthy habits for hypertension and diabetes according to the sample characteristics, from both surveys, are described in tables 1 and 2, respectively.

Figure 1 shows the time evolution of receiving advice on healthy habits among individuals with SAH and DM from 2013 to 2019. For SAH, we can observe that there were reductions in receiving advice for not smoking (APC: -1.49), not drinking alcoholic beverages in excess (APC: -1.48), on salt consumption (APC: -0.56), and for all types of advice on healthy habits (APC: -1.17). Regarding DM, statistically significant reductions were observed only for not smoking (APC: -1.13) and not drinking excessive alcoholic beverages (APC: -1.11).

Table 1. Advice on healthy habits for hypertension in 2013 and 2019 according to the characteristics of the sample. National Health Survey, Brazil (N_{2013} = 11,129; N_{2019} = 19,107).

Characteristics	Advice for hypertension											
	Adequate weight % (95%CI)		Do not drink too much % (95%CI)		Do not smoke % (95%CI)		Healthy diet % (95%CI)		Lower ingestion of salt % (95%CI)		Physical activity % (95%CI)	
	2013	2019	2013	2019	2013	2019	2013	2019	2013	2019	2013	2019
Sex												
Male	84.7 (82.5; 86.5)	84.1 (82.7; 85.5)	79.8 (77.6; 81.9)	70.7 (68.9; 72.4)	79.1 (76.8; 81.2)	69.6 (67.8; 71.3)	88.1 (86.2; 89.7)	87.2 (85.9; 88.5)	90.0 (88.2; 91.6)	87.5 (85.8; 89.0)	81.7 (79.5; 83.7)	82.1 (80.6; 83.6)
Female	84.8 (83.3; 86.2)	84.5 (83.3; 85.7)	72.4 (70.6; 74.1)	63.6 (62.1; 65.2)	74.3 (72.5; 75.9)	65.7 (64.1; 67.2)	88.5 (87.2; 89.7)	87.2 (86.1; 88.3)	91.8 (90.7; 92.8)	87.9 (86.8; 89.0)	81.8 (80.3; 83.2)	81.4 (80.2; 82.6)
Skin color												
White	89.2 (87.8; 90.5)	89.2 (87.8; 90.5)	76.4 (74.3; 78.3)	67.1 (65.3; 68.9)	76.9 (74.9; 78.8)	67.8 (74.9; 78.8)	89.2 (87.8; 90.5)	87.2 (85.9; 88.5)	91.5 (90.1; 92.7)	87.0 (85.5; 88.5)	83.8 (82.0; 85.4)	82.8 (81.4; 84.2)
Brown	86.3 (82.1; 89.6)	86.3 (82.1; 89.6)	73.5 (69.0; 77.5)	68.9 (65.9; 71.8)	73.9 (69.5; 77.9)	70.6 (67.7; 73.4)	86.3 (82.1; 89.6)	89.6 (87.6; 91.3)	91.1 (87.6; 93.7)	89.9 (87.9; 91.6)	79.4 (75.3; 83.0)	82.6 (80.0; 84.9)
Black	87.8 (86.0; 89.4)	87.8 (86.0; 89.4)	74.6 (72.4; 76.7)	65.2 (63.5; 66.9)	75.8 (73.6; 77.8)	65.6 (63.8; 67.3)	87.8 (86.0; 89.4)	86.2 (84.8; 87.5)	90.6 (88.9; 92.0)	87.7 (86.2; 89.0)	79.9 (77.8; 81.9)	80.1 (78.6; 81.5)
Yellow/Indian	89.4 (81.4; 94.3)	89.4 (81.4; 94.3)	72.1 (60.0; 81.7)	62.0 (51.9; 71.2)	76.7 (65.7; 85.0)	66.8 (56.6; 75.6)	89.4 (81.4; 94.3)	94.4 (90.6; 96.7)	93.1 (86.0; 96.7)	92.0 (86.5; 95.4)	80.0 (68.9; 87.8)	85.8 (79.2; 90.6)
Age (in years)												
18-49	85.9 (83.6; 87.7)	85.9 (84.0; 87.6)	77.5 (75.1; 79.8)	71.2 (68.9; 73.5)	77.1 (74.6; 79.4)	70.6 (68.1; 72.9)	88.5 (86.4; 90.3)	87.7 (85.9; 89.3)	90.2 (88.1; 91.9)	87.8 (85.5; 89.8)	83.6 (81.3; 85.7)	85.6 (83.7; 87.3)
50-59	86.6 (84.3; 88.6)	86.5 (84.6; 88.2)	78.8 (76.3; 81.2)	70.3 (68.0; 72.6)	79.5 (77.0; 81.8)	71.4 (69.1; 73.6)	88.6 (86.4; 90.5)	88.1 (86.3; 89.8)	92.0 (90.1; 93.5)	88.6 (86.8; 90.2)	85.9 (83.8; 87.8)	84.9 (83.0; 86.7)
60 or more	82.9 (81.0; 84.6)	82.5 (81.2; 83.8)	71.6 (69.4; 73.7)	62.1 (60.5; 63.6)	73.4 (71.2; 75.5)	63.4 (61.8; 65.0)	88.1 (86.5; 89.5)	86.5 (85.3; 87.7)	91.2 (89.8; 92.5)	87.3 (86.0; 88.4)	77.9 (75.9; 79.9)	78.1 (76.7; 79.4)
Wealth quintiles												
Q1	75.8 (72.8; 78.9)	77.2 (75.1; 79.2)	66.4 (62.9; 69.7)	57.3 (55.0; 59.5)	67.4 (63.9; 70.7)	59.5 (57.2; 61.7)	82.2 (78.8; 85.1)	84.3 (82.6; 86.0)	87.5 (84.2; 90.2)	87.3 (85.7; 88.8)	68.4 (64.8; 71.8)	70.9 (68.8; 72.8)
Q2	81.2 (78.4; 83.8)	83.8 (81.9; 85.5)	71.0 (67.8; 73.9)	64.3 (62.0; 66.6)	71.7 (68.6; 74.7)	65.8 (63.5; 68.1)	85.7 (83.0; 88.0)	87.7 (86.1; 89.1)	90.8 (88.6; 92.6)	88.7 (87.2; 90.3)	75.8 (72.7; 78.6)	78.9 (76.8; 80.8)
Q3	83.6 (80.9; 85.9)	83.3 (81.1; 85.3)	75.0 (72.0; 77.8)	68.4 (65.9; 70.8)	76.2 (73.3; 79.0)	69.8 (67.4; 72.2)	87.0 (84.6; 89.2)	85.4 (83.3; 87.3)	91.2 (89.1; 92.9)	87.3 (84.8; 90.3)	80.9 (78.1; 83.5)	81.1 (78.9; 83.2)
Q4	88.2 (85.7; 90.3)	86.1 (83.8; 88.1)	78.6 (75.8; 81.2)	67.0 (64.1; 69.8)	79.0 (76.0; 81.6)	67.1 (64.2; 69.9)	91.2 (89.2; 92.8)	86.9 (84.6; 88.9)	92.6 (90.8; 94.1)	86.7 (84.8; 89.4)	86.3 (83.8; 88.5)	84.3 (81.9; 86.4)
Q5	91.5 (89.2; 93.4)	89.4 (87.3; 91.1)	82.2 (79.1; 84.9)	72.5 (69.8; 75.1)	83.0 (80.0; 85.6)	71.7 (68.9; 74.3)	93.2 (91.2; 94.8)	90.9 (89.0; 92.5)	92.4 (90.0; 94.2)	88.6 (86.4; 90.5)	92.3 (90.3; 94.0)	89.9 (87.9; 91.6)

Source: Authors.

Table 2. Advice on healthy habits for diabetes mellitus in 2013 and 2019 according to the characteristics of the sample. National Health Survey, Brazil (N_{2013} = 3,182; N_{2019} = 6,317).

Characteristics	Advice for diabetes											
	Adequate weight % (95%CI)		Do not drink soo much % (95%CI)		Do not smoke % (95%CI)		Healthy diet % (95%CI)		Do not consume carbohydrates % (95%CI)		Physical activity % (95%CI)	
	2013	2019	2013	2019	2013	2019	2013	2019	2013	2019	2013	2019
Sex												
Male	90.0 (86.2; 92.8)	92.5 (90.7; 93.9)	81.4 (76.4; 85.6)	77.5 (74.9; 80.1)	80.7 (75.8; 84.8)	74.4 (71.5; 77.1)	93.3 (90.1; 95.4)	95.7 (94.5; 96.6)	86.8 (82.8; 90.0)	88.2 (86.1; 90.1)	84.6 (80.4; 87.9)	86.4 (84.1; 88.5)
Female	93.1 (91.0; 94.8)	91.9 (90.4; 93.2)	76.0 (72.8; 79.0)	67.4 (64.8; 70.0)	76.7 (73.3; 79.7)	69.6 (66.9; 72.1)	96.0 (94.0; 97.3)	94.3 (93.0; 95.4)	88.5 (86.0; 90.7)	89.1 (87.4;	83.5 (80.5; 86.1)	83.8 (81.7; 85.8)
Skin color												
White	92.4 (89.4; 94.6)	92.7 (90.9; 94.2)	76.4 74.3; 78.3)	67.1 (65.2; 68.9)	76.9 (74.9; 78.8)	67.8 (66.0; 69.6)	95.1 (92.5; 96.8)	95.5 (94.2; 96.6)	88.7 (85.5; 91.3)	89.0 (87.0; 90.7)	85.7 (82.1; 88.6)	84.4 (81.8; 86.7)
Brown	88.2 (80.4; 93.1)	92.0 (88.5; 94.5)	73.5 (69.0; 77.5)	68.9 (65.9; 71.8)	73.9 (69.5; 77.9)	70.6 (67.7; 73.4)	94.8 (88.9; 97.6)	95.5 (92.8; 97.2)	87.1 (80.5; 91.7)	88.1 (83.7; 91.5)	77.6 (69.5; 84.1)	84.2 (79.0; 88.2)
Black	92.0 (89.1; 94.2)	91.3 (89.6; 92.8)	74.6 (72.4; 76.7)	65.2 (63.5; 66.9)	75.8 (73.6; 77.8)	65.6 (63.8; 67.3)	94.5 (91.8; 96.3)	93.8 (92.2; 95.1)	86.9 (83.4; 89.8)	88.6 (86.6; 90.3)	82.9 (79.1; 86.2)	85.1 (82.9; 87.2)
Yellow/Indian	93.0 (79.6; 97.9)	97.0 (91.9; 99.0)	72.1 (60.0; 81.7)	62.0 (51.9; 71.2)	76.7 (65.7; 85.0)	66.8 (56.6; 75.6)	94.8 (81.4; 98.7)	98.8 (96.3; 99.6)	80.9 (56.3; 93.3)	90.3 (82.1; 95.0)	90.6 (75.7; 96.8)	94.3 (86.8; 97.6)
Age (in years)												
18-49	91.6 (87.1; 94.6)	94.5 (91.9; 96.3)	83.3 (77.7; 87.8)	77.3 (72.5; 81.5)	81.5 (75.4; 86.4)	74.8 (69.3; 79.6)	96.2 (92.3; 98.2)	97.3 (95.9; 98.2)	87.1 (81.7; 91.1)	93.2 (90.7; 95.1)	90.9 (86.4; 94.1)	90.0 (86.2; 92.9)
50-59	96.6 (94.8; 97.8)	91.8 (89.1; 93.9)	78.8 (76.3; 81.2)	70.3 (68.0; 72.6)	79.5 (77.0; 81.8)	71.4 (69.1; 73.6)	97.3 (95.7; 98.3)	94.1 (91.9; 95.8)	93.2 (90.7; 95.0)	90.6 (88.1; 92.6)	89.1 (84.8; 92.3)	88.0 (84.7; 90.7)
60 or more	89.6 (86.4; 92.1)	91.5 (90.1; 92.7)	71.6 (69.4; 73.7)	62.1 (60.5; 63.6)	73.4 (71.2; 75.5)	63.4 (61.8; 65.0)	93.1 (90.3; 95.1)	94.4 (93.2; 95.5)	85.4 (82.1; 88.3)	86.4 (84.6; 88.1)	78.6 (74.9; 81.9)	81.8 (79.7; 83.8)
Wealth quintiles												
Q1	84.6 (78.4; 89.3)	92.2 (90.2; 93.8)	71.6 (66.0; 76.7)	60.6 (58.3; 62.7)	72.0 (66.2; 77.2)	62.3 (60.1; 64.5)	90.4 (76.2; 96.5)	94.9 (93.3; 96.2)	81.6 (69.2; 89.8)	87.3 (84.6; 89.5)	72.9 (60.7; 82.4)	81.9 (79.0; 84.5)
Q2	91.0 (86.3; 94.1)	92.1 (89.0; 94.3)	72.5 (70.1; 74.8)	67.2 (64.4; 69.9)	73.8 (71.5; 76.1)	67.4 (64.5; 70.2)	93.6 (90.6; 95.7)	95.0 (92.6; 96.6)	87.4 (83.9; 90.3)	88.3 (84.7; 91.1)	80.8 (76.7; 84.3)	86.5 (82.4; 89.8)
Q3	95.7 (92.8; 98.1)	94.5 (91.9; 96.3)	80.2 (76.6; 83.4)	68.7 (65.2; 72.0)	79.5 (75.8; 82.7)	70.5 (67.2; 73.7)	98.9 (97.5; 99.5)	94.8 (91.1; 97.0)	90.6 (84.3; 94.5)	89.8 (86.4; 92.4)	94.2 (90.2; 96.6)	88.1 (83.4; 91.6)
Q4	92.6 (87.1; 95.9)	93.4 (90.3; 95.5)	81.0 (78.2; 83.5)	73.7 (71.2; 76.0)	81.2 (78.3; 83.8)	73.1 (70.6; 75.5)	98.2 (96.7; 99.1)	95.9 (93.5; 97.4)	92.2 (87.2; 95.4)	92.2 (89.6; 94.2)	92.3 (88.0; 95.1)	91.0 (87.6; 93.6)
Q5	93.5 (79.5; 98.2)	90.8 (86.5; 93.9)	82.9 (78.3; 86.7)	72.4 (69.1; 75.5)	84.3 (80.0; 87.8)	71.1 (67.7; 74.2)	95.8 (86.4; 98.8)	93.8 (90.2; 96.2)	90.5 (78.8; 96.0)	88.1 (83.6; 91.5)	91.7 (77.9; 97.2)	88.2 (83.6; 91.7)

Source: Authors.

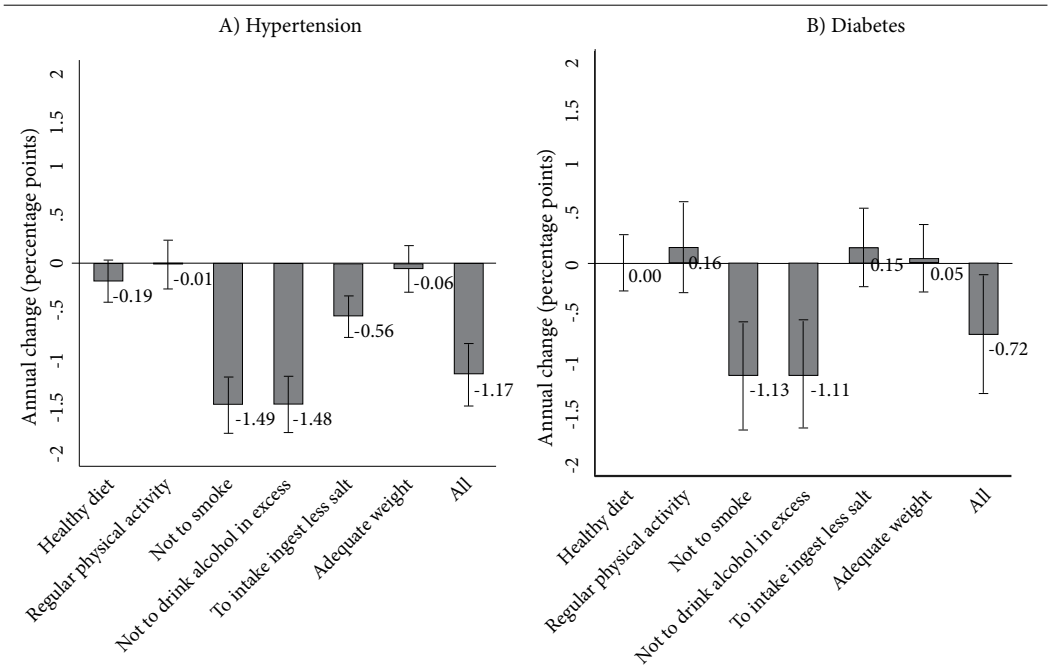

Figure 1. Time evolution of advice on healthy habits for hypertension and diabetes in 2013 and 2019. National Health Survey, Brazil.

Source: Authors.

Figure 2 shows the evolution from 2013 to 2019 for advice on healthy habits to individuals with SAH according to sex, age, skin color, and wealth quintiles. In general, we can observe a decrease in receiving all types of advice, with greater reductions in the following groups: men (APC: -1.46), individuals aged 50-59 years (APC: -1.24), and 60 years or older (APC: -1.22), white skin color (APC: -1.49) and among those belonging to the highest quintile of wealth - Q5 (APC: -1.89).

Figure 3 shows the evolution from 2013 to 2019 for advice on healthy habits to individuals with DM according to sex, age, skin color, and wealth quintiles. Regarding receiving all types of advice on healthy habits for the management of DM, we can observe reductions among the following groups: women (APC: -0.94), individuals aged 60 years or older (APC: -0.77), white skin color (APC: -1.07) and among those belonging to the fourth quintile of wealth - Q4 (APC: -1.03).

Our sensitivity analysis showed a higher decrease in receiving advice on health habits for individuals not using SUS in the last consultation (Supplementary Table 1, available from: https://doi.org/10.48331/scielodata.ZYJEAD).

Discussion

This study identified reductions in receiving advice on healthy habits to manage hypertension and diabetes during six years. Among individuals affected by hypertension, a slight reduction in receiving advice on salt ingestion was observed. However, it is important to highlight that this type of advice is an essential recommendation for this group, independently of the magnitude of this reduction. In addition, we also found a reduction in receiving all types of advice for these individuals. Reductions in receiving advice on healthy habits were also found in a smaller magnitude than hypertension when considering diabetes.

In 2011, a plan to cope with chronic non-communicable diseases (NCDs) was launched in Brazil, aiming at controlling hypertension and diabetes, among other diseases[12]. Thus, monitoring strategies, such as receiving advice from health professionals for groups affected by these morbidities, should be carried out periodically to identify which positive and negative aspects may influence the achievement of the goals provided for in the plan.

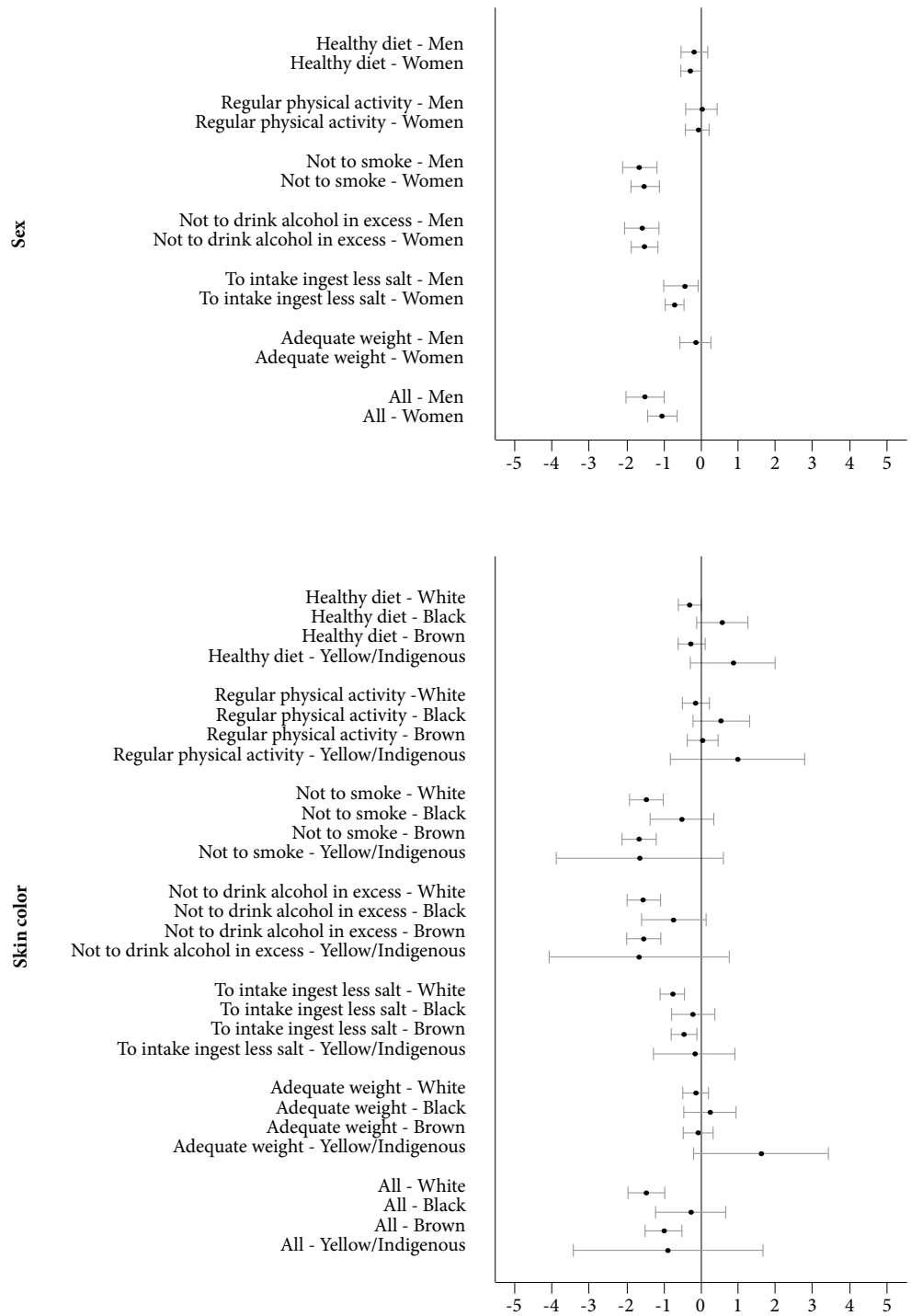

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Figure 2. Time evolution of advice on healthy habits for hypertension according to gender, age, skin color and quintiles of wealth in 2013 and 2019. National Health Survey, Brazil (N hypertension: 2013 = 11,129; 2019 = 19,107).

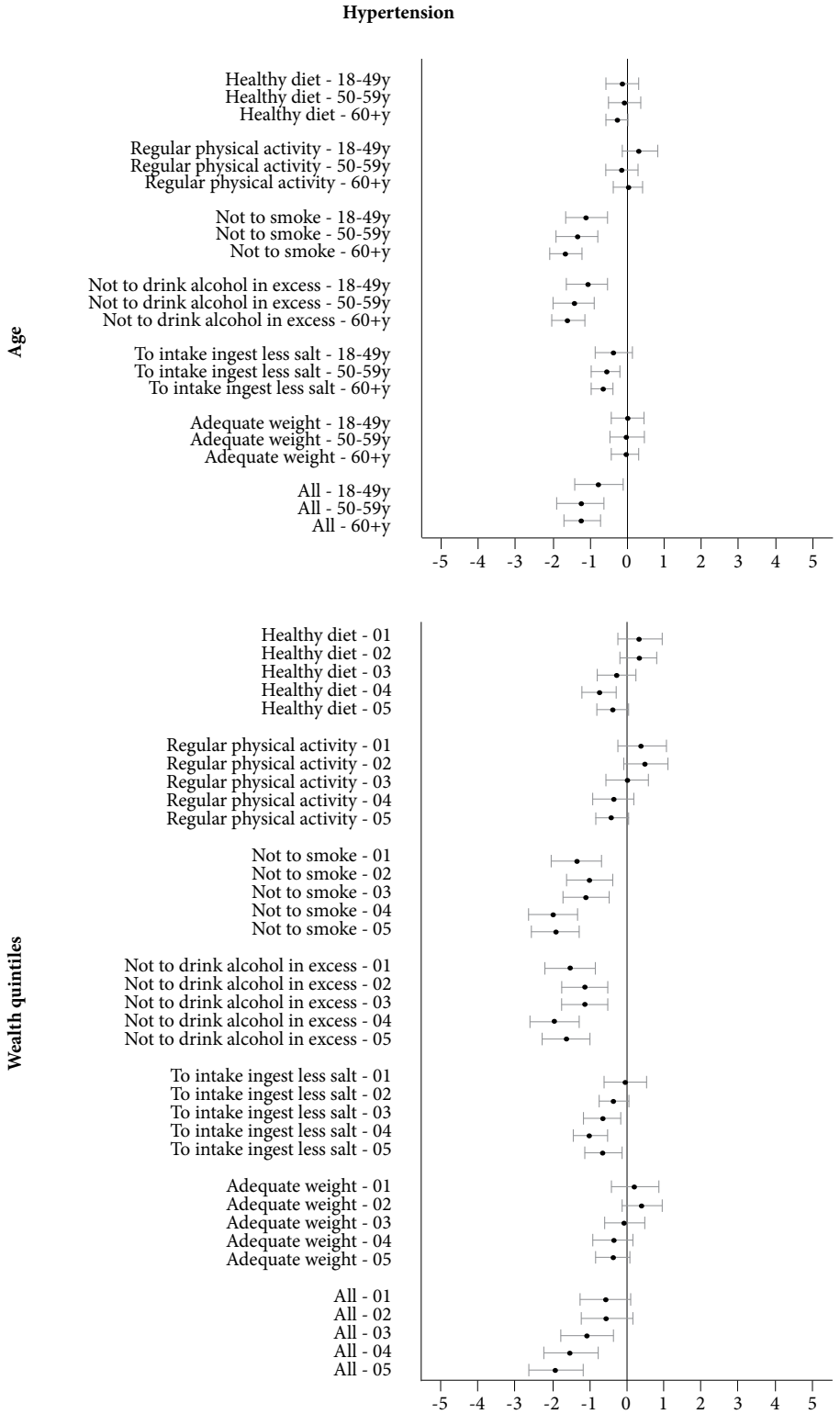

Figure 2. Time evolution of advice on healthy habits for hypertension according to gender, age, skin color and quintiles of wealth in 2013 and 2019. National Health Survey, Brazil (N hypertension: 2013 = 11,129; 2019 = 19,107).

Source: Authors.

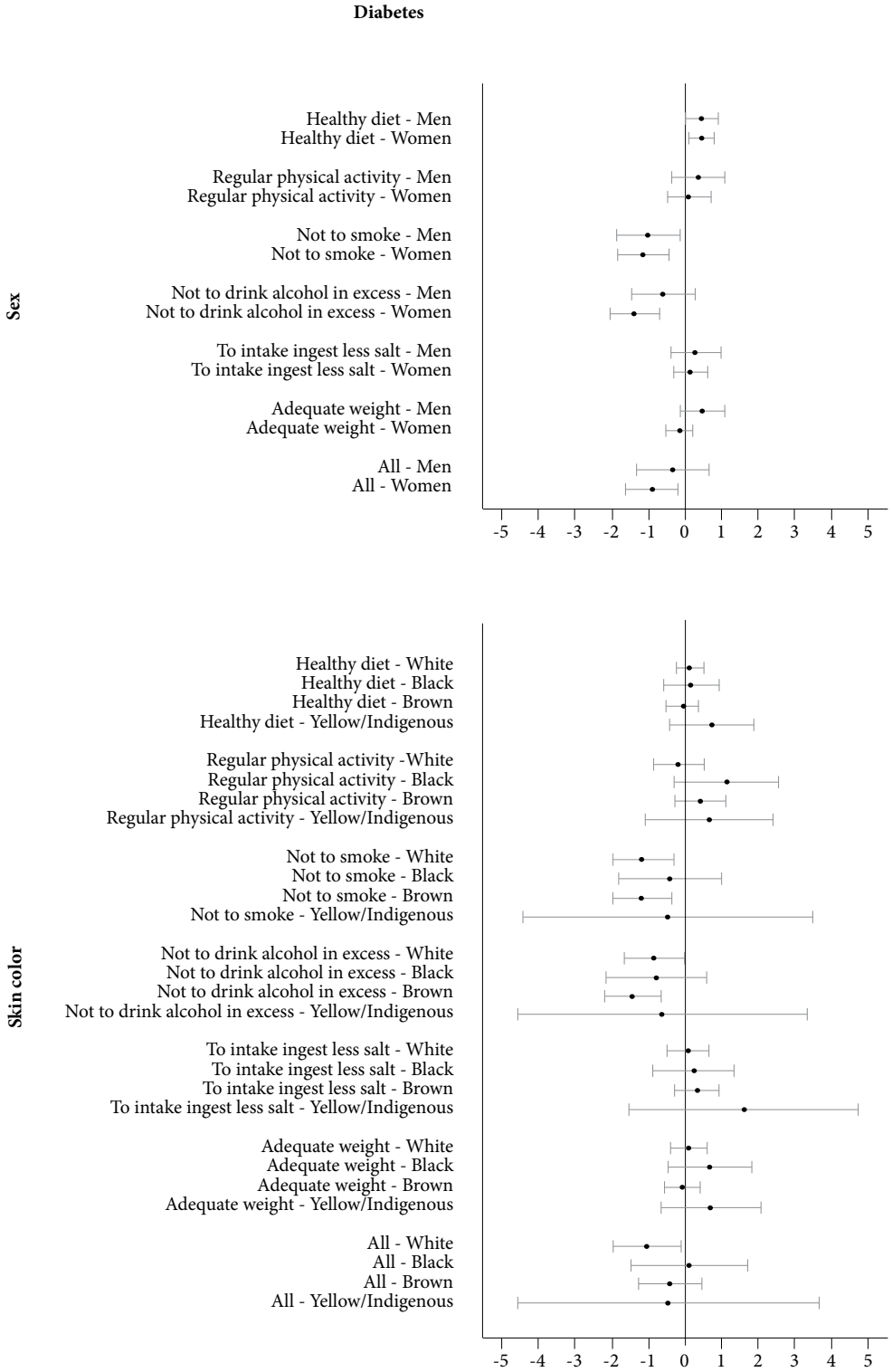

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Figure 3. Time evolution of advice on healthy habits for diabetes according to sex, age, skin color and wealth quintiles in 2013 and 2019. National Health Survey, Brazil (N diabetes: 2013 = 3,182; 2019 = 6,317).

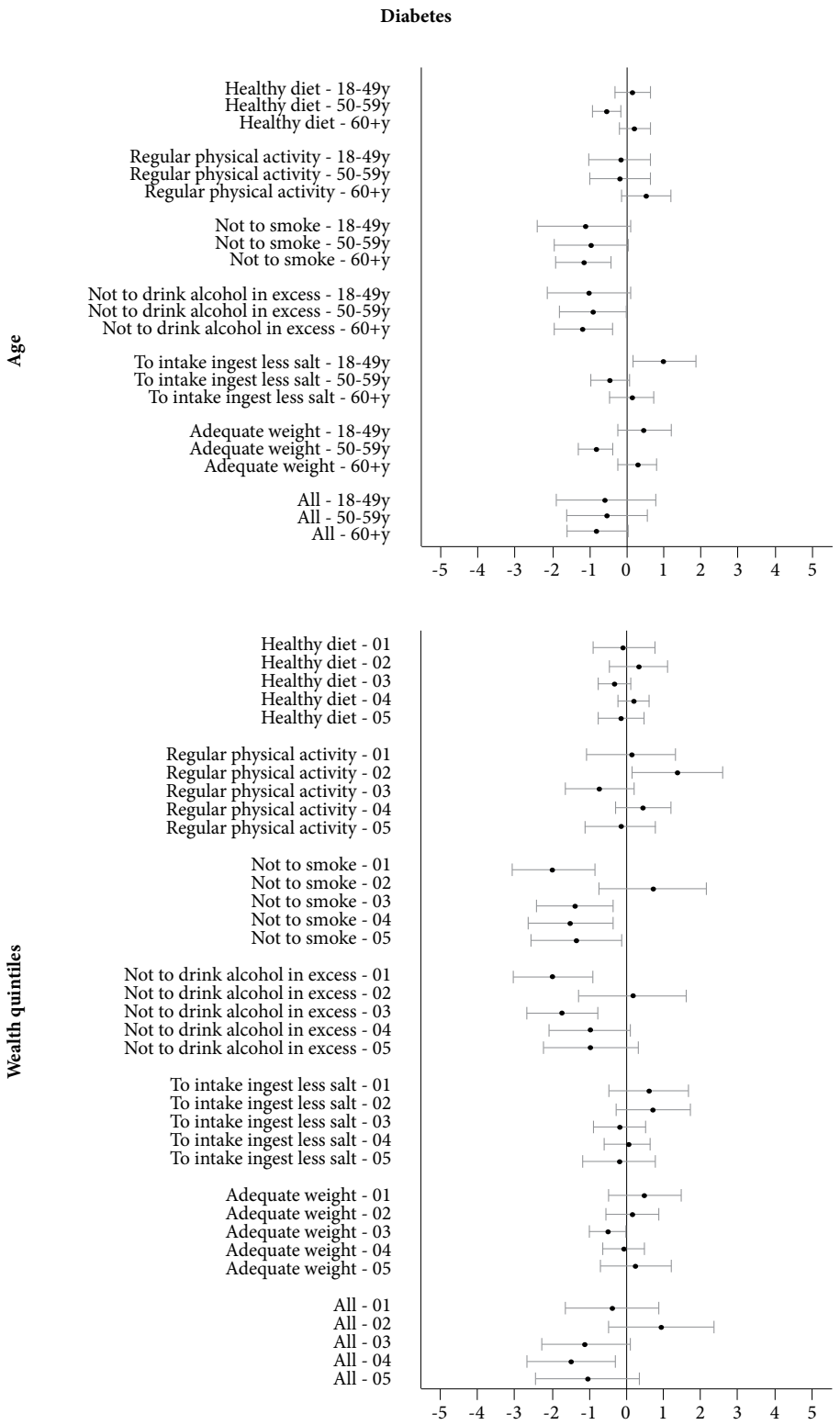

Figure 3. Time evolution of advice on healthy habits for diabetes according to sex, age, skin color and wealth quintiles in 2013 and 2019. National Health Survey, Brazil (N diabetes: 2013 = 3,182; 2019 = 6,317).

Source: Authors.

Although this set of actions was created ten years ago, the country recently underwent some changes in the health area, such as the implementation of austerity policies in 2018, which led to the freezing of financing of SUS[13]. These actions have led to a series of implications such as unemployment and increased poverty, compromising, among other health actions, the goals themselves for the control of NCDs[14].

Advice on healthy habits is an important clinical practice tool since it is a cost-free action that can and should be performed in every contact of professionals with individuals[15,16]EMBASE, and CINAHL were searched from January 1985 to December 2007. The reference lists of all articles collected were checked to ensure that all suitable randomized controlled trials (RCTs. The observed reductions in this study refer to missed opportunities for health promotion actions, disease prevention, and individual's self-care in managing one's health[6,8].

Considering the advances that occurred between 2013 and 2019, such as the qualification of Primary Care, improvement in access to health services and infrastructure, and expansion of the Family Health Strategy[17,18]usuárias da rede de atenção primária à saúde, avaliada nos Ciclos I e II do Programa Nacional de Melhoria do Acesso e da Qualidade (PMAQ, it was expected to find an increase in basic indicators, including receiving advice on healthy habits for SAH and DM, given its simplicity and importance during routine care[6,11]. However, the decrease in these indicators may impact the reduction of healthy habits, which is a source of concern, considering the importance of receiving advice from health professionals for an effective adherence to a healthy lifestyle[7].

Studies about the management of individuals with hypertension and diabetes have shown a low prevalence of receiving advice on healthy habits. These populations were expected to have greater attention from health professionals with good standard recommendations[8,19,20]. In addition, the distribution of advice varies according to sociodemographic and economic characteristics, with higher prevalence among those with white skin color, higher economic and schooling levels[8,19,20].

Regarding the evaluated strata, our results showed that, for SAH and DM, men and wealthier individuals presented the highest prevalence of receiving all types of advice (Supplementary Table 2 and Supplementary Table 3, available from: https://doi.org/10.48331/scielodata.ZYJEAD). Other authors have also found similar results. A study using data from the PNS 2013 about individuals aged 60 years or older with hypertension observed inequalities in receiving advice on healthy habits from health professionals, and the most educated individuals presented a higher prevalence in this aspect[9]utilizando a escolaridade como indicador socioeconômico, no Brasil. Estudo transversal, com dados da Pesquisa Nacional de Saúde, em 2013. A atenção oferecida foi avaliada por meio dos indicadores: recomendações para alimentação saudável, manter o peso adequado, ingerir menos sal, praticar atividade física, não fumar, não ingerir bebida alcoólica em excesso, fazer acompanhamento regular e solicitação de exames de sangue e urina, eletrocardiograma e teste de esforço. As recomendações para ingerir menos sal (91%. Another population-based study conducted in southern Brazil in 2014 identified that individuals from higher socioeconomic status were 1.27 more likely to receive advice to maintain adequate weight and 1.34 to perform physical activity compared to the poorest[19]. These findings reinforce inequalities and suggest a pattern of privileged individuals receiving higher quality care.

Although the most privileged groups have a higher prevalence of receiving advice on healthy habits, and this practice is generally decreasing in the population, the reduction magnitude presents a different pattern than expected. The prevalence reduction in all types of advice to manage SAH was greater among men, aged 50 years and over, of white skin color and belonging to the wealthiest quintile. Regarding advice for DM, we identified a greater decrease in all types of advice among women aged 60 years or older and belonging to the fourth quintile of wealth. Reductions in offering simple types of advice to women with diabetes should be highlighted. Women have a historically higher prevalence of using health services and higher self-care in managing morbidities and even with this pattern, the reductions were higher in this group[21]education level, and health insurance affect the use of health services among the adult Brazilian population with chronic noncommunicable diseases (NCD.

Individuals from the higher socioeconomic status presented the highest prevalence of receiving advice on healthy habits, but they also presented higher reductions in receiving recommendations. The pattern of access and utilization of health services by these individuals could be a possible explanation for this finding[21]education level, and health insurance affect the use of health services among the adult Brazilian population

with chronic noncommunicable diseases (NCD. Our sensitivity analysis helps to understand this result. Individuals using SUS in the last consultation presented lower acceleration in the reduction of receiving advice for both assessed outcomes. This pattern could explain the decrease in prevalence of receiving advice among the richest groups as SUS is more widely used by the poorest population in Brazil[22]we examine the historical development and components of the Brazilian health system, focusing on the reform process during the past 40 years, including the creation of the Unified Health System. A defining characteristic of the contemporary health sector reform in Brazil is that it was driven by civil society rather than by governments, political parties, or international organisations. The advent of the Unified Health System increased access to health care for a substantial proportion of the Brazilian population, at a time when the system was becoming increasingly privatised. Much is still to be done if universal health care is to be achieved. Over the past 20 years, there have been other advances, including investments in human resources, science and technology, and primary care, and a substantial decentralisation process, widespread social participation, and growing public awareness of a right to health care. If the Brazilian health system is to overcome the challenges with which it is presently faced, strengthened political support is needed so that financing can be restructured and the roles of both the public and private sector can be redefined.","container-title":"Lancet (London, England. Moreover, this analysis suggests that the care offered at SUS, despite austerity policies, presents better primary care indicators with an emphasis on health promotion and prevention. This positive aspect should be monitored so as not to result in marked decreases. A population-based study conducted in the South of the country in 2014 also identified a higher prevalence of individuals who had their consultations funded by SUS, disregarding receiving advice on healthy habits[19].

We are aware that our study may have some limitations. First, there is a possibility of recall bias due to the cross-sectional design of the study. Second, the questions about types of advice were followed by "ever in life" recall period, and as receiving advice is not a memorable event, this could be underreported. Another important limitation is our sensitivity analysis. The question about the source of payment refers only to the last consultation, whereas questions about receiving advice refer to any consultation in the previous year. Although we recognize this limitation, the result of our sensitivity analysis suggests different effects depending on the source of payment.

Finally, it is important to highlight that no percentage increases were observed in any of the evaluated types of advice. Given the present situation of the increasing occurrence of DM and SAH, policies and programs encouraging the offer of advice on healthy habits are necessary, especially regarding smoking, drinking, and ingesting salt.

Collaborations

TR Flores and A Wendt were the main investigators of the study, responsible for obtaining the database, formulating the research question, and analyzing the data. RG Neves and CS Costa contributed to the analysis and interpretation of the data. All authors participated in the writing of the manuscript and approved its final version.

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