

Social inequalities in indicators of active aging: a population-based study

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Abstract *The objective of this study was to analyze inequalities in active aging indicators according to race/skin color, level of education, income, and possession of health insurance among 986 older people who participated in the 2014/15 Campinas Health Survey. We estimated the prevalence of participation in 11 activity domains using Poisson regression. The findings reveal similar levels of participation among white and black people in all the domains of the social dimension. The prevalence of work-related physical activity was higher among black people (14.1% compared to 8.2% in white people) and the prevalence of internet use was higher among white people (PR = 2.11). The prevalence of participation in leisure time physical activity, internet use, courses, and in all domains of the social dimension except attendance at religious services was higher among respondents in the highest educational and income groups and among those with health insurance. The findings reveal that older people with a higher income and higher level of education are more likely to participate in activities associated with better health and well-being. The study also shows that older people place a significant demand on Brazil's public health system since individuals who depend exclusively on public health services tend to participate less in activities that are shown to promote health benefits.*

Key words *Social inequality, Disparities in health status, Aging, Older people*

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Introduction

The relationship between aging and active living dates back to the 1950s in the United States and the activity theory¹. However, it was the World Health Organization (WHO) that transformed the idea of “active aging” into a concept within global politics² enshrined in the 2002 Madrid International Plan of Action on Ageing^{3,4}. As expected, the concept of active aging promoted by the WHO emphasizes the relationship between activity and health^{2,3} and – since it was developed in a European context – the participation and inclusion of older people as full citizens. It also focuses on a broader range of activities than those normally associated with active aging in the US context, such as productive activities⁵.

In WHO’s approach, the term “active” refers to continuing participation in social, economic, cultural, physical, political, and civic affairs². In other words, the definition considers economic participation and other forms of unpaid and non-productive participation, encompassing both formal and informal activities requiring physical or mental effort^{2,3}. From the WHO perspective, active aging is not simply a choice, but rather a right bound to opportunities for health, participation, security, and lifelong learning⁶. This is because the possibility of autonomous choice is affected by inequalities, different life experiences, and oppressive social and economic conditions⁷. Thus, the risk of this strategy becoming coercive can be avoided if policy takes on an enabling role and responds to gender, race, class, cultural, and other differences accumulated over the life course.

In view of the above, research on active aging should pay special attention to understanding how social differences can hamper or differentiate active living^{8,9}. However, studies in this area have devoted more effort to analyzing the association between participation in activities and health-related outcomes, such as subjective well-being, physical and emotional health, and survival¹⁰. Despite the importance of studies focusing on health, active aging approaches that disregard social differences run the risk of driving social exclusion and health inequalities, because not everybody is able to adhere to the model to an equal extent⁸. In this respect, studies show that there is a positive relation between socioeconomic status and participation in socio-cultural activities^{11–13} and paid work^{14,15}; however, the relation between socioeconomic status and physical activity, for example, remains unclear

and may vary according to domain^{16,17}. Moreover, the relationship between socioeconomic status and participation in learning or intellectual activities^{18,19} and the influence of race/skin color on active participation in society related to the direct effects of racial discrimination and the indirect effects of socioeconomic differences have been little explored. Finally, there is a lack of national and international studies on the role health services play in promoting active living across multiple domains.

Given that research in this area has paid little attention to social inequalities in active aging^{8,9} and that Brazilian studies exploring inequalities across multiple dimensions of active aging are limited to examining gender and age differences^{20,21}, the aim of the present study was to analyze inequalities in indicators of active aging across social, physical, intellectual, and work dimensions according to race/skin color, level of education, income, and possession of private health insurance in the elderly population of a municipality in the southeast of Brazil.

Methods

A cross-sectional study was conducted using data from the 2014/2015 Campinas Health Survey (ISACAMP, acronym in Portuguese). ISACAMP examines patterns, trends, and social disparities across multiple dimensions of health among people aged ten years and over living in private households in urban areas in the municipality of Campinas in the State of São Paulo.

The ISACAMP used a multistage cluster sampling design. First, the population was divided into five strata corresponding to the city’s health districts: West, Northwest, North, Southeast, and South. Fourteen census tracts were then randomly selected from each stratum, resulting in 70 primary sampling units. All households within the sampling units were listed and then sampled. For the purposes of this study, the population was divided into three age groups: 10 to 19 years, 20 to 59 years, and 60 years and over. The minimum overall sample size was estimated to be 3,400 individuals, subdivided into 1,000 adolescents, 1,400 adults, and 1,000 older people. These numbers were defined based on a population proportion estimate of 0.50 with a margin of error of five percentage points, 95% confidence interval (95% CI), and design effect of 2. To obtain this sample size and considering an expected non-response rate of 27%, 22%, and 20%, respectively,

for each age group based on previous surveys, the following numbers of households were randomly selected: 3,119 for adolescents, 1,029 for adults, and 3,157 for older people.

Within each household, all residents in the age group for which the household had been sampled were interviewed. This type of design is similar in terms of accuracy and more cost effective than designs that select only one person from each selected household²². The present study involved only people aged 60 years and over.

Each individual was given a final weight calculated by multiplying the design weight by the non-response weight and by the post-stratification weight using the age and sex distribution based on population projections performed by SEADE, the State of São Paulo's data analysis system.

The 2014/2015 ISACAMP collected data using a pre-coded questionnaire containing mostly closed-ended questions in three thematic blocks. Data was collected by trained interviewers via face-to-face interviews optimized by the use of a tablet. The interviewers participated in a theoretical and practical training program that discussed expected behavior during interviews, the specific details of each question, how to enter data into the tablet, and the content addressed by the questionnaire. The interviewers were also provided with an instruction manual.

Active aging was defined in accordance with the WHO's² definition of the word "active", which refers to participation in multi-dimensional social, physical, cultural, intellectual, economic, civic, and political activities. Questions concerning the following four dimensions of active aging were selected from the questionnaire:

Social dimension – respondents were asked about their current participation in four domains: a) participation in the family circle, using the question "Do you receive visits from or visit your friends and family?"; b) sociocultural activities, using the question "Do you participate in cultural or social activities (for example: cinema, theater, senior centers, bingo, clubs, older people's dance groups, parties, among others)?"; c) volunteering or participation in groups/associations, using the question "Do you do voluntary work or are you part of a sports, cultural, philanthropic, political, or religious group/association?"; d) religion, using the question "Do you attend a religious service at least once a week?"

Physical activity dimension – this dimension was assessed using questions from the long version of the International Physical Activity

Questionnaire (IPAQ)²³. This instrument measures the weekly time spent doing moderate and/or vigorous physical activity in the following domains: work-related physical activity, transport-related physical activity, domestic activity, and leisure time physical activity. Level of physical activity in each of these domains is classified based on a physical activity score expressed in minutes per week. The score is computed by adding the minutes spent on moderate activities and the minutes spent on vigorous activities multiplied by two, thus taking into account the intensity of each activity as recommended by the WHO²⁴. A score of over 150 minutes per week is the cut-off point used to classify individuals as active in terms of overall physical activity (regardless of domain) and in each specific domain. The differentiation of physical activity by domain is important for identifying and understanding which individual characteristics are associated with physical activity levels¹⁶.

Intellectual dimension – this dimension was assessed using two variables (internet use and participation in courses). Internet use was assessed based on "yes"/"no" answers to the following question: "Do you use the internet?". Participation in courses was confirmed with a "yes" answer to either of the following questions: "Are you currently doing a course at a school or university?" and "Are you currently doing another type of course such as computing, languages, dance, arts etc.?"

Work dimension – this dimension assesses participation in the following domains: a) paid work, assessed using the question "Do you currently carry out paid work or help a family member in his/her work?"; and b) work in retirement.

The following demographic and socioeconomic variables were used to characterize the study population: sex (female and male); age (60-69 years, 70-79 years, and 80 years and over); self-declared race/skin color (white, black/brown, other); level of education in years of schooling (0 to 3, 4 to 7, 8 or more); monthly family income in minimum salaries per capita (< 1, 1 to 3, > 3), and possession of private insurance.

The prevalence of each active aging domain was estimated according to self-declared race/skin color, level of education, income, and possession of private health insurance. Given the small number of people in the "other" race/skin color group (indigenous and yellow-skinned people) and group heterogeneity, only white and black/brown people were included in the analysis. Proportions were compared using Pearson's

chi-squared test with Rao-Scott adjustment, adopting a significance level of $p < 0.05$. The prevalence ratios for each active aging indicator and their respective 95% confidence intervals were calculated using Poisson regression and adjusted for sex and age to eliminate confounding. The analyses of race/skin color were also adjusted for level of education to determine whether potential associations with active aging indicators were explained by socioeconomic factors or by the direct effect of racial discrimination on participation in the activities.

The design effect was taken into account in all analyses using the Stata 14 survey module (Stata Corp., College Station, United States).

ISACAMP was approved by the Ethics Committee of the Faculty of Medical Sciences at the University of Campinas.

Results

A total of 1,168 individuals aged 60 years and over were identified in the selected households; however, the non-response rate was 14% and losses for other reasons amounted to 1.5%, resulting in a final sample of 986 older people. Non-response rates varied between 6.3 and 22.6% across health districts, tending to be higher in areas with higher socioeconomic status: 22.6% and 18.6% in the higher status West and North districts, respectively; 13.7% and 13.1% in the lower status South and Southeast districts; and 6.3% in the Northwest district, in which residents have the lowest socioeconomic status. Post-stratification weights were used to reduce the effect of these differences.

Table 1 shows that the majority of the respondents were female (57.6%), in the 60 to 69 years age group (56.7%), white (71.2%), had less than eight years of schooling (65.3%), had a per capita family income of one to three minimum salaries (55.3%), and did not possess private insurance (52.9%).

The analysis of the active aging profile by race/skin color (Table 2) showed similarities between blacks and whites in participation across all domains of the social dimension. After adjustment for sex and age, the prevalence of work-related physical activity was higher among black people (14.1% compared to 8.2% in white people) and the prevalence of internet use was higher among white people ($PR = 2.11$). These differences were not maintained after adjustment for level of education. However, this same adjustment showed

that the prevalence of participation in a course and carrying out paid work was lower among white people.

Table 3 shows the prevalence of active aging indicators according to level of education. Differences between the educational groups were found across all domains of the social dimension except attendance at religious services. A comparison of the highest and lowest educational groups shows that the prevalence of participation in the family circle ($PR = 1.10$), sociocultural activities ($PR = 2.30$), and voluntary work/associations ($PR = 1.89$) was highest among respondents with at least 8 years of schooling. No statistically significant difference was found between the lowest and middle educational group in the physical activity dimension. However, a comparison of the highest and lowest educational groups shows that individuals with a higher level of education were more active in the leisure time physical activity domains and less active in the work-related physical activity domain ($RP = 1.95$ and $RP = 0.62$, respectively). The most striking differences between the lowest and highest educational group were found in the intellectual dimension; however, the estimates in this dimension were less precise. In the work dimension, the only statistically significant difference between the groups was that the prevalence of work in retirement was higher in the middle educational group than in the lowest educational group ($PR = 2.51$).

Table 4 shows that respondents with a higher income participated more in the family circle, sociocultural activities, and voluntary work/associations domains of the social dimension ($PR = 1.13$, $PR = 2.20$, and $PR = 2.14$, respectively) and in both domains of the intellectual dimension. In the work dimension, no statistically significant differences across income groups were found in the paid work domain; however, the prevalence of work in retirement was greater among those in the highest income group.

Table 5 shows that participation was greater among the group with private health insurance in all domains of the social dimension except attendance at religious services and in both domains of the intellectual dimension (internet use, $PR = 3.75$ and participation in courses, $PR = 4.11$). In the physical activity dimension, similarities were found between the two groups in the work-related physical activity, transport-related physical activity, and domestic activity domains; however, the prevalence of participation in leisure time physical activity was higher among respondents who possessed health insurance than those who

Table 1. Demographic and socioeconomic characteristics of the study population. Campinas, 2014-2015 (n = 986).

Variable	n*	%**
Sex		
Male	387	42.4 (39.6-45.3)
Female	599	57.6 (54.7-60.4)
Age group (years)		
60 to 69	506	56.7 (52.4-60.9)
70 to 79	308	28.0 (25.1-31.0)
80 and over	172	15.3 (12.5-18.1)
Race/skin color		
White	703	71.2 (66.0-76.5)
Black (brown and black people)	254	26.1 (20.7-31.5)
Other	29	2.6 (1.4-3.8)
Level of education (years of schooling)		
0 to 3	341	31.9 (27.2-36.7))
4 to 7	342	33.4 (29.5-37.5)
8 or more	303	34.6 (29.4-39.8)
Monthly family income ^a (mspcb)		
< 1	284	27.4 (22.3-32.6)
1 to 3	552	55.3 (50.2-60.5)
> 3	149	17.2 (12.2-22.3)
Health insurance ^a		
Yes	449	47.1 (40.5-53.7)
No	536	52.9 (46.3-59.5)

* Number of individuals in the non-adjusted sample; **prevalence and 95% confidence intervals (95% CI) calculated based on weighting due to sampling design; a n = 985 (one individual without information); b mspc = minimum salaries per capita.

Source: Authors' elaboration using Campinas Health Survey data.

depended exclusively on Brazil's national health system, the *Sistema Único de Saúde* – SUS (PR = 1.89). No statistically significant differences were found across the groups in the work dimension.

Discussion

The findings of this study show that white people and black people participate equally in all domains except work-related physical activity and internet use, where prevalence was higher among blacks and whites, respectively. In general, respondents with a higher level of education, higher income, and private health insurance show higher prevalence of participation in the social,

intellectual, and physical activity dimensions. In the physical activity dimension, the difference in prevalence is particularly significant in the leisure time physical activity domain. Participation in religious services, transport-related and domestic physical activity, and paid work was similar across groups irrespective of race/color, level of education and income, and possession of private health insurance.

The findings regarding race/skin color and the social dimension are positive because they show that white and black people participate to a similar extent in the domains considered by the study, despite the historical accumulation of disadvantages by the black population in relation to the white population²⁵⁻²⁷ clearly associated with lower levels of participation in different dimensions of social life³. On the other hand, the differences between black and white people observed by this study show that the reduction of inequalities between the white and black population in other dimensions of life remains a major challenge in Brazil²⁸. The first difference concerns work-related physical activity. This indicator is a marker of social inequalities²⁹ and is not always associated with beneficial health effects³⁰. A systematic review revealed that individuals with lower socioeconomic status and in occupations with low social prestige showed higher levels of work-related physical activity²⁹. The higher level of work-related physical activity among black people therefore suggests that they occupy positions that require less professional qualifications and are more physically demanding. This reflects the reality of the Brazilian job market, where black people are the majority in the sectors with the worst working conditions – agriculture, the construction industry, and domestic work – and in precarious work, where labor rights are not protected^{25,28}. The racial difference observed in internet use is disturbing since older people are already the population group in Brazil with lowest internet access¹⁸. This situation differs from that of the United States, for example, where digital inequality has decreased considerably over the last 18 months, with internet use by white and black people rising from 53% and 38%, respectively, in 2000, to 89% and 87%, respectively, in 2018³¹.

A large part of the racial differences identified by the present study may be due to educational inequality between black and white people^{26,32}. In this respect, after adjustment for level of education, differences in work-related physical activity and internet use disappeared and other differenc-

Table 2. Active aging indicator prevalence and prevalence ratios according to race/skin color. Campinas, 2014-2015.

Dimensions	Prevalence			P-value**	Adjusted prevalence ratio ^a			
	Total	Race/skin color*			PR ^b	95% CI	PR ^c	95% CI
		Black (n = 254)	White (n = 703)					
Social								
Family circle	89.0	86.7	89.9	0.212	1.04	0.98-1.11	1.02	0.96-1.09
Sociocultural activities	40.2	35.7	41.6	0.199	1.20	0.93-1.53	1.00	0.78-1.29
Volunteering or associations	23.3	22.6	23.6	0.793	1.06	0.75-1.50	0.92	0.65-1.30
Religious services	47.1	50.6	45.9	0.230	0.91	0.77-1.06	0.93	0.79-1.08
Physical activity								
Work	9.9	14.1	8.2	0.005	0.65	0.44-0.96	0.71	0.49-1.05
Transport	10.9	9.8	11.0	0.613	1.14	0.74-1.76	1.25	0.80-1.93
Domestic	11.4	12.3	11.0	0.667	0.92	0.56-1.52	0.88	0.54-1.43
Leisure	25.3	22.5	25.7	0.296	1.20	0.94-1.54	1.02	0.81-1.30
Overall	48.6	52.8	47.1	0.086	1.07	0.95-1.20	1.10	0.97-1.26
Intellectual								
Internet use	21.7	13.0	25.1	0.000	2.11	1.51-2.94	1.18	0.83-1.67
Courses	2.6	3.4	2.4	0.482	0.71	0.27-1.88	0.41	0.18-0.98
Work								
Paid work	22.1	27.7	19.7	0.015	0.79	0.60-1.04	0.76	0.57-0.99
Work in retirement	5.2	4.8	5.3	0.766	1.17	0.61-2.25	1.04	0.53-2.02

* Yellow and indigenous people excluded. ** Pearson's chi-squared test with Rao-Scott adjustment.

a Reference category: black population. b Prevalence ratio adjusted for sex and age using Poisson regression. c Prevalence ratio adjusted for sex, age, and years of schooling using Poisson regression.

Source: Authors' elaboration using Campinas Health Survey data.

ers were observed, showing that black people were more likely to be doing a course or carrying out paid work. However, this is not necessarily positive for black people and further in-depth study is needed to explore possible intrinsic differences in the activities in question.

With regard to socioeconomic status – measured according to level of education and income – the findings show that the prevalence of participation in the social dimension (participation in the family circle, sociocultural activities, and volunteering and work/associations) was higher in the groups with higher status. Other studies also showed that higher socioeconomic status was associated with a higher level of social participation¹¹⁻¹⁴. One explanation for this association is that people with higher socioeconomic status have access to a range of resources (such as money, knowledge, prestige, and power) that contribute to healthy and active living³³. However, social participation depends on both individual resources and the context of social inequality in which it is embedded. In countries with lower income inequality, for example, social services

systems are more equitable, facilitating the participation of underprivileged groups³⁴. Since deep inequalities persist in Brazil²⁷, it is to be expected that more vulnerable segments of society face greater difficulty in participating in social activities.

With respect to physical activity, the findings show that level of education has a bidirectional effect, whereby the highest educational group shows a positive association with leisure time physical activity and an inverse association with work-related physical activity. The data also shows a direct association between income and overall physical activity, which is particularly significant in the leisure time physical activity domain. A systematic review observed considerable differences in the direction of inequalities in the physical activity domains, revealing an association between higher socioeconomic status and a higher level of leisure time physical activity, and between lower socioeconomic status and a higher level of work-related physical activity¹⁷. One explanation for this is that people with higher socioeconomic status are more likely to adhere

Table 3. Active aging indicator prevalence and prevalence ratios according to level of education. Campinas, 2014-2015.

Dimensions	Prevalence			P-value**	Adjusted prevalence ratio ^a			
	Years of schooling				PRb (2/1)	95% CI	PRb (3/1)	95% CI
	0 to 3 (n = 341) (1)	4 to 7 (n = 342) (2)	≥ 8 (n = 303) (3)					
Social								
Family circle	83.6	90.6	92.5	0.005	1.08	1.02-1.14	1.10	1.03-1.17
Sociocultural activities	24.2	36.8	58.2	< 0.001	1.49	1.13-1.98	2.30	1.81-2.91
Volunteering or associations	15.4	24.3	29.7	0.001	1.57	1.11-2.21	1.89	1.28-2.78
Religious services	49.9	46.7	44.9	0.473	0.94	0.80-1.10	0.89	0.75-1.04
Physical activity								
Work	9.6	10.5	9.6	0.910	0.88	0.55-1.40	0.62	0.40-0.96
Transport	9.6	13.8	9.1	0.156	1.33	0.81-2.21	0.82	0.46-1.47
Domestic	9.5	11.6	12.5	0.656	1.12	0.67-1.85	1.14	0.63-2.08
Leisure	15.6	23.5	36.0	< 0.001	1.38	0.94-2.05	1.95	1.32-2.87
Overall	39.6	51.9	54.7	0.001	1.19	0.99-1.42	1.13	0.93-1.37
Intellectual								
Internet use	2.2	11.0	50.1	< 0.001	4.53	2.33-8.80	18.90	9.81-36.32
Courses	0.5	1.3	5.8	< 0.001	2.71	0.51-14.49	13.16	2.80-61.96
Work								
Paid work	16.8	21.0	28.0	0.008	1.04	0.74-1.45	1.11	0.81-1.52
Work in retirement	2.4	6.7	6.5	0.025	2.51	1.22-5.17	2.17	0.91-5.15

*Pearson's chi-squared test with Rao-Scott adjustment.

^a Reference category: population with 0 to 3 years of schooling. ^b Prevalence ratio adjusted for sex and age using Poisson regression.

Source: Authors' elaboration using Campinas Health Survey data.

to preventive programs and adopt healthy behaviors because they have more motivation and greater access to information and other resources such as sports clubs and gyms^{17,35}. On the other hand, the inverse relation between level of education and work-related physical activity may be explained by the fact that people with a lower level of education are more likely to have jobs that have lower social prestige and are more physically demanding, leading to higher levels of energy expenditure²⁹, as discussed above in relation of race/skin color.

With regard to the intellectual dimension, although the estimates are less precise, it is interesting to note that the groups that are more disadvantaged educationally and financially are significantly less likely to use the internet. There is a clear socioeconomic gradient in internet use in Brazil and the educational gradient is more pronounced than the income gradient, as shown

in the present study¹⁸. These findings suggest that level of education is a key determinant of internet use since education potentiates the appropriation of rapidly changing technologies. This means that this indicator increasingly reflects social, economic, and cultural relations in the off-line world, including social inequalities³⁶. Therefore, digital inclusion policies in Brazil should address not only investment in equipment, internet access in public places, and reduction in the cost of private internet access, but also continuous improvement in basic education so that all segments of society are able to explore, understand, and take ownership of the information available on the internet^{36,37}.

The data also shows that the overall prevalence of participation in courses was low, revealing that the most educationally and financially privileged groups were more likely to engage in learning activities, reflecting the national reali-

Table 4. Active aging indicator prevalence and prevalence ratios according to income. Campinas, 2014-2015.

Dimensions	Prevalence			P-value**	Adjusted prevalence ratio ^a			
	Income in mspc*				PR ^b (2/1)	PR ^b (3/1)	95% CI	IC 95%
	< 1 (n = 284) (1)	1 to 3 (n = 552) (2)	> 3 (n = 149) (3)					
Social								
Family circle	83.5	90.5	94.6	0.003	1.08	1.01-1.17	1.13	1.05-1.22
Sociocultural activities	25.6	41.5	58.2	< 0.001	1.60	1.19-2.17	2.20	1.60-3.02
Volunteering or associations	16.8	22.1	36.3	0.002	1.32	0.90-1.94	2.14	1.38-3.32
Religious services	44.8	48.9	43.8	0.544	1.11	0.93-1.33	0.99	0.73-1.34
Physical activity								
Work	7.2	10.5	12.7	0.170	1.36	0.83-2.24	1.48	0.77-2.85
Transport	9.6	11.8	10.1	0.636	1.20	0.76-1.89	0.99	0.51-1.91
Domestic	12.3	9.7	15.4	0.259	0.78	0.48-1.27	1.21	0.68-2.15
Leisure	13.4	26.1	40.2	< 0.001	1.87	1.32-2.65	2.74	1.99-3.77
Overall	38.2	50.6	59.7	0.001	1.28	1.02-1.60	1.43	1.17-1.52
Intellectual								
Internet use	10.8	17.6	51.2	< 0.001	1.57	1.03-2.39	4.27	2.71-6.74
Courses	0.6	1.6	9.0	< 0.001	2.74	0.55-13.61	15.36	3.39-69.60
Work								
Paid work	20.3	20.9	29.2	0.173	0.97	0.69-1.37	1.23	0.84-1.79
Work in retirement	2.2	5.5	9.2	0.012	2.40	1.04-5.53	3.76	1.42-9.92

* mspc = minimum salaries per capita. ** Pearson's chi-squared test with Rao-Scott adjustment.

^a Reference category: population with monthly family income < 1 smpc. ^b Prevalence ratio adjusted for sex and age using Poisson regression.

Source: Source: Authors' elaboration using Campinas Health Survey data.

ty³². An international study using data from 13 country studies and two cross-national analyses showed a relatively clear pattern across countries whereby those already better off in society are better able to access adult learning and obtain greater benefits in career progress. The study concludes that adult learning tends to reproduce and reinforce initial education resulting in educational selectivity, whereby people with a higher level of education are more likely to engage in other learning processes during the life course¹⁹. The findings of the present study therefore strengthen the argument for placing more emphasis on the complex relationship between social inequality and adult learning into old age¹⁹ to prevent education from increasingly becoming a commodity rather than a right.

The fact that there were no differences between the socioeconomic groups in participation

in the labor market is surprising, given that other studies have shown a direct gradual association between socioeconomic status and work and a particularly pronounced association with level of education^{14,15}. The relationship between financial resources and work is less clear since low-income individuals may have to work to maintain a minimum standard of living, while those with high incomes are more likely to have a higher level of education and, given that education is positively associated with employment, are more likely to remain employed^{15,38}. However, this does not exclude the possibility that those with sufficient income to maintain a dignified and satisfactory standard of living opt to stop working as soon as possible in order to enjoy their old age and participate in other types of activities. It is important to note, however, that the findings of this study in relation to socioeconomic status and partici-

Table 5. Active aging indicator prevalence and prevalence ratios according to possession of private health insurance. Campinas, 2014-2015.

Dimensions	Prevalence		P-value*	Adjusted prevalence ratio ^a	
	Health insurance			PR ^b	95% CI
	No (n = 536)	Sim (n = 449)			
Social					
Family circle	86.4	91.9	0.014	1.07	1.02-1.12
Sociocultural activities	32.5	48.9	< 0.001	1.56	1.30-1.87
Volunteering or associations	18.0	29.2	0.001	1.65	1.23-2.21
Religious services	45.9	48.3	0.530	1.04	0.88-1.23
Physical activity					
Work	10.8	9.0	0.393	1.00	0.66-1.51
Transport	10.2	11.5	0.564	1.19	0.77-1.84
Domestic	11.4	11.2	0.939	1.01	0.67-1.54
Leisure	18.8	32.6	< 0.001	1.89	1.57-2.29
Overall	46.1	52.1	0.083	1.22	1.08-1.37
Intellectual					
Internet use	10.4	34.5	< 0.001	3.75	2.65-5.30
Participation in courses	1.1	4.4	0.004	4.11	1.41-12.0
Work					
Paid work	25.0	18.9	0.047	0.88	0.67-1.16
Work in retirement	5.2	5.2	0.979	1.11	0.65-1.89

* Pearson's chi-squared test with Rao-Scott adjustment.

a Reference category: population with private health insurance; b Prevalence ratio adjusted for sex and age using Poisson regression.

Source: Authors' elaboration using Campinas Health Survey data.

pation in the labor market should be interpreted with caution since the indicator used does not capture other inequalities between social groups in other aspects of the labor market^{14,15,38}.

The data presented show that individuals who possessed private health insurance were more active in the social and intellectual dimensions and in the leisure time physical activity domain. This finding is particularly relevant because it illustrates that older people place a significant demand on the SUS. In this respect, service provision providers should focus not only on meeting the physical needs of older people, but also on targeting services that connect older people with their community³⁹. Social participation is highly valued by older people and should be encouraged within the SUS in view of its potential for promoting physical and mental health and generating social benefits by increasing this group's community contributions¹². Encouraging volunteering and creating community groups that develop cultural and education activities are examples of measures that should be promoted within the SUS³⁹, as provided by the National

Older People's Health Policy⁴⁰. These actions are vital for promoting social and digital inclusion, optimizing social connections, developing new skills, and preserving cognitive functioning³. However, promoting active aging goes beyond the provision of basic health services and it is necessary to address the barriers that limit social participation, such as lack of leisure time due to the burden of family commitments, difficulties in getting around in urban areas, and lack of guidance on leisure activities⁴¹.

The findings also reveal inequalities in the physical activity dimension, particularly in participation in leisure time physical activity between individuals with and without private health insurance. This reinforces the importance of strategies such as the Health and Fitness Gym program and family health support units for improving access to body practices and physical activity^{42,43}. In this respect, these spaces should broaden the scope of activities provided in order to promote the participation of subgroups that differ in terms of gender, age, health status, time available, and individual preferences^{42,44}.

The present study has some limitations, such as the absence of information on frequency of participation in sociocultural activities and volunteering and groups/associations and on the reasons for and frequency of internet use. These details could provide a deeper insight into inequalities, because activities can have diverging effects on health and well-being depending on the context in which they are carried out. Another limitation is survival bias, given that individuals with lower socioeconomic status have a greater risk of premature death and are therefore less likely to be included in the study. This type of bias tends to reduce the strength of association⁴⁵. Study strengths include: the use of a population-based sampling method and the size of the study sample, enabling the assessment of the majority of active aging indicators with a good level of precision; the quality of the data collected; and the use of indicators that have been little explored with the older population, thus adopting a multidimensional approach to active aging.

Final considerations

In addition to discussing the challenges of promoting active aging, this study reveals the magnitude of social inequalities across multiple active aging indicators, thus providing a deeper insight into this question. The findings show that older people with a higher income and higher level of education are more likely to participate in activities associated with better health and well-being, particularly in the social and intellectual dimensions and leisure time physical activity domain. They also show that educational inequalities need to be addressed. As mentioned above, ed-

ucation is a key determinant of active aging, not only because it potentiates participation in activities, but also because it enhances quality of life as people age.

More specifically, the findings corroborate the positive relationship between socioeconomic status and participation in sociocultural activities, but contradict the positive association between socioeconomic status and paid work, suggesting the need for further research in this area. In addition, the study confirms that the relationship between socioeconomic status and physical activity varies according to domain, being positive for leisure time physical activity and negative for work-related physical activity. The findings also show differences in work-related physical activity and internet use between race/skin color groups, which may be attributed to the indirect effect of socioeconomic differences between these groups, rather than the direct effect of racial discrimination. Finally, the study shows that older people place a significant demand on the SUS since individuals who depend exclusively on public health services tend to participate less in activities that are shown to promote health benefits (intellectual and cultural activities, volunteering and participation in groups/associations, and leisure time physical activity). Promoting active aging should therefore go beyond the provision of basic health services to include strategies that foster social participation as a way of enhancing the health and well-being of older people.

The findings show that the promotion of active aging presupposes tackling social inequalities throughout the life course with a view to providing fairer solutions that are sensitive to differences across all segments of society and reduce the causes and extent of health inequalities.

Collaborations

NFS Sousa participated in the design of the research, data analysis and interpretation, and in the writing of the text. MGL collaborated in data interpretation and critical review of the text. MBA Barros participated in the design, data analysis and interpretation, critical review of the text and final approval of the version to be published.

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