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Race-ethnicity differences in physical activity in Brazilian state capitals: an analysis of the 2023 Vigitel survey

Diferenças de raça/cor na atividade física em capitais brasileiras: uma análise do Vigitel de 2023

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ABSTRACT

Objective: To assess race-ethnicity differences in physical activity practice among adults in Brazilian state capitals. Methods: A cross-sectional analysis was conducted using data from Surveillance System for Risk and Protective Factors for Chronic Diseases by Telephone Survey 2023 (18-59 years). Physical activity practice was analyzed across four domains (leisure, occupational, commuting, and household) based on self-report. The Chi-square test assessed differences across race-ethnicity groups (Mixed-race, White, Black). Results: The sample (n = 14,402; 53% women; 45% with 9-11 years of education) was predominantly composed of Mixed-race (46%), White (38%), and Black (14%) individuals. Significant differences were observed across all physical activity domains, with a higher proportion of White individuals engaging in leisure-time physical activity, while Black and Mixed-race individuals had a higher proportion of all other domains. Regarding the intersection of ethnicity and education, significant differences were observed across all race-ethnicity groups in the leisure and occupational domains, individuals with higher education levels (≥12 years) had a greater proportion of leisure-time physical activity and a lower proportion of occupational-related physical activity. Conclusions: The findings reveal race-ethnicity disparities in physical activity practice, with White individuals engaging more in leisure-time activities and Black and Mixed-race individuals participating more in household, commuting, and occupational-related activities. Regardless of ethnicity, those with higher education levels reported greater engagement in leisure-time activities and less engagement in occupational-related activities. Future research should focus on better understanding and reducing these disparities through public policies addressing the intersection of ethnicity and education in access to leisure activities, in particular.

Keywords: Exercise; Sedentary lifestyle; Health disparities; Urban population; Racial Groups.

RESUMO

Objetivo: Avaliar as diferenças de raça/cor na prática de atividade física entre adultos de capitais brasileiras. Métodos: Estudo transversal com dados do Sistema de Vigilância de Fatores de Risco e Proteção para Doenças Crônicas 2023 (18-59 anos). A prática de atividade física foi analisada em quatro domínios (lazer, trabalho, deslocamento e doméstico) com base em autorrelato. O teste de Qui-Quadrado avaliou diferenças entre os grupos de raça/cor (pardo, branco e preto). Resultados: A amostra (n = 14.402; 53% mulheres; 45% com 9-11 anos de escolaridade) foi composta principalmente pelas etnias/raças parda (46%), branca (38%) e preta (14%). Foram observadas diferenças significativas em todos os domínios de atividade física, com maior proporção de brancos praticando atividade física de lazer, enquanto pretos e pardos apresentaram maior proporção nos demais domínios. Para a interseção entre de raça/cor e escolaridade, diferenças significativas foram observadas em todas as etnias/raças para os domínios do lazer e trabalho, onde indivíduos com mais escolaridade (≥12 anos) apresentaram maior proporção de atividade física no lazer e menor de atividades ocupacionais. Conclusões: Os achados revelam disparidades de raça/cor na prática de atividade física, com brancos praticando mais atividades de lazer e pretos e pardos mais atividades domésticas, deslocamento e trabalho. Independentemente da raça/cor, aqueles com maior escolaridade reportaram maior atividade de lazer e menor de trabalho. Pesquisas futuras devem focar na melhor compreensão e possíveis reduções dessas disparidades por meio de políticas públicas direcionadas à interseção de de raça/cor e escolaridade no acesso às atividades físicas.

Palavras-chave: *Exercício; Inatividade física; Disparidades em saúde; População urbana; Grupos raciais.*

Introduction

Physical activity (PA) has significant repercussions on physical and mental health and is considered a relevant investment in the realm of public health[1]. However, its regular practice is affected by the race-ethnicity and social inequalities that permeate society, which impacts PA patterns and contributes to the fact that not all individuals are able to be physically active, often due to lack of access[2-4].

Among these inequalities in the Brazilian context, it is important to highlight the implementation of public policies capable of improving social indicators for the Black population over recent decades. Among the implemented policies, the following stand out: the Creation of the Secretariat for Policies to Promote Racial Equality[5]; the Establishment of the National Policy for Comprehensive Health of the Black Population[6]; the Approval of the Racial Equality Statute[7]; and the Implementation of Racial Quota Laws for federal universities[8].

Despite the progress achieved by these policies, studies show that in Brazil, Black and mixed-race individuals often have high levels of PA in occupational-related, commuting, and domestic task contexts but significantly lower leisure-time PA[9,10]. This reveals a pattern imposed by socioeconomic conditions and access barriers, not by personal choice[9,10]. According to data from the 2019 National Health Survey, the Black population represented the group with the highest prevalence of physical inactivity[11,12]. Nevertheless, the race-ethnicity focus regarding different domains of PA remains underexplored in the literature.

In addition to race-ethnicity classification, years of formal education may also indicate prevailing hierarchical structures in Brazil, given that educational attainment is, in many cases, closely related to income a condition capable of stimulating PA practice[13,14]. Although the benefits of PA apply to the general population, access to private facilities and more attractive public areas could be one possible explanation for the lack of diversified PA in the leisure domain among individuals with lower education and, often, lower income[15]. Thus, higher income is associated with greater PA, particularly in leisure[3,9]. Meanwhile, greater availability of equipment, parks, bike lanes, and other public spaces is associated with an increased proportion of people engaging in PA[16]. Therefore, differences in PA domains are common among race-ethnicity groups with varying levels of education and income[17,18].

Understanding race-ethnicity disparities and years of formal education can help expand discussions in favor of public policies promoting PA as a right[19]. Thus, the present study aimed to assess race-ethnicity disparities in PA practice across different domains among adults from Brazilian capital cities.

Methods

Cross-sectional analysis using data from the Surveillance System for Risk and Protective Factors for Chronic Diseases (*Sistema de Vigilância de Fatores de Risco e Proteção para Doenças Crônicas* - Vigitel) in 2023[20].

Population, sample, and data collection

Vigitel data collection was conducted among individuals aged ≥18 years in all 26 Brazilian state capitals and the Federal District. A probabilistic sampling method was used, involving the random selection of 5,000 households with landline and/or mobile phone lines per city, followed by the random selection of one resident per household until a minimum of 2,000 interviews per city was completed. The total number of completed interviews in Vigitel 2023 was 21,690. The final sample used in this study consisted of 14,402 participants, limited to adults (18–59 years). The data cleaning flowchart for Vigitel 2023 in this study is presented in Figure 1.

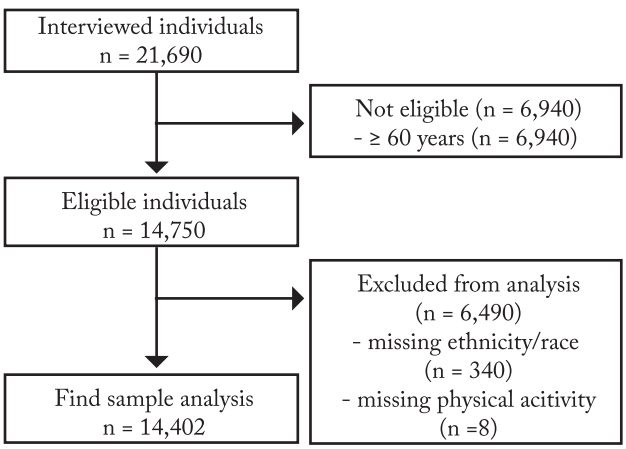

Figure 1 – Data cleaning flowchart for analysis.

In Vigitel 2023, the race-ethnicity variable was categorized based on the classification of the Brazilian Institute of Geography and Statistics), adopting the following groups: Mixed-race, White, Black, Asian, and Indigenous[20]. However, in this study, the race-ethnicity variable was categorized only into the three most prevalent groups: Mixed-race, White, and Black. Due to the small percentage of individuals self-declaring

as Asian or Indigenous (1.3% and 4.6%, respectively), resulting in insufficient statistical power for hypothesis testing, these groups were excluded from both descriptive analysis and hypothesis tests.

The inclusion criteria of the study were: individuals who fully answered questions about PA practice in all assessed domains and self-reported their race-ethnicity. The exclusion criteria were: individuals aged ≥60 years and those self-declaring as Asian or Indigenous.

Vigitel was approved by the research ethics committee (CAAE no. 65610017.1.0000.0008), following Resolution 466/12 of the Brazilian Ministry of Health and adhering to the Declaration of Helsinki. Participant consent was obtained via telephone. Verbal consent was recorded when the respondent answered the call, after the interviewer explained the research purposes (e.g., confidentiality, voluntary participation, and topics investigated). Participation was authorized orally without a signature, and this agreement was directly recorded in the research system[20].

Physical activity

Information on PA practice across different domains (leisure, occupational, commuting, household) was analyzed dichotomously (practices/does not practice). The questions used in the study, response options, and PA domains assessed are presented in the Chart 1. Criteria for defining PA practitioners were:

- Leisure: Answering *"Yes"* to PA practice in the last three months.
- Occupational: Individuals who work and answered *"Yes"* to walking extensively or carrying heavy loads at work (responses of *"Don't know"* were treated as missing).
- Commuting: Individuals who work or study and reported walking or cycling for part or all of their commute (*"Yes, for the entire commute"* and *"Yes, part of the commute"* were grouped).
- Household: Individuals who perform housecleaning alone or with help.

Statistical analysis

Physical activity practice across different domains was analyzed both unstratified and stratified by: Education level (0–8 years; 9–11; ≥12) and Race-ethnicity (White; Mixed-race; Black). Descriptive analyses included absolute and relative frequencies. Prevalence (%) was calculated for each PA domain.

The Chi-square test was used to assess differences in proportions between: PA practice (yes/no) and race-ethnicity (White, Mixed-race, Black). PA domains (leisure, occupational, commuting, household). All analyses were performed using Stata (version 16.1, Stata Corporation, College Station, TX, USA).

Results

Recruitment and sample characterization

The characterization of the analyzed sample according to race-ethnicity is presented in Table 1. The sample was predominantly composed of Mixed-race individuals (46%), women (53.2%), the age group of 25–34 years (31.1%), and those with 9–11 years of education (44.8%).

Domains of physical activity

Figure 2 displays the proportion of PA practitioners stratified by activity domain and race-ethnicity. The analysis revealed statistically significant disparities across all domains. White individuals showed the highest prevalence of leisure-time PA (64%, p = 0.008), while Black and Mixed-race individuals demonstrated greater engagement in commuting-related PA (39% and 35% respectively, p < 0.001), household activities

Chart 1 – Structure of questions and response options for assessing physical activity across leisure, occupational, commuting, and household domains.

Question	Physical activity domain	Response options
In the past three months, did you engage in any physical activity?	Leisure	Yes / No
At work, do you walk extensively?	Occupational	Yes / No / Don't know
At work, do you carry heavy objects?	Occupational	Yes / No / Don't know
Do you currently work?	Occupational	Yes / No
Are you currently a student?	Occupational	Yes / No
For your commute to/from work/school, do you walk or cycle for any portion of the trip?	Commuting	Yes, for the entire commute / Yes, for part of the commute / No
Who usually does the housecleaning in your home?	Household	I, alone / I, with another person / Someone else

Table 1 – Sociodemographic characteristics by race-ethnicity in the Surveillance System for Risk and Protective Factors for Chronic Diseases by Telephone Survey (Vigitel) data, 2023.

	Total %	Mixed-race %	White %	Black %
	100.0	46.0	37.8	14.1
Sex				
Male	46.8	47.2	45.3	47.5
Female	53.2	52.8	54.7	52.5
Age (years)				
18 to 24	15.9	14.4	18.1	16.5
25 to 34	31.1	31.1	27.9	39.0
35 to 44	22.5	24.0	21.7	19.1
45 to 59	30.5	30.4	32.2	25.4
Education level (years)				
0 to 8	19.3	24.5	12.7	19.0
9 to 11	44.8	48.3	37.0	53.5
≥ 12	35.9	27.2	50.3	27.5

(64% and 63%, p < 0.001), and occupational PA (42% and 41%, p < 0.001).

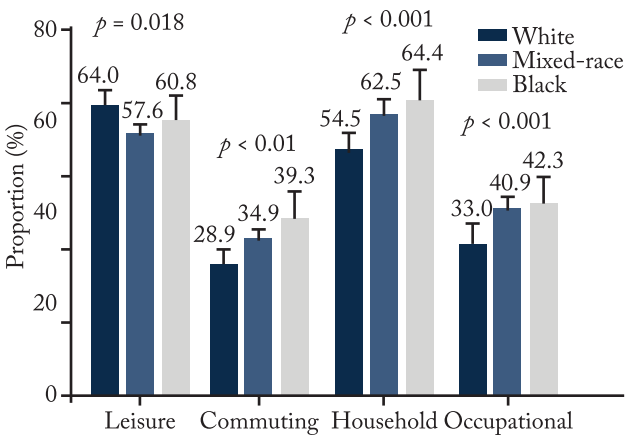

Figure 2 – Proportion of physical activity practitioners by domain according to race-ethnicity.

Physical activity, race-ethnicity, and education level

Figure 3 shows the intersection between race-ethnicity and education level across PA domains. Statistically significant differences were observed in all race-ethnicity groups for the leisure domain, where individuals with higher education (≥12 years) showed greater PA participation compared to those with 0-8 and 9-11 years of education (all p < 0.05). The most pronounced disparity was among White individuals, with 75% of the highly educated group engaging in leisure PA versus only 37% of the least educated group.

For the occupational domain, higher education was associated with lower PA participation across all groups (all p < 0.05). Half of the least educated Black individuals engaged in occupational PA, compared to just one-third of the most educated. In the commuting domain, no significant difference was observed among Black individuals (p = 0.279). For household PA, only White individuals showed reduced activity with higher education (p < 0.001).

Discussion

In this cross-sectional analysis using Vigitel 2023 data, we investigated race-ethnicity differences in PA among adults from Brazilian capital cities. Our findings show that White individuals engaged more in leisure PA, while Black and Mixed-race individuals showed higher PA participation in other domains (occupational, commuting, and household). Across all race-ethnicity groups, individuals with higher education levels (≥12 years) demonstrated greater leisure PA and lower occupational PA participation.

Socioeconomic and race-ethnicity factors are strongly associated with PA, being considered determinants for regular practice across its different domains (leisure, occupational, commuting, and household)[21]. A study using Vigitel 2013 data showed that the prevalence of Black individuals engaging in leisure PA for at least 150 minutes per week was lower than that of Mixed-race and White individuals[22]. Leisure PA tends to be more enjoyable and diverse. However, it is associated with individuals of higher income and education levels, who have greater access to adequate spaces and free time to engage in these activities[23].

On the other hand, occupational and household PA are associated with necessity, being characterized by intense efforts and repetitive movements that do not offer the same health benefits and are commonly practiced by less educated individuals[24]. A US-based study with a sample composed of (non-Hispanic Black, non-Hispanic White, Hispanic/Latino, Asian-American, and multiracial/other groups) showed that higher education levels were associated with lower proportions of people frequently engaging in household and occupational PA. Furthermore, White individuals showed the lowest prevalence of PA in these domains[25]. Another study with American students found that non-Hispanic Black students engaged in more occupational PA than all other racial groups[26]. Thus, our findings align with the literature demonstrating differences in PA levels among race-ethnicity groups and their intersection with education level.

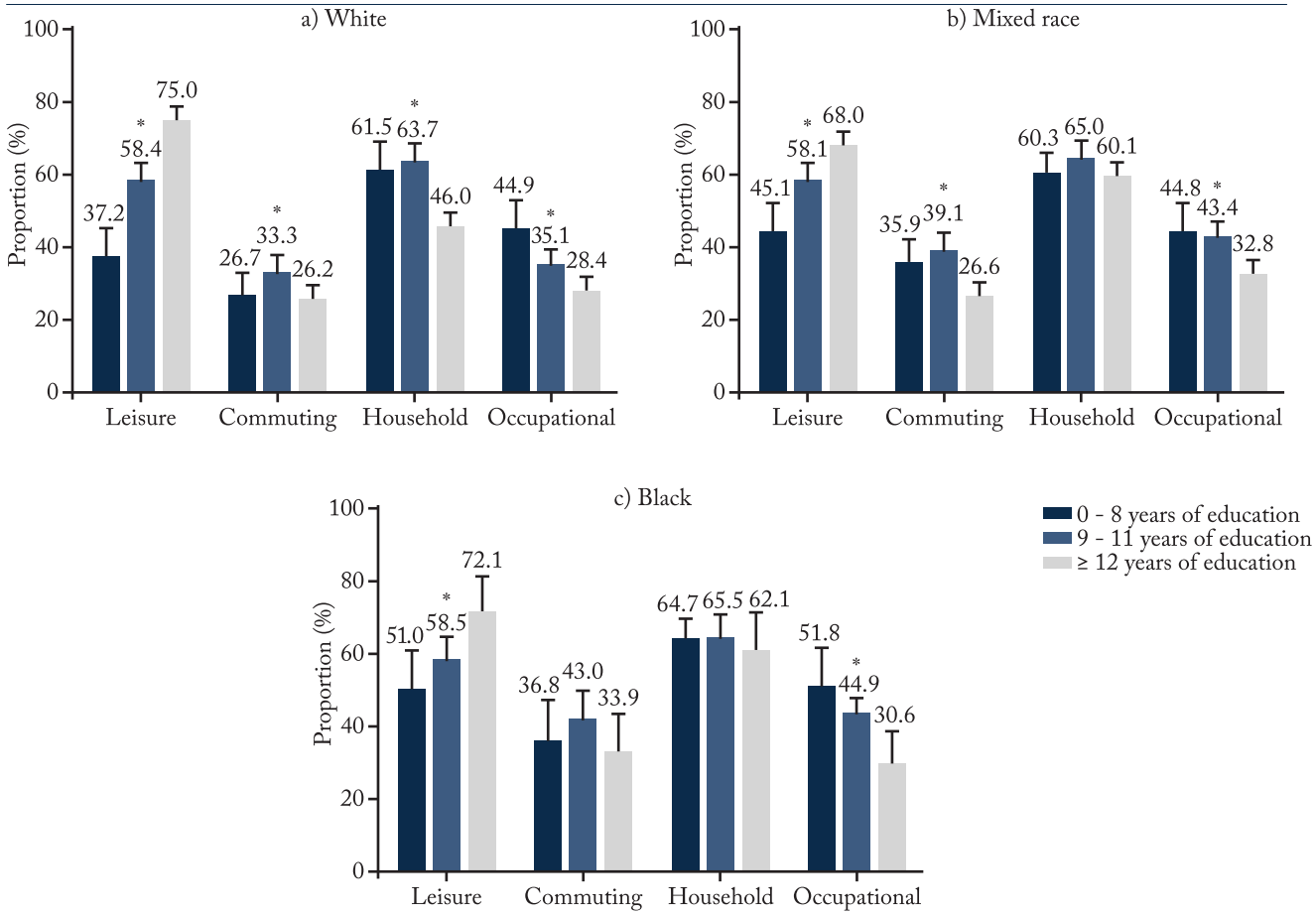

Figure 3 – Proportion of physical activity practitioners by years of education among Mixed-race, Whites, and Blacks.
A) White; B) Mixed-race; C) Black.
*indicates a statistically significant difference ($p < 0.05$) between the groups of years of schooling within that physical activity domain.

The practice of commuting PA in Brazil is particularly complex to understand, as it may be linked to either choice or necessity depending on the socioeconomic and race-ethnicity characteristics of practitioners and the type of activity involved[27]. A temporal trend analysis of Vigitel data (2010-2019) showed that White individuals and those with higher education spend less time on commuting PA[28]. In this context, commuting PA is more easily associated with choice. Public transportation use is associated with lower income, meaning that using buses, trains, and subways as transportation modes typically occurs out of necessity and is related to walking practices[29].

Our findings revealed an intersection between race-ethnicity and years of education. Previous evidence has shown that socioeconomic status is significantly associated with occupational and leisure PA in adults[30]. However, economic status (income, education level, and occupation) may not fully capture the influence of race-ethnicity differences among Black, White, and Mixed-race individuals on PA levels across different domains. Other studies have also explored the role of race-ethnicity and education in PA levels[13,18,28,31].

Data from the Brazilian Institute of Geography and Statistics 2022 reveal differences in education levels among race-ethnicity groups, with White individuals showing higher educational attainment[32]. These differences demonstrate the structural racism deeply rooted in Brazil, a legacy of the colonial period, which benefits privileged groups (e.g., White ethnicity and those with higher education levels)[33-35].

The 2019 National Health Survey reveals unequal access to public sports and leisure facilities, with greater availability in higher-income and higher-education communities. Conversely, in lower-income communities with less education, both the quantity and quality of public facilities are reduced, with many residents lacking even safe spaces to exercise. This limits both participation in activities and the health benefits of PA for this population[36,37]. Examples of PA facilities include: covered multi-sport courts, grass or synthetic fields, running tracks, outdoor public gyms, parks,

squares, and bike paths[38].

The right to PA should be a social priority and government responsibility[13]. This requires data that considers race-ethnicity differences, to implement and monitor interventions that increase leisure PA participation and develop affirmative policies to reduce access inequalities[39].

Important limitations warrant attention in our study. The Vigitel sample includes only individuals with access to landline and/or mobile phones, preventing generalization of findings to rural areas (where access is more limited) and smaller inland cities[40-42]. PA levels were assessed via questionnaire, introducing recall bias; however, in population studies, objective measures are logistically challenging[43]. Finally, while years of education does not precisely determine educational attainment, it has proven to be a viable proxy for socioeconomic status when this variable is unavailable, as in our study.

Among the strengths, we highlight the epidemiological and population-based nature of the study, which included adults from all Brazilian capital cities. Furthermore, Vigitel employs a complex sampling design, allowing us to assess a representative sample from each Brazilian capital. To our knowledge, this is the first study to investigate PA prevalence across all domains (leisure, occupational, commuting, and household) according to years of education and race-ethnicity differences in the Brazilian population.

PA promotion interventions must consider race-ethnicity, socioeconomic, education-level, and income factors as determinants, particularly for leisure and occupational domains. Thus, identifying profiles with lower PA levels by choice (e.g., leisure) should be prioritized, such as Black individuals with low education. The effective applicability of these premises aligns with Hallal et al.'s[19] proposal for the new PA definition, which states governments should facilitate choosing PA as part of daily routines. Moreover, access to enjoyable, safe, healthy, equitable, and purposeful PA should be a priority for health policymakers, being essential for public policies across government levels.

In conclusion, the results demonstrate race-ethnicity inequalities in PA practice, with White individuals engaging more in leisure activities, while Black and Mixed-race individuals perform more household, commuting, and occupational PA. Regardless of ethnicity, individuals with higher education reported greater participation in leisure PA and less in occupational PA.

These findings may inform future studies seeking to deepen understanding of these disparities and develop strategies to reduce them through public policies that consider the intersection of race-ethnicity and education in leisure activity access. Furthermore, future studies should assess socioeconomic status for a more comprehensive understanding of this race-ethnicity intersection.

Conflict of interest

The authors declare no conflicts of interest.

Authors' contributions

Sampaio BOA, Scaciota LL, and Ribeiro HS: Conceptualization; Methodology; Software development, implementation, and testing; Data and experiment validation; Data analysis; Investigation; Resource provision; Data curation; Supervision; Project administration; Data visualization; Writing - original draft; Writing - review & editing; Final manuscript approval. Oliveira LC, Camargo JM, Alvares PBD, Quintanilha JCS, and Palmer CR: Conceptualization; Investigation; Project administration; Data visualization; Funding acquisition; Writing - original draft; Final manuscript approval. Florindo AA and Hallal PC: Conceptualization; Methodology; Supervision; Project administration; Writing - review & editing; Final manuscript approval.

Declaration on the use of artificial intelligence tools in the article writing process

The authors did not use artificial intelligence tools for manuscript preparation.

Availability of research data and materials

The datasets are publicly available upon article publication.

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Reviewers' assessment

The reviews of this article were originally conducted in Portuguese. This version has been translated using ChatGPT and subsequently reviewed by the Chief Editors.

Reviewer A

Anonymous

Format

- Does the article comply with the manuscript preparation rules for submission to the Revista Brasileira de Atividade Física e Saúde?
  Partially
- Regarding formal aspects, is the manuscript well-structured, containing the sections: introduction, methods, results, and discussion (conclusion as part of the discussion)?
  Partially
- Is the language appropriate, with clear, precise, and objective text?
  No
- Was any evidence of plagiarism observed in the manuscript?
  No

Suggestions/comments:

- The text needs to be revised to avoid repetition and to ensure that all procedures adopted are presented clearly and correctly. The description of the main study variable is disorganized; a table presenting the domains of physical activity and the respective categories would facilitate the reader's understanding of what the study aims to explore.

Abstract

- Are the abstract and resumo adequate (including: objective, information about study participants, studied variables, main results, and a conclusion) and do they reflect the manuscript content?
  No

Suggestions/comments:

- In the methods section, sample information is missing. How many people participated in the study? Who are they? From which region?

Introduction

- Was the research problem clearly stated and delimited?
  Partially
- Is the research problem adequately contextualized in relation to existing knowledge, moving from general to specific?
  Partially
- Are the reasons that justify the study (including the authors' assumptions about the problem) well established?
  Partially
- Are the references used to support the research problem current and relevant to the topic?
  Partially
- Was the objective clearly presented?
  Yes

Suggestions/comments:

- It is necessary to include national references or studies that are closer to the Brazilian context to justify the study, especially considering the historical factors that result in race-ethnicity disparities. In addition, there are citations without references.

Methods

- Are the methodological procedures generally appropriate for the research problem?
  Yes
- Are the methodological procedures adopted for the study sufficiently detailed?
  Yes
- Was the procedure adopted for the selection or recruitment of participants appropriate for the research problem and described in a sufficient, clear, and objective way?
  Yes
- Were details provided about the instruments used for data collection, their psychometric qualities (e.g., reproducibility, internal consistency, and validity), and, when relevant, about the operational definition of the variables?
  Yes
- Is the data analysis plan appropriate and adequately described?
  Partially
- Were the inclusion and/or exclusion criteria of the sample described and appropriate for the study?
  Partially
- Did the authors provide clarifications on the ethical

procedures adopted for the study?
Partially
Suggestions/comments:
- Explain the VIGITEL sample and the inclusion and exclusion criteria for the study sample;
- Present the final analyzed sample;
- Provide a table with the physical activity variables, by domain, and the categories to be analyzed;
- Consider grouping Black and Brown individuals in the same category or explain somewhere in the text the rationale for keeping them separate;
- In the statistical analysis, the authors state that data would be analyzed using means and standard deviations, but these were not presented.

Results
- Is the use of tables and figures appropriate and do they facilitate the presentation of the results?
  Yes
- Is the number of illustrations in line with the journal's submission requirements?
  Yes
- Was the number of participants in each stage of the study, as well as the number and reasons for losses and refusals, reported?
  Yes
- Are participants' characteristics presented and sufficient?
  Partially
- Are the results presented adequately, highlighting the main findings and avoiding unnecessary repetition?
  Yes

Suggestions/comments:
- Suggestion only: analyze Black and Brown individuals in the same category.

Discussion
- Are the main findings presented?
  Yes
- Are the strengths and limitations of the study discussed?
  Yes
- Are the results discussed in light of the study's limitations and existing knowledge?
  Partially
- Are the potential contributions of the main findings to scientific development, innovation, or practical applications discussed?
  Partially

Suggestions/comments:
- Seek results in the national literature to support or reflect on the findings of the present study. Also, reconsider the hypotheses raised and present references to support them.
- Some statements/information were not referenced.

Conclusion
- Was the conclusion adequately presented and consistent with the study objective?
  Yes
- Is the study conclusion original?
  Yes

Suggestions/comments:
- No comments.

References
- Are the references updated and sufficient?
  Yes
- Are most references composed of original articles?
  Yes
- Do the references meet the journal's formatting and quantity requirements?
  Yes
- Are citations in the text appropriate, i.e., do statements cite references that actually substantiate them?
  Partially

Suggestions/comments:
- No comments.

Comments to the author
- The topic is highly relevant and aligned with the goals of the thematic issue. However, for publication to be possible, the manuscript requires substantial revisions. Some observations and suggesions are included in the text.

Final decision
- Major revisions required

Reviewer B
Anonymous

Format
- Does the article comply with the manuscript preparation rules for submission to the Revista Brasileira de Atividade Física e Saúde?

Yes
- Regarding formal aspects, is the manuscript well-structured, containing the sections: introduction, methods, results, and discussion (conclusion as part of the discussion)?
  Yes
- Is the language appropriate, with clear, precise, and objective text?
  Yes
- Was any evidence of plagiarism observed in the manuscript?
- Not applicable

Suggestions/comments:
- Not applicable.

Abstract
- Are the abstract and resumo adequate (including: objective, information about study participants, studied variables, main results, and a conclusion) and do they reflect the manuscript content?
  Yes

Suggestions/comments:
- No comments.

Introduction
- Was the research problem clearly stated and delimited?
  Yes
- Is the research problem adequately contextualized in relation to existing knowledge, moving from general to specific?
  Yes
- Are the reasons that justify the study (including the authors' assumptions about the problem) well established?
  Yes
- Are the references used to support the research problem current and relevant to the topic?
  Yes
- Was the objective clearly presented?
  Yes

Suggestions/comments:
- No suggestions.

Methods
- Are the methodological procedures generally appropriate for the research problem?
  Yes
- Are the methodological procedures adopted for the study sufficiently detailed?
  Not applicable
- Was the procedure adopted for the selection or recruitment of participants appropriate for the research problem and described in a sufficient, clear, and objective way?
  Not applicable
- Were details provided about the instruments used for data collection, their psychometric qualities (e.g., reproducibility, internal consistency, and validity), and, when relevant, about the operational definition of the variables?
  Not applicable
- Is the data analysis plan appropriate and adequately described?
  Not applicable
- Were the inclusion and/or exclusion criteria of the sample described and appropriate for the study?
  Not applicable
- Did the authors provide clarifications on the ethical procedures adopted for the study?
  Yes

Suggestions/comments:
- As this is a secondary analysis of Vigitel 2023 data, detailed methodological procedures were not presented, but the reference was provided for readers to access detailed information.

Results
- Is the use of tables and figures appropriate and do they facilitate the presentation of the results?
  Yes
- Is the number of illustrations in line with the journal's submission requirements?
  Yes
- Was the number of participants in each stage of the study, as well as the number and reasons for losses and refusals, reported?
  Not applicable
- Are participants' characteristics presented and sufficient?
  Yes
- Are the results presented adequately, highlighting the main findings and avoiding unnecessary repetition?
  Yes

Suggestions/comments:
- No suggestions.

Discussion

- Are the main findings presented?
  Yes
- Are the strengths and limitations of the study discussed?
  Yes
- Are the results discussed in light of the study's limitations and existing knowledge?
  Yes
- Are the potential contributions of the main findings to scientific development, innovation, or practical applications discussed?
  Yes
  Suggestions/comments:
- No comments.

Conclusion

- Was the conclusion adequately presented and consistent with the study objective?
- Yes
- Is the study conclusion original?
- No
  Suggestions/comments:
- The conclusion is not original, since health inequalities and inequities are well known in Brazil and access to physical activity remains a privilege. However, the study is important as it reinforces race-ethnicity and educational disparities in physical activity in the Brazilian population.

References

- Are the references updated and sufficient?
- Yes
- Are most references composed of original articles?
- Yes
- Do the references meet the journal's formatting and quantity requirements?
- Yes
- Are citations in the text appropriate, i.e., do statements cite references that actually substantiate them?
- Yes
  Suggestions/comments:
- No comments.

Comments to the author

- the article is relevant as it analyzes physical activity by domain, considering race-ethnicity and educational aspects. Its contribution lies in expanding the discussion on these differences and adopting an intersectional approach, fostering reflection, debate, and the promotion of actions to reduce race-ethnicity, educational, gender, age, sexual orientation, and income disparities in access to physical activity (whether free or private).

Final decision

- Accepted for publication in the current format