



Physical activity for children and youth: Physical Activity Guidelines for the Brazilian Population

Atividade física para crianças e jovens: Guia de Atividade Física para a População Brasileira

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ABSTRACT

Regular physical activity promotes physiological, psychological and social benefits in the lives of children and adolescents. Despite the high prevalence of young people who do not physically active in our country, and that we have a good ranking in world academic production on research in the physical activity and health area, Brazilian recommendations for physical activity had not been published until then. The aim of this article was to describe how the chapter for children and young people aged 6-17 years of Physical Activity Guidelines for the Brazilian Population was developed and to present the main recommendations for this age group. The construction of the chapter for children and young people involved the following steps: a) literature review; b) writing the preliminary version of the chapter; c) listening process of the target audience for the chapter and specialists in the physical activity promoting area; d) public consultation; and e) writing the final version of the chapter. The topics presented cover examples of physical activities practised in different domains; recommendations for practice (types, intensity, frequency, duration and the ways in which it can be structured). Guidance is provided for young people, parents/guardians and teachers about how to adopt and maintain a more physically active lifestyle, as well as suggestions for reducing time in sedentary behaviour. The construction of a national guidelines about physical activity for Brazilian population is something unprecedented, and resulted from a joint effort of several departments of society.

Keywords: Physical activity; Health promotion; Public health; Child; Adolescent.

RESUMO

A prática regular de atividade física promove benefícios fisiológicos, psicológicos e sociais na vida de crianças e jovens. Apesar da alta prevalência de jovens que não praticam atividade física em nosso país e de termos uma boa colocação no ranking mundial de produção acadêmica sobre pesquisa na área de atividade física e saúde, ainda não havia sido publicadas as recomendações brasileiras de atividade física. O objetivo deste artigo consistiu em descrever como foi desenvolvido o capítulo para crianças e jovens de 6 a 17 anos do Guia de Atividade Física para População Brasileira e apresentar as principais recomendações para esta faixa etária. A construção do capítulo para crianças e jovens envolveu as seguintes etapas: a) revisão de literatura; b) redação da versão preliminar do capítulo; c) processo de escuta com o público alvo referente ao capítulo e especialistas da área de promoção da atividade física; d) realização de consulta pública e; e) redação da versão final do capítulo. Os tópicos apresentados abordam exemplos de atividades físicas praticadas em diferentes domínios; recomendações para a prática (tipos, intensidade, frequência, duração e as formas que a mesma pode ser estruturada). Além disso, são apresentadas orientações para jovens, pais/responsáveis e professores sobre como adotar e manter um estilo de vida mais ativo fisicamente, assim como sugestões para reduzir o tempo em comportamento sedentário. A elaboração de um guia nacional de atividade física para a população brasileira foi algo inédito, e resultou de um esforço conjunto entre diversos setores da sociedade.

Palavras-chave: Atividade física; Promoção da saúde; Políticas públicas; Criança; Adolescente.

Introduction

Physical activity is a behavior that promotes a series of physiological, psychological and social benefits, as well as cultural appropriations in the lives of children and youth¹. The proper practice of physical activity can favor health aspects such as the improvement of physical fitness parameters and motor development, maintenance of body weight, prevention of chronic noncommunicable diseases (NCDs), promotion and maintenance of mental health, in addition to favoring interaction of this public^{2,3}. Maintaining this behavior at this stage of life favors the adoption of other positive health behaviors, such as reducing the time spent in sedentary behaviors, a more balanced and healthy diet⁴ and decreasing exposure to risk behaviors such as smoking, alcoholism or the use of illicit drugs⁵.

Despite the knowledge about the aforementioned benefits, around 80% of youth globally do not reach a minimum of 60 minutes per day of physical activity⁶. More recent data reinforce the high prevalence of physical inactivity among youth and demonstrate that this scenario has remained unchanged since 2001⁷. In Brazil, data from the last National Survey of School Health (PeNSE 2015) showed that 71.7% of boys and 86.5% of girls do not practice at least 300 minutes of physical activity per week⁸.

With a view to improving monitoring and subsidizing policies for the promotion of physical activity, guidelines have been built at a global level by the World Health Organization¹ and at national level by different countries⁹⁻¹³. In general, these recommendations indicate that children and youth (6 to 17 years old) should accumulate, on average, 60 minutes a day in physical activities with moderate-to-vigorous intensity¹. Some guidelines also indicate that light intensity physical activities should also be performed whenever possible throughout the day^{9,11-13}. It is indicated that aerobic physical activities should occupy most of this time, and activities aimed at muscle and bone strengthening should be performed at least three times a week⁹.

Although Brazil plays a leading role in the global physical activity research scenario occupying fourth position in the world ranking of academic production in the area, according to the Global Observatory for Physical Activity¹⁴, so far, it has not produced its own physical activity guidelines. In this sense, the project "Physical Activity Guidelines for the Brazilian Population" (hereinafter referred to as Guide) was developed in order to establish the country's first recommenda-

tions for the practice of physical activity. The Guide was developed considering the cycles of life (children aged 0 to 5 years old; children and youth aged 6 to 17 years old; adults aged 18 to 59 years old, and elderly people aged 60 years old or more), and specific populations (pregnant women and people with disabilities), in addition to the domains and contexts in which physical activity takes place in Brazil. The purpose of this article is to describe how the chapter of the Guide for children and youth aged 6 to 17 years old was developed and to present the main guidelines and messages for promoting physical activity among individuals in this age group.

Methods

This manuscript addresses the procedures adopted by the Working Group responsible for building the Guide's chapter for children and youth from 6 to 17 years old. The work was structured according to the following steps: 1) literature review and organization of the theoretical basis about the main physical activity recommendations for children and youth in the world; 2) listening process with the target audience (youth, parents/guardians and teachers); 3) listening process with specialists in the field of physical activity promotion; 4) drafting of the preliminary version of the text that would compose the Guide; 5) making the first version of the chapter text available to society through public consultation; 6) writing the final version of the chapter.

In order to build a bibliographic reference database for the writing of the chapter aimed at children and youth of the Guide, first, a search was carried out for other recommendations and physical activity guides presenting a specific section for the youth. Websites from different institutions and electronic databases were consulted. Altogether, 18 guides/recommendations for physical activity practice, from different countries and published between January 2010 and June 2020, were selected. These documents were used to support the recommendations of time, intensities and minimum frequencies to obtain benefits for the general health of youth.

The electronic databases PubMed, Cochrane Library and LILACS were consulted in order to conduct a systematic investigation of systematic review studies and meta-analysis on intervention in physical activity and sedentary behavior involving children and youth. Another research in the same databases was performed in order to select systematic reviews on motivations, facilitators or barriers to the practice of physical activ-

ity among children and youth. After the selection process was completed, the studies selected from another search strategy carried out independently by the Physical Activity Domains Working Group, which included 64 studies, were added to the results of these searches.

Studies considered eligible to compose the theoretical framework should present the following aspects: 1) be systematic review articles; 2) include studies with youth between 6 and 17 years old; 3) address issues of interest to this Working Group, including interventions aimed at increasing the practice of physical activity and/or reducing time in sedentary behavior, benefits of physical activity, motivations, facilitators or barriers to physical activity in different contexts; 4) have been published in the last ten years; 5) be published in Portuguese, Spanish or English.

The complete flowchart of the bibliographic reference database selection process is shown in Figure 1. It is worth emphasizing that the intention of this search was not to carry out a systematic review of systematic reviews (overview), but to identify recent and relevant evidence that would serve as a primary source for the construction of the chapter. The guiding instrument of the content structure included in this chapter was a template (with guidelines on the format and topics that each chapter should cover) prepared by the Guide's Scientific Committee together with the Health Department team.

For the development of the specific text for children and youth, parents, guardians, adolescents (12 to 17 years old) and Physical Education teachers/professionals working in the public and private educational systems were heard. These hearings took place in July 2020 and aimed to collect information regarding the understanding, presentation format and content, as well as suggestions to be applied to the preliminary text produced by the Working Group responsible for the construction of this chapter of the Guide. The hearings were performed through electronic forms from the Google Forms tool.

In order to reach respondents from all regions of the country, the links to the forms were shared with members of the project "Brazilian guidelines for physical activity" and also among contacts of the members of this Working Group. These people acted as disseminators of these links, favoring the participation of people from all regions of the country in this stage of the construction of the Guide.

As an additional part of this listening, two special-

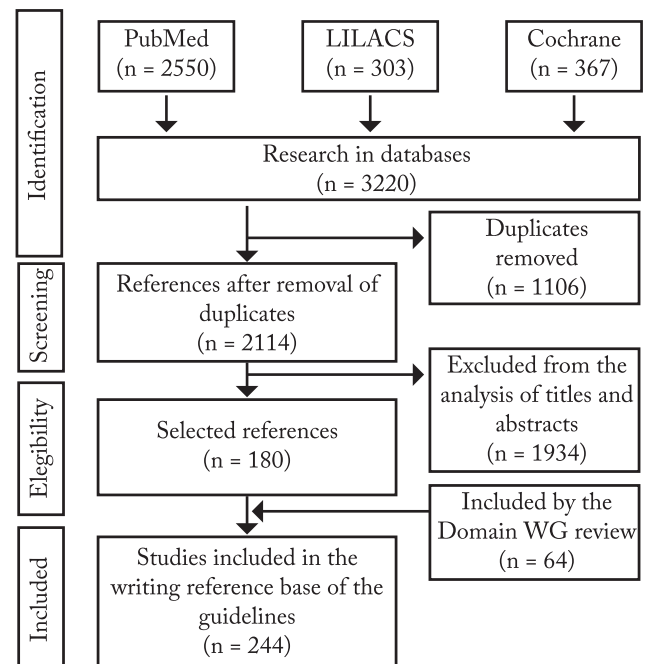


Figure 1 — Flowchart of the selection process of used references

ists in the field of physical activity promotion, with a PhD degree, were interviewed. The specialists had vast experience in research related to the areas of public policies for sport and leisure, in addition to having experience with the management of programs aimed at promoting the practice of physical activity for children and youth, such as the *Segundo Tempo* project. Suggestions from other specialists in the area who were heard in seminars conducted by other work groups were also considered, making the necessary adjustments for the young population.

The interviews took place through videoconferences in July 2020 and were conducted by one of the members of the Working Group. The interviews were recorded and later used in order to obtain information about public systems to support the promotion of physical activity for children and youth in Brazil, as well as the opinion of experts on information that should be included in the Guide. Additionally, in order to map programs and strategies that promote the practice of physical activity for children and youth, searches were carried out on websites of Ministries and Secretariats of the Federal Government.

The Working Group responsible for recommending physical activities for children and youth was organized based on weekly meetings with agendas and tasks previously defined via e-mail. Thus, two subgroups were organized, with three and four members, to carry

out the gathering of information and write a text on: 1) physical activity guidelines for children and youth and the prevalence of physical (in)activity at national and global level and; 2) effects of regular physical activity, low level of physical activity and long time spent in sedentary behavior on the health of children and youth.

After the development of these first two texts, the Working Group dedicated their efforts to the construction of the preliminary version of the chapter. Subsequently, relevant aspects raised in public hearings and with experts were incorporated into the preliminary version of the chapter. As part of the proposal to create the Guide, the Health Department, through the Primary Health Care Secretariat, carried out, in August 2020, the Public Consultation of the complete document composed by the documents of the eight Working Groups (see news in: <https://aps.saude.gov.br/noticia/9516>). Once the consultation was over, the suggestions and observations obtained were analyzed by the members of the Working Group and incorporated into the document in order to integrate the participation of Brazilian society in the development of the Guide.

The Guide, in its section dedicated to children and youth (6 to 17 years old), provides simple guidelines in an accessible language in order to help the target audience in adopting a more physically active lifestyle. Recommendations are presented regarding the volume and intensity of physical activity necessary to obtain health benefits, how the recommended volume can be accumulated throughout the day, examples of physical activities that can be practiced in different domains, and guidance on practice aimed at youth. Parents, guardians and Physical Education teachers have also received guidance so that they can positively influence and support youth in the practice of physical activity.

Results

The results here outlined are a summary of the central elements that scientifically support the guidelines on physical activities for children and youth. The complete content of the Physical Activity Guide for the Brazilian Population can be accessed on the Health Department website (www.saude.gov.br). Some examples of physical activities that can be practiced in different domains are described in Chart 1. These examples aim to reinforce that children and youth can be physically active in different domains and not only during their free time (leisure).

For the age group from 6 to 17 years old, the guide-

Chart 1 – Domains and respective examples of physical activities for youth (6-17 years old).

Domains of Physical Activity	Leisure time	Individual and team sports: soccer, five-a-side soccer, handball, volleyball, basketball, rugby, racket sports, rhythmic or artistic gymnastics, athletics, martial arts.
		Individual and groups activities: walking, running, flying a kite, dancing, swimming, cycling, skating, games (hide and seek, tag, jump rope, rubber jump, dodgeball).
	Transportation	Go places on foot or by bicycle, skateboard, rollerblade or scooter (no engine).
	Occupational (school activities)	Participate in Physical Education classes, games, school sports teams, extracurricular physical activities, and activities that take place in the open spaces of the school during recess/break.
	Domestic	Help family members with household chores such as keeping the yard and gardening, washing the bike or bathing the pets, taking out the trash.

lines recommend that at least 60 minutes per day of physical activity of moderate-to- vigorous intensity should be accumulated. This recommendation can be achieved continuously, in one session, or accumulated in smaller periods throughout the day. In addition, it is recommended that youth engage in muscle and bone strengthening physical activities for at least three days throughout the week as part of the recommended 60 minutes or more per day (Chart 2). For those who, initially, cannot reach 60 minutes of daily physical activity, the importance of accumulating as many minutes of practice as possible is highlighted, with a progressive increase in volume over time, in order to achieve the recommendations.

The Physical Activity Guidelines for the Brazilian Population also provides guidance to youth, parents/guardians and Physical Education teachers on how youth can adopt a more physically active lifestyle, overcome any barriers to physical activity and reduce time spent on sedentary behavior (Chart 3). For children and youth, the messages aim to encourage the practice of physical activity in different domains and encourage the experiencing of different types of physical activity, encouraging them to do something they like. It was reinforced that the initiation of physical activities could happen at any time and it suggested including physical activity as part of the daily routine of children and

Chart 2 - Guidelines for the practice of physical activity for children and youth from 6 to 17 years old.

Guidelines	Kind of activity	Physical activities in general, including aerobic, muscle and bone strengthening activities*
	Intensity	Moderate-to-vigorous**
	Frequency	Every day of the week
	Duration	60 minutes per day
	Structuring	Continuous and/or accumulated***

*As part of the 60 minutes of practice; **Activities with an absolute intensity greater than 3 METs, that is, those that lead to a moderate increase in heart and respiratory rate; ***Continuous: 60 minutes per day in a single session; Accumulated: 60 minutes per day divided into blocks of time throughout the day.

youth. One of the messages in the Guide highlights the importance of involving friends and family (joint practice) in carrying out physical activities.

For parents or guardians, the main messages were aimed at recognizing the importance of their support for their children’s practice of physical activity, especially the younger who have greater dependence on the company, permission and/or follow-up when commuting to the practice places. The messages for Physical Education teachers highlighted their important part as a role model for their students. The importance of Physical Education classes in encouraging and complying with physical activity recommendations was highlighted, and it suggested that teachers address the contents of the Guide in accord with the skills and abilities highlighted in the Common National Curriculum Base (BNCC) – Chart 3.

Guidelines to reduce time in sedentary behavior were also contemplated. The importance of limiting daily screen time in free time to a maximum of two hours and replacing time spent in sedentary behavior with some physical activity was reinforced. Taking breaks during extended periods of sedentary behavior should be encouraged. At school, Physical Education teachers must propose active moments during the school period (breaks, extra-class activities), in addition to seeking the inclusion of this cross-cutting theme in the political pedagogical project of schools (Chart 4). One of the recommendations of the Working Group to reduce sedentary behavior is that children and youth watch part of the classes standing up at school, with the help of adjustable tables, as is already done in other countries.

Discussion

This article presented the strategies and methods

Chart 3 - Summary of key messages and guidelines on how to adopt a more physically active lifestyle

Children and youth (6 to 17 years old)	
Show interest in physical activity.	
Seek help from friends, parents/guardians and Physical Education teachers to practice physical activity.	
Actively participate in Physical Education classes.	
Try to practice different sports and physical activities; create or adapt games.	
Practice physical activities that are enjoyable and satisfying.	
Know and use the public and private spaces available for the practice of physical activity in the neighborhood and at school.	
Practice physical activities with friends, classmates and family.	
Incorporate the practice of physical activity into the daily routine.	
Parents or guardians	
Encourage the participation of children in diverse physical activities.	
Teach children to practice some physical activities.	
Knowing public and private spaces in the neighborhood and at school and taking the children to practice physical activities in such places.	
Encourage children to walk or cycle to school whenever it feels safe.	
Identify groups of physical activity practices on social networks.	
Provide social support (encouraging, practicing together, taking them to practice sites) is important for children to be physically active.	
Help children to plan their daily activities, including the practice of physical activity in their routine.	
Physical Education Teachers	
Act as an example (role model) of a physically active person for children and youth.	
Provide opportunities for children and youth to have contact with diverse sports and physical activities.	
Advise parents/guardians about the possibilities of physical activities that they can practice together with their children.	
Provide social support for children and youth to practice physical activity in and out of the school context.	
Address contents of the guidelines in class, in accordance with the skills and abilities highlighted in the BNCC.	
Present and discuss the contents of the guidelines with parents/guardians of their students and other teachers in the school.	

adopted for the development of the Physical Activity Guidelines for the Brazilian Population, as well as the main information present in the section related to children and youth from 6 to 17 years old. The Guide represents a joint effort among the State, the scientific community and society in general in the construction of a document that will be used as an important source of information for the general population, for health professionals and for those responsible for the creation and implementation of public policies for promotion of physical activity in different life cycles, contexts and specific conditions. For Brazilian children and youth aged 6 to 17 years old, the Guide recommends the practice of, on average, 60 minutes per day of mode-

Chart 4 - Summary of key messages and guidance on how to reduce time in sedentary behavior.

Children and youth (6 to 17 years old)
Limit your time in front of the computer, cell phone, tablet, video game and television to a maximum of two hours a day.
Replace part of the time in sedentary behavior with the practice of some physical activity.
Include breaks during schoolwork: getting up, stretching, moving your body or walking for a drink of water, for example.
Parents or guardians
Limit the time your child spends in front of the computer, cell phone, tablet, video game and television to a maximum of two hours a day.
Encourage your child to replace some of their free time in sedentary behavior with games or active play.
Advise the child to take a break after every hour sitting, to get up, stretch, move their body or walk for a drink of water.
Physical Education Teachers
Include, in the school routine, games and activities that encourage students to reduce their time in sedentary behavior.
Discuss with other teachers in the school about “sedentary behaviors” and how to limit the time children spend in these behaviors.
Suggest that the topic “sedentary behaviors” be included as a cross-cutting theme in your school’s political-pedagogical project.

rate-to-vigorous physical activity, including aerobic activities and muscle and bone strengthening activities.

Despite the existence of global guidelines for physical activity and sedentary behavior¹⁵, several countries have proposed their own national guidelines in order to meet specific characteristics of their population and provide specific subsidies for the promotion of physical activity considering their particularities. Among these countries, the United States of America³, Canada¹⁶, Australia⁹, the United Kingdom¹⁷, China¹⁰, Uruguay¹⁸, Argentina¹⁹, amidst others²⁰⁻²³, stand out.

In general terms, the Guide has followed the recommendations for the practice of physical activity (e.g.: types, volume and intensity of physical activity practice) present in guidelines from other countries. However, it is worth highlighting the progress by including messages aimed at parents/guardians and Physical Education teachers, presenting examples of physical activities that children and youth can practice in different domains and taking different regional and cultural realities and particularities into account. It also brought messages, aimed at children and youth, their parents/guardians and teachers, on how to overcome barriers to practice and ways to reduce time in sedentary behavior.

A recent revision²⁴ on the different physical activity guidelines for children and youth has shown that, as the Guide mentions, the daily 60-minute volume is a

consensus and corroborates the recent global physical activity guidelines proposed by the WHO¹⁵. The “optimal” volume of physical activity is a complex delimitation, nonetheless, there is evidence that many of the benefits resulting from the practice of physical activity occur with volumes around 60 minutes per day¹⁵.

The Guide, however, emphatically addresses that the time of physical activity can be cumulative throughout the day and even if the child or adolescent does not reach this goal on a daily basis, he/she should always seek to engage in some physical activity every day of the week. This strategy has been adopted in an attempt not to discourage youth who, on some days of the week, do not meet the recommended 60 minutes per day.

Regarding the intensity of physical activities, international guidelines²⁴ primarily recommend moderate-to-vigorous physical activities. The recommendation to carry out physical activities that reach moderate and vigorous intensities is based on the association between this intensity range and the multiple health benefits for children and youth, such as improvement in cardiorespiratory, neuromuscular, bone, and cardiometabolic and cognitive indicators, bodyweight/adiposity control and reduction of depressive symptoms^{2,15}. The Guide, in addition to following this general recommendation, brings a point that converges with most international guidelines: it addresses the recommendation to practice light intensity physical activities. The Guide suggests that, whenever possible, some physical activity be performed throughout the day, even if light intensity, as a way to reduce as much as possible the time spent in sedentary behavior. This recommendation is based on evidence that indicates that time spent in light physical activity can increase the overall benefits of being physically active²⁵.

As for the type of physical activity recommended, aerobic physical activities are the priority in most international guidelines for children and youth²⁴. In addition, both the global guidelines proposed by the WHO and the main international guidelines recommend physical activities that involve muscle and bone strengthening for at least three times a week. The Guide follows these recommendations. However, when describing the benefits of the recommended physical activities, in addition to the benefits traditionally described, it also considers that the activities practiced have a positive impact on the development of motor skills and physical capacities (e.g.: flexibility, speed)²⁶.

Regarding sedentary behavior, although there is

evidence suggesting that the time spent in sedentary activities is related to negative health outcomes among youth such as low physical fitness, greater adiposity and worsening cardiometabolic profile, the minimum amount of recommended sedentary behavior and the impact interruption of sedentary behavior are still not well evidenced²⁷. Thus, this guidelines recommend that children and youth reduce and/or replace time spent in sedentary behavior, whenever possible, with physical activities – even if low intensity.

These recommendations in the Guide are aimed at the target audience (children and youth from 6 to 17 years old), but also at people related to this age group. Therefore, parents or guardians and teachers in general, especially those of Physical Education, can access the information in the Guide to act as promoters of physical activity for this audience. This proposal is based on the ecological understanding of physical activity²⁸, in which children and youth are not seen as the only ones responsible for the practice of physical activity or for time spent in sedentary behavior in their daily lives.

From this outlook, the Guide provides information on the social support of parents and guardians²⁹ and on activities that can be proposed and encouraged by teachers, corroborating what is specifically recommended for this age group²⁶. The physical activity promoting agents can have access to information related to the use of public spaces and the engagement in sports and leisure activities³⁰ that are summarized in the guidelines.

It is important to highlight that, although the Guide is an important document for disseminating information and recommendations on adopting a physically active lifestyle, it is not capable of promoting changes in terms of increasing levels of physical activity of children and youth by itself. Therefore, it is necessary that the dissemination of the Guide's recommendations is articulated with the actions of different sectors of society (Health, Education, among others) and with programs and policies that promote physical activity in different spheres (public and private) and at different levels (municipal, state and federal).

The publication of these guidelines will contribute to the promotion of physical activity in Brazil, with positive implications for the public health of the population. It will be available in accessible language to facilitate the understanding and dissemination of information, guidelines and messages on adopting a physically active and less sedentary lifestyle. Its messages were aimed at children and youth, parents/guardians and

Physical Education teachers, as there is an understanding that the adoption of an active lifestyle is not a merely individual choice, but a support network that creates favorable conditions for practice and those closest to the youth represent the primary bonds of this network.

In conclusion, the planning and elaboration of physical activity guidelines for the Brazilian population was unprecedented and required a joint effort amidst different sectors of society, which allowed the elaboration of a document coherent with the current scientific production in this field of knowledge within the needs of the Brazilian population. As with other physical activity guidelines (for example, the WHO and US guidelines), the Physical Activity Guidelines for the Brazilian Population is not an unchangeable document. Therefore, it will have to be constantly evaluated and updated in order to overcome its limitations and fulfill its role of contributing to the promotion of physical activity in the Brazilian population.

Conflict of interest

The authors declare no conflict of interest.

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Author contributions

Dumith SC, Prazeres Filho A, Cureau FV, Farias Júnior JC, Mello JB, Silva MP, Matias TS and Lopes WA contributed to the design of the manuscript, data collection and analysis, and writing of the manuscript. Magalhães LL contributed to the data collection and writing of the manuscript. Hallal PC contributed to the conception, writing and general revision of the manuscript.

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