BMJ Open

Interventions based on environmental determinants for nutritional and physical activity behaviours in Colombia: a scoping review

Edgar D Hernandez [1], Cristian Arvey Guzman [2,3], Pamela Seron [4]

To cite: Hernandez ED, Guzman CA, Seron P. Interventions based on environmental determinants for nutritional and physical activity behaviours in Colombia: a scoping review. *BMJ Open* 2022;**12**:e060085. doi:10.1136/bmjopen-2021-060085

► Prepublication history and additional supplemental material for this paper are available online. To view these files, please visit the journal online (http://dx.doi.org/10.1136/bmjopen-2021-060085).

Received 14 December 2021
Accepted 30 August 2022

[1]Facultad de Medicina, Human Movement Department, Universidad Nacional de Colombia, Bogotá, Colombia
[2]Facultad de Medicina, Universidad Nacional de Colombia, Bogota, Colombia
[3]Physical Therapy Department, Hospital Universitario Nacional de Colombia, Bogota, Colombia
[4]Departamento de Ciencias de la Rehabilitación & CIGES, Facultad de Medicina, Universidad de La Frontera, Temuco, Chile

Correspondence to
Dr Pamela Seron;
pamela.seron@ufrontera.cl

ABSTRACT

Objective To identify, systematically, the interventions based on environmental determinants to improve the nutritional and physical activity (PA) habits available in Colombia.

Design A scoping review was performed according to the guidelines of the Joanna Briggs Institute.

Study selection All studies about intervention programmes for PA and nutritional behaviours in Colombia were included.

Methods Searches in Medline/PubMed, Embase, Cochrane, Scielo and Lilacs, using MeSH, Decs and Emtree terms, were performed up to August 2020. Additionally, a manual search was made in specialised national journals. An internet documentary search of the official websites on policies and programmes by departmental, district and municipal secretariats was also performed.

Two reviewers independently screened titles and abstracts. Then, the full texts were reviewed to select documents to be included.

Data management relevant information from selected documents and articles was extracted. A descriptive analysis was considered.

Results Sixty-seven documents and 70 published articles were found. The programmes were identified in 13 initiatives, 7 in the area of PA and 6 with a nutrition focus. They were on physical and social environmental modifications such as the '*muévete*' ('get moving') programmes in Bogota, Quindio and Cartagena; a modification of '*ciclovía*'; or bicycle path programmes as well as nutrition programmes in schools, universities and companies.

Conclusion This scoping review identified national programmes and policies in Colombia in the area of nutrition and PA from the environmental perspective in different scenarios: from schools to workplaces and communities. The need to implement such programmes from public and private institutions is also noted, promoting the practice of PA and healthy eating in every scenario in the national territory. New research to determine the impact of these programmes is essential to get a glimpse of the effects of these programmes and the implications for public health.

STRENGTHS AND LIMITATIONS OF THIS REVIEW

⇒ This scoping review compiles, comprehensively, policy and evidence related to interventions based on environmental determinants that promote healthy lifestyles in the South American country of Colombia.
⇒ An electronic search for public documents and evidence published in scientific journals was exhaustively carried out.
⇒ This scoping review maps available information and contributes to the identification of knowledge gaps providing future research ideas.
⇒ The main limitation of this study is that the information collected does not provide insights into the effectiveness of the programmes.

INTRODUCTION

A very strong environmental perspective is currently seeking to explain how the promotion of health focusing on environmental aspects plays an essential role in the promotion of health and the development of public policies[1] (figure 1). The environmental determinants related to physical activity (PA) and diet are factors thought worldwide to have a strong impact on morbidity and mortality,[2] as this is a public health concern globally, in Latin America and also in Colombia due to the low levels of PA and inadequate nutrition habits among the population.[3]

Changes in health habits among world populations are mediated by the environment in which they develop; therefore, environmental modifications could bring about changes in these habits.[4] The WHO has encouraged the development of social programmes or structural modifications, such as outdoor gyms in parks[5] or nutritional interventions in schools, as a strategy to promote higher levels of PA or healthier nutrition to control chronic diseases.

Global evidence shows that healthy habits, particularly PA and healthy eating habits, are elements in health promotion and prevention that reinforce a systemic response favouring psychological and social aspects in

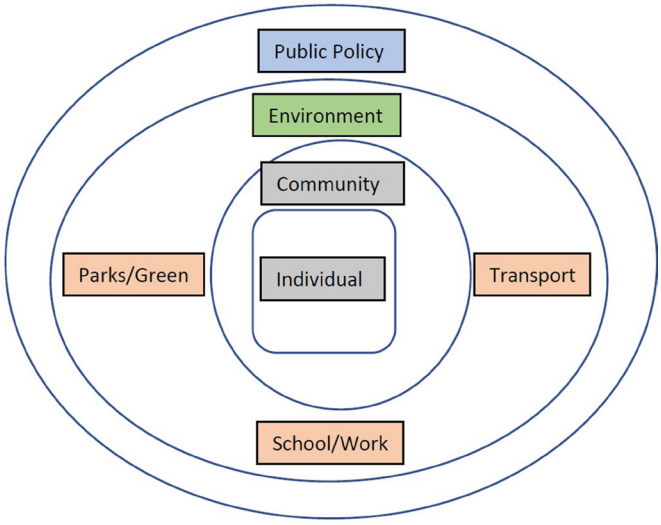

Figure 1 Environmental determinants in ecological models.

encouraging healthy lifestyles.[5] In Colombia, different environmental strategies have promoted the development of healthy lifestyles in terms of PA and nutrition, but they are not compiled and recognised in the country. Hence, this study aims to identify the interventions based on environmental determinants to improve the nutritional and PA habits available in Colombia and to determine the effect of the intervention on the nutritional and PA habits.

METHODOLOGY

A scoping review was conducted following the guidelines of the Joanna Briggs Institute[6] regarding search, selection, classification and analysis of the evidence. In addition, the guidelines of the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) extension for scoping review (PRISMA-ScR) were followed.[7]

Search strategy

Two strategies to find the documents or publish articles were used to identify the intervention programmes published up to August 2020. The first, on official documents about programmes established nationally and departmentally. For this, an internet documentary search of the official pages published on policies and programmes by departmental, district and municipal secretariats was performed. The second was to search on electronic databases Medline/PubMed, Embase, Cochrane, Scielo and Lilacs using MeSH, Decs and Emtree terms. Additionally, a manual search was made in specialised national journals (online supplemental file 1).

Study eligibility criteria

This review focused on Colombia, considering the political-administrative division in departments and regions. Official documents were included that referred to programmes meant to promote PA or healthy nutrition from the environmental perspective. The reports and programmes implemented on PA and nutrition by district, regional or national secretariats, the Ministry and public and private national governmental organisations that were published and explained in their communications were included. Moreover, articles published in national or international scientific journals were included where programmes were developed in Colombia.

Study selection

Two reviewers independently screened all records by title and abstract. Then, selected documents were read in full text according to the established criteria. In the case of disagreement, a third reviewer made the selection. To optimise the process, Rayyan (Qatar Computing Research Institute) platform was used.[8]

Data extraction

A spreadsheet in Microsoft Excel (Microsoft Office V.365) was designed. The characteristics of the programmes or studies were extracted, as well as the title, authors or those responsible for the document, year and place of publication, outcomes considered and the scope of interventions.

Data analysis

An analysis matrix was created where the characteristics of official documents and publications, discriminating the specific programmes to which they corresponded and the main results are presented. The information appears narratively, accompanied by tables or figures that summarise the information.

Patient and public involvement

Patients or the public were not involved directly in the design, conduct, reporting or dissemination plans of our research.

RESULTS

The selection process for studies and documents is presented in figure 2. Seventy-two official documents were found and 67 documents were selected after the full-text review.[9–51] From the electronic database search, 2969 articles published in scientific journals were located initially, of which 2849 were excluded for the title and abstract. Of the 120 studies read in full text, 55 articles were excluded. Additionally, five studies were identified by cross-referencing. Finally, 70 scientific articles were included.[52–124] All these document and articles were related to 13 initiatives on physical and social environmental modifications, 7 in the area of PA and 6 with a nutrition focus (online supplemental files 2; 3).

Characteristics of the official documents included

The 67 official documents included are related to different regions and national entities in Colombia, 14 from the Ministry of Social Protection with a national approach. Nineteen documents from the capital, Bogotá, and the rest from different cities (12 Medellin and 22 from another departments as Cundinamarca, Antioquia,

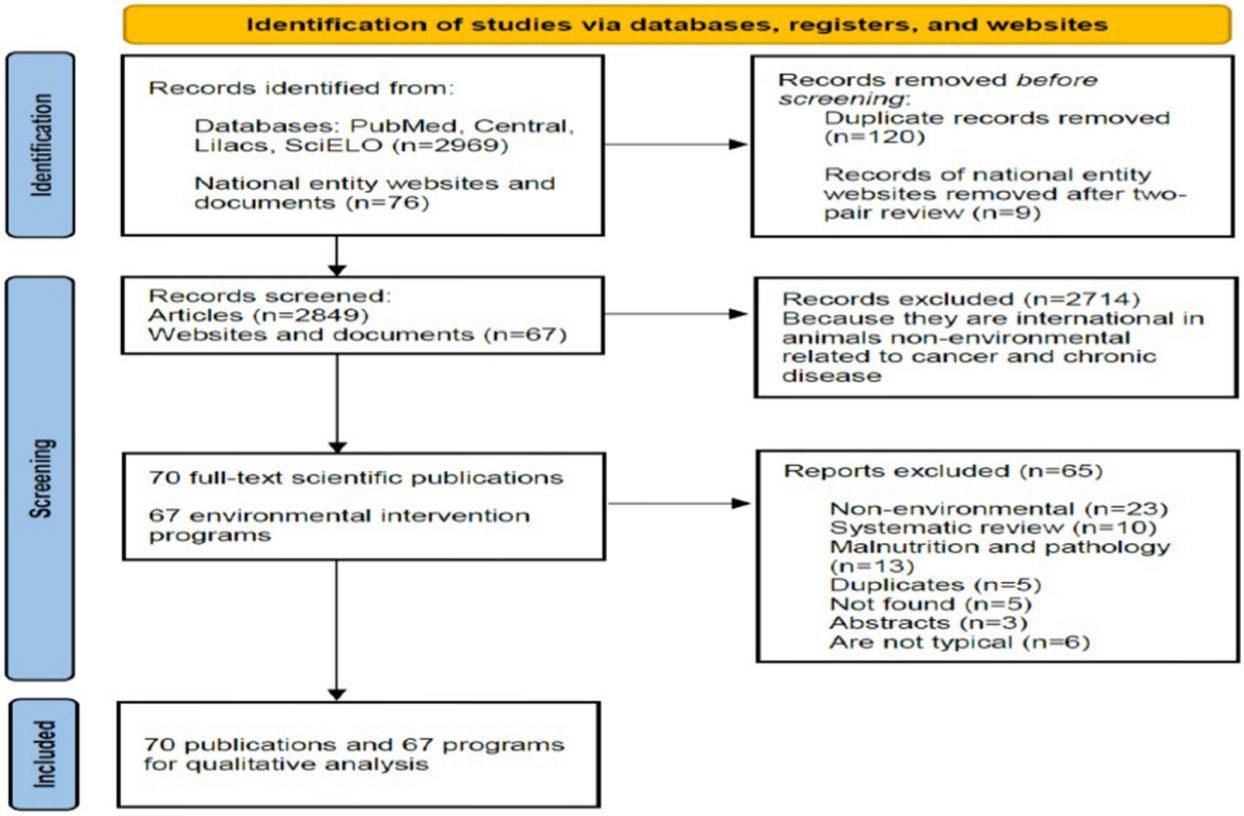

Figure 2 PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) flowchart for the selection of official documents and scientific articles.

Bolívar, Caldas, Boyacá and Santander). It is important to highlight that these documents were published on the websites of the institutions.

Characteristics of the publications included

Seventy articles included related to environmental strategies for nutrition and PA in several regions of the country were published between 2006 and 2020. Twenty documents focused on programmes executed at a national level. The other ones are focused on the departmental or city level: 35 in Bogota, followed by 15 documents in Medellín, Cali, Barranquilla, Tunja, Cartagena and Popayán. The types of studies found were 35 cross-sectional, 2 longitudinal, 6 reviews, 7 qualitative, 6 mixed, 4 controlled or community trials, 4 cohort, 3 natural experiments, 1 evaluation of technology, 1 modelling and the remaining 4 used other designs not well specified.

Findings on environmental programmes to impact PA

Of the 67 documents and 70 publications found, 55 are about PA. Most focus on environmental, physical or social modifications that promote activity like '*muévete Bogotá*' (move Bogota),[10] '*muévete Quindío*' (move Quindío) and '*Vida Activa Cartagena*' (active life in Cartagena),[125] which focus on information, education, communication and intervention strategies, providing advice and support in the formulation of projects within the institutions.

As table 1 shows, these 55 programmes are classified into seven initiatives for different structural modifications or social programmes: active transportation,[126] bicycle paths or '*ciclovías*',[56] neighbourhoods and urban modification,[58] '*Recreovía*' and community PA,[60] schooling and curricular or structural modification,[61] as well as modification of parks.[75] These strategies cover the life cycle, with activities in different contexts such as preschools,[89] schools,[65] universities and associations for older adults.[127] The programmes are undertaken at the community level,[59 89 128] in districts and associations, and up to the modification of built environments like the modification of roads,[56] transportation[101] and parks.[60]

In the transport area, the most representative programmes are those that stimulate active transport as '*ciclovías*', bicycle paths or bicycles in Bogota,[97] '*ciclovías EnCicla Medellín*',[17] active citizen transport programmes in Cartagena and Pereira,[97] with some international evidence like that reported by the IPEN study[74] of active transport and change of transport in Colombian cities. In terms of infrastructure, the number of kilometres of '*ciclovías*', or the construction of cycle paths and lanes, increased. The main outcomes reported are related to health benefits such as years of healthy life and reduced risk for chronic diseases. Another documented programme is '*Transmilenio*',[101] a mass transport system designed to increase PA. The study reports that it increases walking time by >150 min/week (OR 1.5, 95% CI 1.1 to 1.9), and indicates that it is a protective measure due to the use of the transport system and long walk stations.

Table 1 Physical activity programmes at environment level

Programme	Population	Programme characteristics	Environmental perspective according to ecological model
Bicycle paths and bike lanes[13 20 29 30 54–56 66 80 85 97–99]	Adults, children	Bicycle path and *ciclovía* construction programmes in different Colombian cities	Physical social determinants area of transport and built environment
Neighbourhoods and urban modification[58 59 62 64 74 76 79 88 120]	Adults, older adults	Neighbourhood environment modification programme to promote physical activity	Physical social determinants area of transport and built environment
Recreovía and community physical activity[52 55 68 72 78 80 96 100]	All ages	Active paths programmes to promote physical activity	Physical social determinants area of transport and built environment and social programmes
Schooling and curricular or structural modification[61 65 78 89 91 122]	Children and adolescents	School and preschool programmes with changes to curriculum and school activities	Social determinants social programmes
Physical activity and primary healthcare[57 89 104 121 123]	Adults, older adults, children and adolescents	Development of physical activity programmes in the framework of primary care	Social determinants social programmes
Active transport[53 80 101]	General population	Modification of the type of vehicular transport use to walking or use of alternative transports	Physical social determinants area of transport and built environment
Parks, urban modification and physical activity[60 68 75]	General population	Programme of structural modification of parks, construction of outdoor gyms and promotion of their use for physical activity	Physical social determinants area of transport and built environment

The other programme reported in the literature is the '*Recreovías*' of Bogota,[41] considered a leading programme that promotes and generate healthy habits and lifestyles. Other programmes included activities on the street and in parks to stimulate the development of active practices in the community,[100] which yielded favourable results in several participants in the years of its creation, such as an increase in the number of vigorous activities in the participants. Additionally, parks programmes with outdoor gyms[12] or design of healthy programmes for communities were other important strategies reported.

Finally, school programmes were identified with two main proposals: one with the curricular integration of PA, and the other with the modification of school spaces for the practice of PA during school hours. These programmes seek to encourage students to undertake PA as a primary element in the curriculum or beyond it.

Findings on environmental programmes to impact nutritional habits

Twelve nutrition-related official programmes were identified. Table 2 contains these 12 programmes organised in six groups: schooling and environmental eating programmes, built environment and eating, community food safety, ultra-processed foods programme, food labelling, primary healthcare and community nutrition. Some

Table 2 Nutritional programmes at environment level

Programme	Population	Programme characteristics	Environmental perspective according to ecological model
Built environment and nutrition[58]	General population	The relation of the built environment and the development of walking in neighbourhoods was evaluated, the proximity of shopping centres and food sites was analysed with the use of transport and walking activities	Physical social determinants built environment
Schooling and environmental nutrition programmes[67 73 82 84 94 107 112 113]	Children and adolescents	School, preschool programmes with modification of food programmes, set menus, changes to school snacks and lunches	Social determinants social programmes
Community-level food security[70 83 95 148]	General population	The programmes determine the association of food insecurity in the home with demographic characteristics, the food expenditure of the home and consumption in Colombian communities	Social determinants social programmes
Ultra-processed food programme[71]	General population	The type and characteristics of ultra-processed foods. In Colombia, industrialised bread is the most easily assimilated ultra-processed food in the traditional diet, along with snacks and sugary drinks	Social determinants social programmes
Food labelling [86 87]	General population	Food labelling system programme and changes in food consumption and food purchases	Social determinants social programmes
APS and community nutrition[90 108 114 118 149]	General population	Development of nutrition and healthy eating programmes in the framework of the APS	Social determinants social programmes

of these programmes are included in the 10-year Colombian public health plan,[35] specifically the programmes of school-age healthy eating[129] for public and private schools in the country's capital and other cities such as Medellín and Cali.[130]

School and university programmes were identified in the area of education,[67] as '*Bogotá sin hambre*' and '*aliméntate Bogotá*' (Bogota without hunger and feed yourself Bogota), school snacks and snack programmes for preschoolers and students[131] where students, teachers and administrators participate in the development of activities that promote healthy nutrition. Healthy eating programmes in community and family surroundings were also identified.[90] The '*ABC de la alimentación saludable*' (ABCs of healthy eating) is a programme that promotes eating as satisfying energy and nutrient needs at all stages of life. Another line of action is the community-level emphasis given to food security programmes, such as the Antioquia nutritional improvement programmes (MANA),[81] and the school food security programmes in Bogotá[41] and Cali,[132] which suggest school eating programmes with snacks that fulfil nutritional requirements and replace the nutritional needs not provided by the students' families.

Furthermore, the evidence included concentrated on food labelling[87] and the benefits of this programme at the national level for weight control and informed food purchases. According to the studies, labelling issues arise because buyers do not consult it or because it is not clear to the person reading it.

On the other hand, the evidence on ultra-processed food programmes[51] and their use at the community level reports that Colombians in more vulnerable urban and rural areas consume this ultra-processed food more with an increase in overweight and obesity. In this same community, the '*Familias en acción*' (Families in Action) is a programme that includes cash transfer to children and mothers who promote healthy lifestyle habits, including a balanced diet.[83]

Other technical documents found are guidelines on healthy eating[133] that evaluate the degree of effectiveness of the '*Programa de Alimentación Escolar (PAE)*' (School Food Programme).

Findings on environmental programmes with a combination of nutrition and PA

Of the programmes and articles found, the HEVS 'Healthy Life Habits Programme' in communities was identified,[77] which describes community-level guidelines and global recommendations about healthy lifestyles. Another programme from the Colombia Department of Sports (Coldeportes) focuses on the promotion of healthy habits and lifestyles with an emphasis on healthy eating and the regular practice of PA. Finally, two programmes with a strategy for nutrition and PA at the school level encourage a balanced diet and the development of school PA programmes.[73 91] More details are in table 3.

DISCUSSION

To the best of our knowledge, this is the first scoping review that compiles the programmes established in nutrition and PA from the environmental perspective in Colombia. Seventy scientific articles located in the main databases and 67 official documents published on the websites of the Ministry of Health, district and national secretariats were identified, showing that structural modifications are not centralised health policies since several strategies have been developed in different parts of the country other than the capital, Bogotá, such as Medellin, Cartagena or Cali. The relevance of the data found lies in the importance of the public policies targeting the promotion of PA and healthy nutrition in Colombia. It is worth noting that the programmes established in the areas of nutrition and PA from this perspective are centred on two lines: one on structural modifications in the environment, such as the construction of segregated bike lanes, bicycle paths, outdoor spaces for activity, outdoor gyms or modification of parks, and the other on the design of social programmes for healthy eating, school snacks, food labelling, *recreovías*, curricular changes in schools among others.

According to the finding, it is evident in Colombia that programmes are being developed that target the promotion of PA and healthy nutrition from the environmental perspective by national and departmental entities. It is also evident that a large number of the programmes, their implementation and policies are developed in

Table 3 Physical activity and nutrition at environment level

Programme	Population	Programme characteristics	Environmental perspective according to ecological model
HEVS healthy life habits programmes in communities[69 77 92 93 96 117 124]	Adults, older adults	Healthy Life Habits Programmes (HEVS) in Colombia, programme to educate and promote community physical activity in Colombia encouraging minimum activity of 180 min of moderately vigorous activity	Social determinants social programmes
Schooling and environmental food programmes[73 91]	Children and adolescents	School, preschool programmes with modification of food programmes, set menus, changes to school snacks and lunches	Social determinants social programmes

different parts of the country as Medellín, Bucaramanga, Cartagena and Cali, but with the greatest development in Bogota.

There is a myriad of programmes and scientific articles on PA from the environmental perspective, demonstrating that the promotion of this lifestyle is one of the guidelines in the country's public policies. It is undeniable that both, the official documents and the articles, underscore the presence of the environmental perspective with a socioecological position centred on creating programmes. From this perspective worldwide, different studies have been conducted and they conclude the importance of environmental modifications at school level in healthy lifestyles.[134 135] The systematic review of PA and sedentary lifestyle in Bangladesh[135] explores the implementation of PA programmes with an environmental focus as in our study, aimed at active transport for school and university students and the relation between the level of PA in urban and rural areas. In addition, the review of PA in Thailand[136] reports on the use of activity measures in schools, the use of transport and free time through scales and instruments such as those in studies identified in Colombia.

According to the evidence, the programmes to promote PA or balanced eating are approached from different perspectives, the most referenced being those of physical modifications such as parks, schools and bicycle paths in the city, to create integrated spaces to practice the activity,[137] or those that include social or community programmes with activities on parks or cities.[138 139] In countries like Australia, Finland, New Zealand, France and the USA, similar strategies for promotion of PA and healthy nutrition have been reported. In the controlled trial by Reilly *et al* in Australia, canteens or school cafeterias were altered to offer products with nutrition labels for sale to school-aged students compared with control groups to establish the change in culture in terms of dietary management and eating patterns.[140] In relation to these programmes, progress is being made in Colombia in relation to developments in other countries, but more research is needed to demonstrate the effectiveness of these programmes in the country.

In this vein, in Montreal, Canada, it was suggested that parks be built close to neighbourhoods to see how proximity to parks increases activity and perception of their use.[141] In another Canadian study, the use of forms of active transport walking, bicycle use on paths built in neighbourhoods or the use of a vehicle or bus and its relation to the increase in PA were studied.[142] These two proposals are related to what is identified in this study, specifically the use of the built environment like streets and sidewalks to promote PA, which is reported in the Colombian studies on *muévete Bogotá*,[78] the *recreovía* or the studies of parks.[68]

In Latin America, evidence from Brazil, Argentina and Chile describes urban modification in cities and parks facilitating walking and the use of free space in neighbourhoods for PA,[143] similar to the reports in this scoping review. In addition, the IPEN study for the Americas[64] reports the environmental modification in neighbourhoods and parks in six South American countries was determined with the subsequent increase in PA levels. Finally, in the natural experiment in Pernambuco, Brazil, an active city programme in 140 cities of the territory to measure the impact of the programme on community PA in free time, in parks and neighbourhoods with education on nutrition and diet and managing exercise,[144] similar to the *Recreovia Bogotá* in this study.

It is important to highlight that the programmes with an environmental perspective are in keeping with global guidelines on the modification of physical spaces and development of social programmes that promote healthy habits.[145 146] Moreover, it is important to recognise that Colombia is implementing big and diverse programmes, but research with aim to establish the effects and impact of these is needed.

One important aspect of this scoping review is that the programmes implemented and the results reported in the evidence let us understand that environmental actions and modifications in nutrition and PA are being implemented in the entire country. This work can be used to learn about intersectoral public policies that potentially impact health and promote the prevention of chronic diseases.

Finally, a relevant point is that the programmes, both from the PA and nutrition perspectives, are oriented towards changing lifestyles, favouring greater activity in leisure and transport, work and home, as well as an improvement in eating behaviours, with a consequent balance between food intake and caloric expenditure. A multilevel ecological perspective is also observed that involves the concept of physical and social activity, not only from the point of view of the individual but also making the environment relevant.[147]

It is important to highlight that the limitations of this study are related to two specific aspects. One is the approach on the review because this only gives a map of the information found but did not assess the impact of the implementation of the programmes. And the other is that despite the multidisciplinary and multisectoral approach of the programmes, the specific contribution of each sector has not been identified.

In conclusion, this scoping review identified national programmes and policies in Colombia in the area of nutrition and PA from the environmental perspective in different scenarios: from schools to workplaces and to communities. The need to implement such programmes from public and private institutions is also noted, promoting the practice of PA and healthy eating in every scenario in the national territory. Given that this is a scoping review that located interventions, but did not evaluate their impact, the next step would be to conduct studies in order to determine the impact of these programmes and the implications for public health.

Research ethics approval

This scoping review is a secondary research involving documents and articles, not people or animals, and therefore no ethical approval was required.

Acknowledgements EDH is a PhD candidate in Methodology of Biomedical Research and Public Health program, Universitat Autònoma de Barcelona (UAB), Barcelona, Spain.

Contributors Overall content as guarantor: EDH. Study concept and design: EDH and PS. Screening titles and abstracts: EDH, PS and CG. Search and extracted the evidence: EDH and CG. Writing and revising the manuscript for important intellectual content: EDH and PS. EDH, PS and CG approved the final manuscript.

Funding The authors have not declared a specific grant for this research from any funding agency in the public, commercial or not-for-profit sectors.

Competing interests None declared.

Patient and public involvement Patients and/or the public were not involved in the design, or conduct, or reporting or dissemination plans of this research.

Patient consent for publication Not applicable.

Ethics approval Not applicable.

Provenance and peer review Not commissioned; externally peer reviewed.

Data availability statement Data are available upon reasonable request.

ORCID iDs

Edgar D Hernandez http://orcid.org/0000-0002-9678-8538
Cristian Arvey Guzman http://orcid.org/0000-0001-6259-8210
Pamela Seron http://orcid.org/0000-0003-0190-8988

REFERENCES

1 Teo K, Chow CK, Vaz M, *et al*. The prospective urban rural epidemiology (pure) study: examining the impact of societal influences on chronic noncommunicable diseases in low-, middle-, and high-income countries. *Am Heart J* 2009;158:e1:1–7.
2 Bishop FL, Lauche R, Cramer H, *et al*. Health behavior change and complementary medicine use: National health interview survey 2012. *Medicina* 2019;55. doi:10.3390/medicina55100632. [Epub ahead of print: 24 Sep 2019].
3 Souza Mde, Pinzón AM, Garcia AFS. Comparación de Los Programas de Actividad Física Y Deporte Dirigidos a la Población Latinoamericana. *Lúdica Pedagógica* 2014.
4 Ogilvie D, Griffin S, Jones A, *et al*. Commuting and health in Cambridge: a study of a 'natural experiment' in the provision of new transport infrastructure. *BMC Public Health* 2010;10:703.
5 Sisson SB, Salvatore AL, Hildebrand D, *et al*. Interventions to promote healthy environments in family child care homes in Oklahoma-Happy healthy homes: study protocol for a randomized controlled trial. *Trials* 2019;20:541.
6 The Joanna Briggs Institute. The Joanna Briggs Institute Reviewers' Manual 2015: Methodology for JBI scoping reviews Joanne Briggs Inst; 2015.
7 Tricco AC, Lillie E, Zarin W, *et al*. PRISMA extension for scoping reviews (PRISMA-ScR): checklist and explanation. *Ann Intern Med* 2018;169:467–73.
8 Elmagarmid A, Fedorowicz Z, Hammady H. Rayyan: a systematic reviews web app for exploring and filtering searches for eligible studies for Cochrane Reviews. In: *Evidence-Informed public health: opportunities and challenges Abstracts of the 22nd Cochrane Colloquium*. In, 2014.
9 Habitos Y salud. Available: https://indersantander.gov.co/habitos-y-salud.html [Accessed 24 Nov 2020].
10 Instituto Distrital De Recreación Y Deporte. Muévete Bogotá. Available: https://www.idrd.gov.co/muevete-bogota [Accessed 24 Nov 2020].
11 Documentos - Mindeporte. Available: https://www.mindeporte.gov.co/72140 [Accessed 24 Nov 2020].
12 Instituto Distrital De Recreación Y Deporte. Gimnasios al AIRE libre en Bogotá. Available: https://www.idrd.gov.co/gimnasios-al-aire-libre-bogota [Accessed 24 Nov 2020].
13 Plan Maestro de Ciclorutas – CIDEU [Internet]. Available: https://www.cideu.org/proyecto/plan-maestro-de-ciclorutas/ [Accessed 24 Nov 2020].
14 Instituto Distrital De Recreación Y Deporte. Muévete Escolar. Available: https://www.idrd.gov.co/muevete-escolar [Accessed 24 Nov 2020].
15 Instituto Distrital De Recreación Y Deporte. Muévete Trabajador|. Available: https://www.idrd.gov.co/muevete-trabajador [Accessed 24 Nov 2020].
16 Instituto Distrital De Recreación Y Deporte. Consejería de actividad física Y alimentación saludable. Available: https://www.idrd.gov.co/consejeria-actividad-fisica-y-alimentacion-saludable-0 [Accessed 24 Nov 2020].
17 Instituto Distrital De Recreación Y Deporte. Escuela de la bicicleta. Available: https://www.idrd.gov.co/escuela-la-bicicleta [Accessed 24 Nov 2020].
18 Instituto Distrital De Recreación Y Deporte. Recreovía. Available: https://www.idrd.gov.co/recreovia [Accessed 24 Nov 2020].
19 Instituto Distrital De Recreación Y Deporte. Escuelas de MI Barrio. Available: https://www.idrd.gov.co/escuelas-mi-barrio [Accessed 24 Nov 2020].
20 Instituto Distrital De Recreación Y Deporte. Ciclovía bogotana. Available: https://www.idrd.gov.co/ciclovia-bogotana [Accessed 24 Nov 2020].
21 Instituto Distrital De Recreación Y Deporte. Deporte escolar. Available: https://www.idrd.gov.co/deportes/escolar [Accessed 24 Nov 2020].
22 Instituto Distrital De Recreación Y Deporte. Recreo Encuentros juveniles. Available: https://www.idrd.gov.co/recreo-encuentros-juveniles [Accessed 24 Nov 2020].
23 Instituto Distrital De Recreación Y Deporte. Centros Felicidad Bogotá. Available: https://www.idrd.gov.co/centros-felicidad-bogota [Accessed 24 Nov 2020].
24 Inder. Segunda infancia. Available: https://www.inder.gov.co/es/oferta/segunda-infancia#estrategia-51 [Accessed 24 Nov 2020].
25 Columbia 2005: results from the demographic and health survey. *Stud Fam Plann* 2007;38:55–60.
26 Inder. Adolescencia. Available: https://www.inder.gov.co/es/oferta/adolescencia#estrategia-53 [Accessed 24 Nov 2020].
27 Inder. Adultos mayores. Available: https://www.inder.gov.co/es/oferta/adultos-mayores [Accessed 24 Nov 2020].
28 Inder. Juventud. Available: https://www.inder.gov.co/es/oferta/juventud#estrategia-62ANTIOQUIAestrategias de universidad activa por actividad fisica y deporte X [Accessed 24 Nov 2020].
29 Inder. Ciclovías de Medellín, 35 años de servicio. Available: https://www.inder.gov.co/es/node/857 [Accessed 24 Nov 2020].
30 Inder. Familia. Available: https://www.inder.gov.co/es/oferta/familia#estrategia-67 [Accessed 24 Nov 2020].
31 Lineamiento operativo para La promoción de un entorno laboral formal saludable
32 Minsalud.gov. Available: https://www.minsalud.gov.co/sites/rid/Lists/BibliotecaDigital/RIDE/VS/PP/ENT/entorno-laboral-saludable-2018.pdf [Accessed 24 Nov 2020].
33 Libertad Y Orden
34 de Alimentación Escolar P, Alimentarias Basadas en Alimentos G. Evaluación de Operaciones Y Resultados para Determinar La Efectividad del
35 Bernal GB, General S, Fernando J. Alejandro Gaviria Uribe Ministro de Salud Y Protección social Luis Fernando Correa Serna Viceministro de Salud Pública Y Prestación de Servicios (E) Carmen Eugenia Dávila Guerrero Viceministra de Protección social Subdirector de Enfermedades no Transmisib. Available: www.minsalud.gov.co [Accessed 24 Nov 2020].
36 ABECÉ Actividad física en El entorno laboral ¿Qué ES La actividad física?

37 Páginas - Actividad física. Available: https://www.minsalud.gov.co/salud/publica/HS/Paginas/actividad-fisica.aspx [Accessed 24 Nov 2020].
38 Páginas - Modos, condiciones y estilos de vida saludables. Available: https://www.minsalud.gov.co/salud/Paginas/habitos-saludables.aspx [Accessed 24 Nov 2020].
39 Producto. "Estrategia de Información, Educación y Comunicación en Seguridad Alimentaria y Nutricional para Colombia. 3.
40 Actividad Física. Available: https://www.ucaldas.edu.co/portal/tag/actividad-fisica-2/ [Accessed 25 Nov 2020].
41 Secretaría Distrital de Salud de Bogotá Bogotá vital ES Salud Urbana. Available: http://saludcapital.gov.co/Paginas2/Su-Bogota-vital.aspx [Accessed 25 Nov 2020].
42 RAFA-PANA. Programa Nacional de Hábitos Y Estilos de Vida Saludable. Available: https://rafapana.org/report/programa-nacional-de-habitos-y-estilos-de-vida-saludable/ [Accessed 25 Nov 2020].
43 Instituto Departamental del Deporte de Boyacá. Available: http://www.indeportesboyaca.gov.co/ [Accessed 25 Nov 2025].
44 Joven Saludable - IDER Cartagena. Available: https://ider.gov.co/index.php/recreacion/promocion-masiva-de-una-vida-activa/joven-saludable [Accessed 25 Nov 2020].
45 Deporte social. Available: https://indersantander.gov.co/deporte-social.html [Accessed 25 Nov 2020].
46 Eventos De Promoción - Actividad fisica. Available: https://actividadfisica.indeportescundinamarca.com/item/categoria_cms/496/articulo/1833/ [Accessed 25 Nov 2020].
47 Sistema Departamental De Capacitación En Actividad Física - Actividad fisica. Available: https://actividadfisica.indeportescundinamarca.com/item/categoria_cms/496/articulo/1840/ [Accessed 25 Nov 2020].
48 Instituto Para La Recreación Y El Deporte De Cundinamarca Programa Departamental "Cundinamarca Siempre Activa Y Saludable". Available: https://es-la.facebook.com/people/Javier-Heli-Torres- [Accessed 25 Nov 2020].
49 Programa de Actividad Física - Actividad fisica. Available: https://actividadfisica.indeportescundinamarca.com/item/categoria_cms/496/articulo/1817/ [Accessed 25 Nov 2020].
50 Zonas Activas - Actividad fisica. Available: https://actividadfisica.indeportescundinamarca.com/item/categoria_cms/496/articulo/1831/ [Accessed 25 Nov 2020].
51 Dietista Magister en Seguridad Alimentaria Nutricional N. Los Productos Ultraprocesados pup en La Alimentación Escolar Ángela Lucía Cortés Morales.
52 Díaz del Castillo A, Sarmiento OL, Reis RS, *et al*. Translating evidence to policy: urban interventions and physical activity promotion in Bogotá, Colombia and Curitiba, Brazil. *Transl Behav Med* 2011;1:350–60.
53 Becerra JM, Reis RS, Frank LD, *et al*. Transport and health: a look at three Latin American cities. *Cad Saude Publica* 2013;29:654–66.
54 Gómez LF, Mosquera J, Gómez OL, *et al*. Social conditions and urban environment associated with participation in the Ciclovia program among adults from Cali, Colombia. *Cad Saude Publica* 2015;31 Suppl 1:257–66.
55 Paez DC, Reis RS, Parra DC, *et al*. Bridging the gap between research and practice: an assessment of external validity of community-based physical activity programs in Bogotá, Colombia, and Recife, Brazil. *Transl Behav Med* 2015;5:1–11.
56 Triana CA, Sarmiento OL, Bravo-Balado A, *et al*. Active streets for children: the case of the Bogotá Ciclovía. *PLoS One* 2019;14:e0207791.
57 Castro-Jiménez LE, Argüello-Gutiérrez YP, Camargo-Rojas DA. Physical activity within the framework of primary health care as perceived by the actors. *Rev Salud Publica* 2018;20:415–21.
58 Cochrane T, Yu Y, Davey R, *et al*. Associations of built environment and proximity of food outlets with weight status: analysis from 14 cities in 10 countries. *Prev Med* 2019;129:105874.
59 Gómez LF, Parra DC, Buchner D, *et al*. Built environment attributes and walking patterns among the elderly population in Bogotá. *Am J Prev Med* 2010;38:592–9.
60 Barradas SC, Finck Barboza C, Sarmiento OL. Differences between leisure-time physical activity, health-related quality of life and life satisfaction: al Ritmo de las Comunidades, a natural experiment from Colombia. *Glob Health Promot* 2019;26:5–14.
61 Carrillo Cubides R, Aldana Alarcón LG, Gutiérrez Galvis AR. Differences in physical activity and in physical condition between school age students of two public curriculum programs in bogota, colombia. *Nutr Hosp* 2015;32:2228–34.
62 Cerin E, Mitáš J, Cain KL, *et al*. Do associations between objectively-assessed physical activity and neighbourhood environment attributes vary by time of the day and day of the week? IPEN adult study. *Int J Behav Nutr Phys Act* 2017;14:34.
63 López-Mateus MC, Hernández-Rincón EH, Correal-Muñoz CA, *et al*. An educational strategy that promotes healthy habits in elderly people with hypertension in a municipality of Colombia: a participatory action research study. *Medwave* 2017;17:e7072.
64 Mitáš J, Cerin E, Reis RS, *et al*. Do associations of sex, age and education with transport and leisure-time physical activity differ across 17 cities in 12 countries? *Int J Behav Nutr Phys Act* 2019;16:121.
65 Gutiérrez-Martínez L, Martínez RG, González SA, *et al*. Effects of a strategy for the promotion of physical activity in students from Bogotá. *Rev Saude Publica* 2018;52:79.
66 Montes F, Sarmiento OL, Zarama R, *et al*. Do health benefits outweigh the costs of mass recreational programs? an economic analysis of four Ciclovía programs. *J Urban Health* 2012;89:153–70.
67 Díaz MP, Montoya IA, Montoya LA. Case study: School meals' management in Santiago de Cali and Bogota. [Estudio de caso: La gestión de la alimentación escolar en Santiago de Cali y Bogotá].. *Rev Salud Publica* 2011;Oct;13:737–47.
68 Rubio MA, Triana C, King AC. Engaging citizen scientists to build healthy park environments in Colombia. *Health Promot Int* 2020.
69 Prieto-Rodríguez A, Agudelo-Calderon CA. A multilevel approach to diagnosing physical activity in three parts of Colombia. *Rev Salud Publica* 2006;8 Suppl 2:57-68.
70 Hackett M, Melgar-Quiñonez H, Taylor CA, *et al*. Factors associated with household food security of participants of the manA food supplement program in Colombia. *Arch Latinoam Nutr* 2010;60:42–7.
71 Khandpur N, Cediel G, Obando DA, *et al*. Sociodemographic factors associated with the consumption of ultra-processed foods in Colombia. *Rev Saude Publica* 2020;54:19.
72 Parra DC, Dauti M, Harris JK, *et al*. How does network structure affect partnerships for promoting physical activity? Evidence from Brazil and Colombia. *Soc Sci Med* 2011;73:1365–70.
73 Varela Arévalo MT, Ochoa Muñoz AF, Tovar Cuevas JR. Measuring eating habits and physical activity in children: synthesis of information using indexes and clusters / Medición de hábitos saludables Y no saludables en niños: Síntesis de la información utilizando indicadores Y conglomerados. *Rev Mex Trastor Aliment J Eat Disord* 2018;9:264–76.
74 Adams MA, Frank LD, Schipperijn J, *et al*. International variation in neighborhood walkability, transit, and recreation environments using geographic information systems: the IPEN adult study. *Int J Health Geogr* 2014;13:43.
75 Camargo DM, Ramírez PC, Fermino RC. Individual and environmental correlates to quality of life in Park users in Colombia. *Int J Environ Res Public Health* 2017;14. doi:10.3390/ijerph14101250. [Epub ahead of print: 19 10 2017].
76 Van Dyck D, Cerin E, De Bourdeaudhuij I, *et al*. Moderating effects of age, gender and education on the associations of perceived neighborhood environment attributes with accelerometer-based physical activity: the IPEN adult study. *Health Place* 2015;36:65–73.
77 Gaffney LK, Lozano OD, Almanza A, *et al*. The implementation of a national physical activity intervention in Colombia. *J Phys Act Health* 2019;16:430–6.
78 Gámez R, Parra D, Pratt M, *et al*. Muévete Bogotá: promoting physical activity with a network of partner companies. *Promot Educ* 2006;13:164-9:138–43.
79 Cerin E, Cain KL, Conway TL, *et al*. Neighborhood environments and objectively measured physical activity in 11 countries. *Med Sci Sports Exerc* 2014;46:2253–64.
80 González SA, Sarmiento OL, Cohen DD, *et al*. Results from Colombia's 2014 report card on physical activity for children and youth. *J Phys Act Heal* 2014;11:S33–44.
81 Álvarez MC, López A, Estrada A. Estado nutricional de niños de Antioquia, Colombia, según DOS sistemas de referencia. *Rev Panam Salud Publica/Pan Am J Public Heal* 2009.
82 Duarte-Cuervo CY, Ramos-Caballero DM, ÁC L-G. Factores relacionados con las prácticas alimentarias de estudiantes de tres universidades de Bogotá TT - Factors related to students' eating practices in three universities in Bogotá, Colombia. *Rev salud pública* 2015;17:1.
83 Lopez-Arana S, Avendano M, van Lenthe FJ, *et al*. The impact of a conditional cash transfer programme on determinants of child health: evidence from Colombia. *Public Health Nutr* 2016;19:2629–42.
84 Varela Arévalo MT, Tenorio Banguero Ángela Ximena, Duarte Alarcón C. Prácticas parentales para promover hábitos saludables de alimentación en La primera infancia en Cali, Colombia. *Rev Esp Nutr Hum Diet* 2018;22:183–92.

85 Pratt M, Perez LG, Goenka S, *et al*. Can population levels of physical activity be increased? global evidence and experience. *Prog Cardiovasc Dis* 2015;57:356–67.
86 Mora-García CA, Tobar LF, Young JC. The effect of randomly providing nutri-score information on actual purchases in Colombia. *Nutrients* 2019;11. doi:10.3390/nu11030491. [Epub ahead of print: 26 Feb 2019].
87 Mora-Plazas M, Gómez LF, Miles DR, *et al*. Nutrition quality of packaged foods in Bogotá, Colombia: a comparison of two nutrient profile models. *Nutrients* 2019;11. doi:10.3390/nu11051011. [Epub ahead of print: 04 May 2019].
88 Herazo-Beltrán Y, Pinillos Y, Vidarte J, *et al*. Predictors of perceived barriers to physical activity in the general adult population: a cross-sectional study. *Braz J Phys Ther* 2017;21:44–50.
89 Hernández-Rincón EH, Arias-Villate SC, Gómez-López MT. Actividad física en preescolares desde atención primaria orientada a la comunidad, en un municipio de Colombia. TT - Physical activity from primary care oriented to the community for preschool children in a Colombian municipality. *Rev Cuba Pediatr* 2018;90:201–12.
90 Herrán OF, Patiño GA, DelCastillo SE. Desigualdad y nutrición: Encuesta de la Situación Nutricional en Colombia, 2010 TT - Inequality and nutrition: survey of the nutritional situation in Colombia, 2010. *Rev bras saúde Matern infant* 2015;15:401–12.
91 Céspedes J, Briceño G, Farkouh ME, *et al*. Promotion of cardiovascular health in preschool children: 36-month cohort follow-up. *Am J Med* 2013;126:1122–6.
92 Barrera EAV, Lima RA, Hardman CM. Perfil sociodemográfico, ocupacional e prática de atividade física em trabalhadores de um programa comunitário de atividade física TT - Perfil sociodemográfico, ocupacional y actividad física entre los trabajadores del programa comunitario de actividad f. *Rev andal med Deport* 2019;12:71–5.
93 Vernaza-Pinzón P, Villaquiran-Hurtado A, Paz-Peña CI. Riesgo y nivel de actividad física en adultos, en un programa de estilos de vida saludables en Popayán. TT - Risk and physical activity level in adults in a healthy lifestyle program in Popayán. *Rev Salud Publica* 2017;19:624–30.
94 Arsenault JE, Mora-Plazas M, Forero Y, *et al*. Provision of a school snack is associated with vitamin B-12 status, linear growth, and morbidity in children from Bogota, Colombia. *J Nutr* 2009;139:1744–50.
95 Forde I, Chandola T, Garcia S, *et al*. The impact of cash transfers to poor women in Colombia on BMI and obesity: prospective cohort study. *Int J Obes* 2012;36:1209–14.
96 Díaz Del Castillo A, González SA, Ríos AP, *et al*. Start small, dream big: experiences of physical activity in public spaces in Colombia. *Prev Med* 2017;103S:S41–50.
97 Torres A, Sarmiento OL, Stauber C, *et al*. The Ciclovia and Cicloruta programs: promising interventions to promote physical activity and social capital in Bogotá, Colombia. *Am J Public Health* 2013;103:e23–30.
98 Sarmiento OL, Díaz Del Castillo A, Triana CA, *et al*. Reclaiming the streets for people: insights from Ciclovías Recreativas in Latin America. *Prev Med* 2017;103S:S34–40.
99 Sarmiento O, Torres A, Jacoby E, *et al*. The Ciclovía-Recreativa: a mass-recreational program with public health potential. *J Phys Act Health* 2010;7 Suppl 2:S163–80.
100 Sarmiento OL, Rios AP, Paez DC, *et al*. The recreovía of bogotá, a community-based physical activity program to promote physical activity among women: baseline results of the natural experiment al ritmo de las comunidades. *Int J Environ Res Public Health* 2017;14. doi:10.3390/ijerph14060633. [Epub ahead of print: 13 06 2017].
101 Lemoine PD, Sarmiento OL, Pinzón JD, *et al*. TransMilenio, a scalable bus rapid transit system for promoting physical activity. *J Urban Health* 2016;93:256–70.
102 Céspedes J, Briceño G, Farkouh ME, *et al*. Targeting preschool children to promote cardiovascular health: cluster randomized trial. *Am J Med* 2013;126:27–35.
103 Ramírez Villada JF, León Ariza HH. Características antropométricas, funcionales Y de fuerza explosiva de mujeres mayores de 50 años físicamente activas de la ciudad de Bogotá, Colombia. *Revista Española de Geriatría y Gerontología* 2012;47:148–54.
104 Castro-Carvajal JA, Patiño-Villada FA, Cardona-Rendón BM. Aspects associated with physical activity in the adult population's leisure time in a municipality in the Antioquia Department, Colombia. *Rev Salud Pública* 2008.
105 Barrera Sánchez LF, Herrera Amaya GM, Ospina Díaz JM. Intervención educativa para modificación de conocimientos, actitudes y prácticas sobre nutrición en Boyacá, Colombia TT - educational intervention for changing knowledge, attitudes and practices about nutrition in Boyacá, Colombi. *Rev Cuid* 2014;5:851–8.
106 Prada GE, Dubeibe-Blanco LY, Herrán OF. Evaluación del impacto de un ensayo comunitario sobre El consumo de frutas y verduras en Colombia. TT - Evaluation of the impact of a community intervention on the consumption of fruits and vegetables in Colombia. *Salud Publica Mex* 2007;49:11–19.
107 Agudelo-Ibáñez DR, Muñoz-Tobar MC, Rojas-Ramírez YA. Verificación del cumplimiento de la minuta patrón Sin eliminación de la muestra en servicios de alimentación escolar: diseño Y validación de Una metodología. *Rev Salud Pública* 2018.
108 Rincón MVB, Osorio AR, Leyton MR. Concordancia en La talla para La edad entre diferentes referencias de crecimiento: Caldas, Colombia. 2006-2009. TT - Agreement in height for age between growth references: Caldas, Colombia. 2006-2009. *Rev Esp Salud Publica* 2012;86:393–407.
109 Dehghan M, Mente A, Rangarajan S, *et al*. Association of dairy intake with cardiovascular disease and mortality in 21 countries from five continents (pure): a prospective cohort study. *Lancet* 2018;392:2288–97.
110 Del Castillo SE, Patiño GA, Herrán OF. Inseguridad alimentaria: variables asociadas y elementos para la política social. TT - Food insecurity: associated variables and issues for public policy. *Biomedica* 2012;32:545–56.
111 Gonzalez-Casanova I, Sarmiento OL, Pratt M, *et al*. Individual, family, and community predictors of overweight and obesity among Colombian children and adolescents. *Prev Chronic Dis* 2014;11:1–12.
112 Ashe LM, Sonnino R. At the crossroads: new paradigms of food security, public health nutrition and school food. *Public Health Nutr* 2013;16:1020–7.
113 Arismendi-Bustamante LJ, Carmona-Garcés IC, Rodríguez-Villamil LN. Validación del juego reglado "Chefcitos", para promover hábitos de vida saludable y el consumo de frutas y verduras en escolares mayores de siete años. Colombia, 2014 TT - Validation of a regulated game "Chefcitos" to promote healthy. *Perspect nutr hum* 2015;17:67–76.
114 Lucumí DI, Grogan-Kaylor A, Espinosa-García G. Asociación de la posición socioeconómica y la percepción del ambiente con La autopercepción del estado de salud en mujeres de Bogotá, Colombia. TT - Socioeconomic status, perception of environment, and their association with self-rated health status among women in Bogotá, Colombia. *Rev Panam Salud Publica/Pan Am J Public Health* 2013;34:14–20.
115 Granada-Echeverri P, Zapata-Valencia CD, Giraldo-Trujillo JC. [The impact of a social mobilisation model on promoting physical activity amongst people affiliated to the Colombian Social Health Security System]. *Rev Salud Publica* 2008;10:361–73.
116 Herrán OF, Bermúdez JN, Zea M del P. Cambios alimentarios en Colombia; resultados de dos encuestas nacionales de nutrición, 2010-2015. *Rev la Univ Ind Santander Salud* 2020;52:21–31.
117 Chow CK, Lock K, Madhavan M, *et al*. Environmental profile of a community's health (epoch): an instrument to measure environmental determinants of cardiovascular health in five countries. *PLoS One* 2010;5:e14294.
118 Hernández-Rincón E, Severiche-Bueno D, Romero-Mayorga D. Promoción de alimentación saludable en hogares comunitarios infantiles del municipio de Sopó (Cundinamarca. Colombia) bajo La estrategia de Atención Primaria en Salud. *Revista Salud Uninorte* 2015;31:514–24.
119 Miller V, Yusuf S, Chow CK, *et al*. Availability, affordability, and consumption of fruits and vegetables in 18 countries across income levels: findings from the prospective urban rural epidemiology (pure) study. *Lancet Glob Health* 2016;4:e695–703.
120 Yusuf S, Joseph P, Rangarajan S, *et al*. Modifiable risk factors, cardiovascular disease, and mortality in 155 722 individuals from 21 high-income, middle-income, and low-income countries (PURE): a prospective cohort study. *Lancet* 2020;395:795–808.
121 Granada-Echeverri P, Zapata-Valencia CD, Giraldo-Trujillo JC. Impacto de un Modelo de Movilización social sobre La Promoción de la Actividad Física en Afiliados al Sistema de Seguridad social en Salud. *Rev Salud Publica* 2008;10:361–73.
122 Céspedes J, Briceño G, Farkouh ME, *et al*. Targeting preschool children to promote cardiovascular health: cluster randomized trial. *Am J Med* 2013;126:e3:27–35.
123 Ramírez Villada JF, León Ariza HH. Características antropométricas, funcionales Y de fuerza explosiva de mujeres mayores de 50 años físicamente activas de la ciudad de Bogotá, Colombia. *Rev Esp Geriatr Gerontol* 2012.
124 López-Mateus MC, Hernández-Rincón EH, Correal-Muñoz CA. Estrategia educativa que promueve los hábitos saludables en

adultos mayores con hipertensión arterial en un municipio de Colombia: estudio de investigación-acción participativa. TT - Estrategia educativa que promueve los hábitos saludables en adultos may. *Medwave* 2017;17:e7072.
125 Otros Proyectos - IDER Cartagena. Available: https://ider.gov.co/index.php/recreacion/promocion-masiva-de-una-vida-activa/otros-proyectos [Accessed 25 Nov 2020].
126 González SA, Sarmiento OL, Cohen DD. Results from Colombia's 2014 report card on physical activity for children and youth. *J Phys Act Heal* 2014;11 Suppl 1:S33–44.
127 López-Mateus MC, Hernández-Rincón EH, Correal-Muñoz CA. Estrategia educativa que promueve Los hábitos saludables en adultos mayores Con hipertensión arterial en un municipio de Colombia: estudio de investigación-acción participativa. *Medwave* 2017;17:e7072.
128 Vinaccia S, Serra Majem L, Ruano Rodriguez C. Adherencia a la dieta mediterránea en población universitaria colombiana TT - Mediterranean diet adherence in Colombian university population. *Nutr clín diet hosp* 2019;39:93–100.
129 Minsalud.gov. Available: https://www.minsalud.gov.co/sites/rid/Lists/BibliotecaDigital/RIDE/INEC/IGUB/evaluacion-programa-de-alimentacion-escolar-2013.pdf [Accessed 24 Nov 2020].
130 Organización Panamericana de la Salud. División de Promoción y Protección de la Salud, Colombia. Universidad del Valle, Colombia. Secretaría de Salud Municipal de Cali. Iris PAHO., 1993Promoviendo una dieta saludable en los escolares de Cali a través de la estrategia de comunicación social en salud TT - Promoting a healthy diet in Cali's school children through the strategy of social communication in health. Available: https://iris.paho.org/handle/10665.2/37229 [Accessed August 2021].
131 Rodríguez Leyton M. Desafíos para El Consumo de Frutas Y Verduras. *Rev la Fac Med Humana* 2019;19.
132 Title N. Available: https://www.cali.gov.co/bienestar/publicaciones/151132
133 Navarrete JAM, Villamil SSG, Bautista JEC. Efectividad de las intervenciones educativas realizadas en América Latina para La prevención del sobrepeso Y obesidad infantil en niños escolares de 6 a 17 años: Una revisión sistemática. *Nutricion Hospitalaria* 2015;31:102–14.
134 Dobbins M, Husson H, DeCorby K, *et al*. School-based physical activity programs for promoting physical activity and fitness in children and adolescents aged 6 to 18. *Cochrane Database Syst Rev* 2013:CD007651.
135 Uddin R, Hasan M, Saif-Ur-Rahman KM, *et al*. Physical activity and sedentary behaviour in Bangladesh: a systematic scoping review. *Public Health* 2020;179:147–59.
136 Liangruenrom N, Suttikasem K, Craike M, *et al*. Physical activity and sedentary behaviour research in Thailand: a systematic scoping review. *BMC Public Health* 2018;18:733.
137 Diez Roux A-V. Neighborhoods and health: where are we and were do we go from here? *Rev Epidemiol Sante Publique* 2007;55:13–21.
138 Beltrán MDPD, Romero YMH. Healthy eating and restaurants. A review of recent evidence in the literature. *Cien Saude Colet* 2019;24:853–64.
139 Toots A, Wiklund R, Littbrand H, *et al*. The effects of exercise on falls in older people with dementia living in nursing homes: a randomized controlled trial. *J Am Med Dir Assoc* 2019;20:835–42.
140 Reilly K, Nathan N, Wu JHY, *et al*. Assessing the potential impact of a front-of-pack nutritional rating system on food availability in school canteens: a randomised controlled trial. *Appetite* 2018;121:309–15.
141 Moore S, Kestens Y. Neighbourhood environmental correlates of perceived park proximity in Montreal. *Can J Public Health* 2011;102:176–9.
142 Craig CL, Brownson RC, Cragg SE, *et al*. Exploring the effect of the environment on physical activity: a study examining walking to work. *Am J Prev Med* 2002;23:36–43.
143 Ferrari G, Werneck AO, da Silva DR, *et al*. Is the perceived neighborhood built environment associated with domain-specific physical activity in Latin American adults? An eight-country observational study. *Int J Behav Nutr Phys Act* 2020;17:21.
144 Simões EJ, Hallal PC, Siqueira FV, *et al*. Effectiveness of a scaled up physical activity intervention in Brazil: a natural experiment. *Prev Med* 2017;103S:S66–72.
145 Salud OPdela. Más personas activas para un mundo más sano; 2019: 108. https://iris.paho.org/bitstream/handle/10665.2/50904/9789275320600_spa.pdf [Accessed 15 Apr 2021].
146 NICE. Physical activity and the environment. Guidance. Available: https://www.nice.org.uk/guidance/ng90 [Accessed 20 Apr 2021].
147 Erwin H, Brusseau TA, Carson R, *et al*. SHAPE America's 50 million Strong™: critical research questions related to youth physical activity. *Res Q Exerc Sport* 2018;89:286–97.
148 Álvarez MC, López A, Estrada A. Estado nutricional de niños de Antioquia, Colombia, según DOS sistemas de referencia. *Revista Panamericana de Salud Pública* 2009;25:196–203.
149 Barrera Sánchez LF, Herrera Amaya GM, Ospina Díaz JM. Intervención educativa para modificación de conocimientos, actitudes y prácticas sobre nutrición en Boyacá, Colombia TT - Educational intervention for changing knowledge, attitudes and practices about nutrition in Boyacá, Colombia. *Rev Cuid* 2015;5:851–8.