

Assessment of educational interventions for primary health care professionals in Latin America on the content of physical activity: a scoping review

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Abstract - Introduction: Physical activity (PA) is inherent to human beings and its benefits are widely recognized. As such, intervention delivered by health care professionals are a way of targeting this behavior. Advising the population for healthier behaviors can be a strategic tool in Primary Health Care (PHC) scenarios due to its population coverage power, but there are still few studies that invest in the qualification of multidisciplinary work. **Aim:** Thus, the objective was to summarize the methodological characteristics of educational interventions on the PA content offered to health professionals working in PHC in Latin America and to describe the degree of compliance reported by studies on their internal and external validity. **Methods:** A scoping review was carried out on the training of health professionals who would preferentially address the PA content and who had insertion in the PHC in Latin America. Searches were performed in eight electronic databases (Lilacs, PubMed, Physical Education Index, Scielo, Scopus, Web of Science, Embase and SPORTDiscus) until March 2021. **Results:** The search results returned seven original studies with distinct methodological characteristics, but all focused on training professionals for PA counseling, with five interventions with PA guidance for people with chronic diseases. The description of the articles suggested low internal and external validity by the RE-AIM model. The PRECIS tool indicated that interventions are on a more pragmatic path. **Conclusion:** It is concluded that there is a need for new training in different Latin American countries from the perspective of health promotion, as the practice of PA can be encouraged for everyone.

Keywords: physical exercise, health education, delivery of health care.

Introduction

Physical inactivity is associated with an increase in deaths from chronic non-communicable diseases and disabilities worldwide, economically impacting health systems^{1,2}. It is known that only 31% of the world population meets the physical activity (PA) guidelines³. Thus, any encouragement to more active behaviors may be necessary, one of which is through educational approaches carried out by health professionals that promote autonomy and self-management of practices.

Primary Health Care (PHC) is a potential setting for the development of educational actions, designed and implemented according to the ideals of health promotion. Among the recognized strategies, the counseling for PA can be highlighted, which, in turn, is an action known for encouraging and debating healthy behaviors during individual or group sessions, such as consultations, where various health indicators are also addressed⁴.

Previous evidence suggests that PHC counseling strategies to promote healthy eating and PA stimulates

health promotion in individuals with and without CVD risk factors, without adverse effects^{5,6}. However, it is observed that a good portion of the counseling for PA in PHC is carried out without adequate technical-scientific knowledge on the subject, which can limit its potential⁷⁻¹⁰.

When recognizing the deficiency of this content in initial training¹¹, it is important to invest in the training and qualification of professionals working in PHC for PA counseling. Thus, it is important to recognize the development of professional training strategies, so that public policy makers can use this scientific evidence to guide the implementation of actions. On the other hand, if there is little evidence, researchers can devote attention to the development of interventions that seek to verify the effectiveness of training for health professionals.

In this sense, this research aims to summarize the methodological characteristics of educational interventions on the PA content offered to health professionals working in PHC in Latin America and to describe the degree of compliance reported by studies on their internal and external validity.

Methods

This scoping review adopted the operational process based on “The Cochrane Handbook for Systematic Reviews of Intervention”^{12,13} and on the items on the “PRISMA extension for scoping reviews” list¹⁴. This study is part of a larger systematic review project and was registered on the PROSPERO (CRD42021226315).

Eligibility criteria

The inclusion criteria were based on the PICOS strategy¹⁵, considering: (a) Population: adults aged 18 years or older, without particular clinical conditions, except for overweight and/or obesity; (b) Interventions: developed in Latin American countries, conducted in primary health care. These interventions could involve educational processes (e.g., courses, training, meetings, supply of materials), related to PA, to implementing agents, without restrictions relation to the support theories and/or methodologies used; (c) Comparison: when the interventions had a comparator group, no restrictions were imposed on the existence of strategies related to the comparison groups; (d) Outcomes: (I) how many people/professionals “assimilated” the educational elements and (II) indicators of physical activity, without restriction in relation to the measurement instruments (e.g., observation, questionnaires, activity trackers), assessed domains (e.g., leisure, commuting, occupational) and indicators (e.g., motivation for practice, transition from stages of beha-

avior, increase in the daily number of steps, number of minutes per week) and; (e) Study design: intervention studies, without restrictions to the existence of comparison groups and randomization between groups.

Selection process

Original studies were searched in eight electronic databases (Lilacs, Pubmed, Physical Education Index, Scielo, Scopus, Web of Science, Embase and SPORT-Discus), covering the available literature until March 2021. The strategy search was initially set up in Pubmed, from three categories (e.g., physical activity, study designs and Latin American countries) and applied as follows: (“physical activity” [Text Word] OR exercise* [Text Word] OR sport* [Text Word] OR walk* [Text Word] OR run* [Text Word] OR running* [Text Word] OR bike* [Text Word] OR cycling* [Text Word] OR “physical fitness” [Text Word] AND (“experimental study” [Text Word] OR “randomized controlled trial” [Text Word] OR “randomized controlled trial” [Text Word] “intervention” OR “quasi-experimental” [Text Word] OR trial* [Text Word] OR “clinical trial” [Text Word] OR “controlled trial” [Text Word] AND Argentina [Text Word] OR Venezuela [Text Word] OR Colombia [Text Word] OR Peru [Text Word] OR Ecuador [Text Word] OR Bolivia [Text Word], OR Chile [Text Word] OR Paraguay [Text Word] OR (Uruguay [Text Word] OR Guyana [Text Word] OR Suriname [Text Word]) OR Brazil [Text Word]). Manual searches were also carried out on the reference lists of the articles included for full reading.

Titles, abstracts and full texts assessments and data extraction were conducted independently and alternated by pairs of researchers, with the support of a third researcher to resolve doubts and establish consensus (LS, ED and JG), under the supervision of a researcher with experience in search strategies and literature reviews (PG). The extraction of RE-AIM and PRECIS data were independently conducted by pairs. The third researcher solved disagreements (LS, ED, JG and SY).

RE-AIM

The RE-AIM (reach, effectiveness, adoption, implementation, maintenance) framework, has 52 internal and external validity indicators subdivided into five domains with the aim of evaluating and/or planning future interventions, being them: (1) Reach: evaluates the proportion and representativeness of individuals willing to participate in a given intervention characteristics of participants and non-participants, participation rate, recruitment strategies (e.g., email invitation to health departments, health units and health professionals) and cost of recruitment are some of the items evaluated); (2) Efficacy and Effec-

tiveness: considers the influence of an intervention on important health outcomes, including potential negative effects; (3) Adoption: considers the proportion and representativeness at institutional and personal level to initiate and adopt an intervention, such as number of participants, participation rate, description of the place of intervention, people served, among others; (4) Implementation: in this dimension, the methodology used to execute a program is evaluated, taking into account the theories of behavior change, frequency and type of intervention and; (5) Maintenance: the information that demonstrates continuity or not of the program and its specific reasons are evaluated in institutional and personal level¹⁶.

PRECIS

The Pragmatic Explanatory Continuum Indicator Summary (PRECIS-2) is a tool with the objective of assisting in the planning and evaluation of interventions in order to guide decision making by researchers and managers. The instrument has nine domains to be considered, each domain is a 5-point Likert scale: 1. very explanatory, 2. rather explanatory, 3. equally pragmatic/explanatory, 4. rather pragmatic and 5. very pragmatic. The domains evaluated are: Eligibility, Recruitment, Setting, Organization, Flexibility (delivery), Flexibility (adherence), Follow-up, Primary outcome, Primary analysis. From a PRECIS-2 toolkit, which can be retrieved from the website of the research instrument, it was possible to obtain guidance on each domain mentioned above and, then, indicate the best score. Data were extracted individually to avoid extraction bias and, in case of divergence, a third opinion was consulted. Table 5 presents the scores by domain and the total average of each article¹⁷.

Results

Searches in eight electronic databases retrieved 6,010 articles, 2,065 of which were duplicates. Of 3,945 titles screened, 102 had its abstracts assessed. At the end of this stage, eight studies remained for evaluation by their full texts, and three of these were excluded for following reasons: two cross-sectional studies and one not was configured as a full article. With addition of two articles through manual searches, seven articles composed the descriptive synthesis below (Figure 1).

Of the seven studies included in this scoping review, six took place in Brazil, in which, most had practical application in the city of São Paulo-SP. The primary objective of these studies was to describe the training process for health workers to promote the content of PA during their work routine and, in some

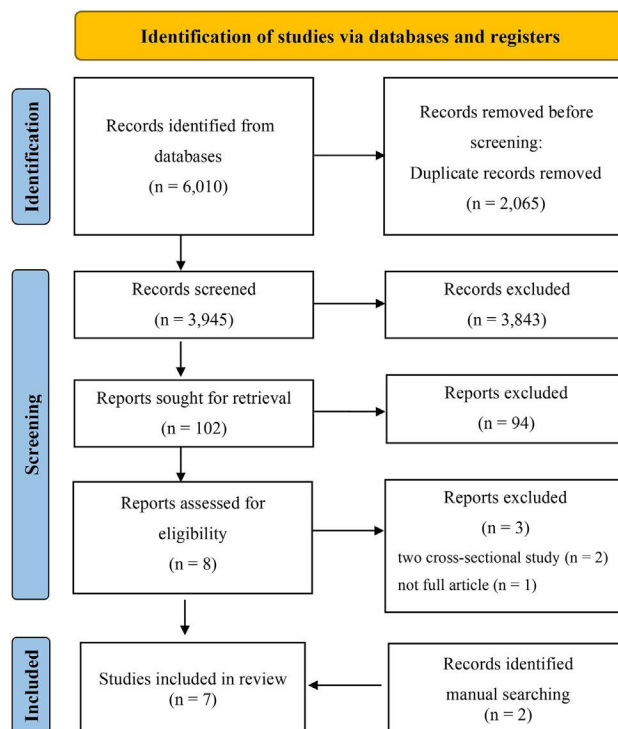


Figure 1 - Flowchart of scoping review.

studies, other preventive behaviors were introduced, such as eating and regular use of medicines within primary care. The interventions sought to train professionals to intervene with adults in general, diabetic people, with risks for cardiovascular diseases, pregnant women and adolescents (Table 1).

Six of the seven studies took place in person, however, there was variety in the duration and number of training sessions. Regarding the design, four Non-randomized Controlled Trial (NRCT), two Uncontrolled and Non-randomized Study (UNRS) were included and the study in Quito-Ecuador performed a Randomized Control Trial (RCT). The training was carried out by researchers and received by physicians, nursing professionals and community health agents (CHA). Of the seven studies, four had the presence of CHA, three of which were carried out only with the CHA (42.85%). Although the training location has not been explicitly described by some studies, there is an indication that they were carried out in the workplace. All studies described theories or documents that supported the training of professionals on PA content (Table 2).

Of the seven studies, four assessed the professionals' perception of knowledge after training, others seek to identify the autonomy for behavior change generated to health users after professional training and analyze health variables such as BMI, blood pressure and biochemical variables. In Malta et al. (2016)

Table 1 - Description of objectives, period of realization and city of training (n = 7).

Author/Year/Country	Main objective	Period of the study	City
Florindo et al. (2014) ¹⁸ , Brazil	The aim of this study was to describe a methodology for training to provide counseling on PA among community health workers working within primary healthcare in Brazil.	2011	São Paulo
Sá et al. (2016) ¹⁹ , Brazil	To assess the limits and potentialities for PA education in the Family Health Strategy, in order to support the training of health professionals for the complete realization of their duties in primary health care in Brazil.	2010	São Paulo
Malta et al. (2016) ²⁰ , Brazil	To assess the effect of an educational intervention focused on improving knowledge and professional health practices with regard to food and PA during pregnancy.	2012 to 2014	Botucatu
Nascimento et al. (2017) ²¹ , Brazil	To assess a pilot study of an intervention to support diabetes self-management led by CHW from a Primary Care Unit that serves low-income communities.	2014	São Paulo
Florindo et al. (2018) ²² , Brazil	To report an evaluation of health professionals' participation in a distance-learning PA training course developed in a low socio-economic region of São Paulo city, Brazil.	-	M'Boi Mirim, district in São Paulo city
Bandeón et al. (2018) ²³ , Ecuador	To assess the feasibility of implementing a physician-based, patient-centered counseling intervention model in Ecuador to improve the ability of primary care physicians to reduce cardiovascular disease risk factors among patients.	2014 to 2016	Quito
Dopp et al. (2020) ²⁴ , Brazil	To present the implementation and development of educational actions with community workers to promote PA in adolescence.	2018	Rio Claro

Legend: PE - Physical Education; CHWs - Community Health Workers; HP - Health Professionals; PA - Physical Activity.

Table 2 - Description of the main characteristics related to the training of health professionals (n = 7).

References	Methodology/protocol	Study design	Who trained? ¹ Who received training? ²	Training location	Central training topics	Rationale of the content
Florindo et al. (2014) ¹⁸ , Brazil	Face-to-face training 12 h: 4 meetings of 3 h each, once a week, for 1 month, within working hours, in the morning	NRCT	¹ Researchers ² CHWs (n = 65)*	-	PA	Ecological model, transtheoretical model and pedagogy Paulo Freire
Sá et al. (2016) ¹⁹ , Brazil	Face-to-face training 9 h: 6 meetings of 1h30 min, for 4 months.	NRCT	¹ Researchers ² Physician, Nurses, Nursing assistant and CHWs (n = 39)	Health Care Unit	PA	National Policy for Permanent Education in Health, inspired by Paulo Freire's pedagogy
Malta et al. (2016) ²⁰ , Brazil	Face-to-face training 16 h: 8 h of introductory course + 3 workshops of 8 h (1 of 4 h and 2 of 2 h)	NRCT	¹ Researchers ² Physician and Nurses (n = 42)**	Health Care Unit	Leisure walk and healthy eating for pregnant women	Brazilian recommendations, transtheoretical model, motivational interview and recognition of barriers and facilitators in promoting leisure walking and healthy eating during prenatal care
Nascimento et al. (2017) ²¹ , Brazil	Face-to-face training 56 h: 32 h initial + 4 h per month for 6 months	NRCT	¹ Researchers ² CHWs (n = 19)	-	Self-management of diabetes through healthy behaviors (adherence to medication, increasing PA and healthy eating)	Motivational intervention to support autonomy with communication skills

(continued)

Table 2 - Continuation

References	Methodology/protocol	Study design	Who trained? ¹ Who received training? ²	Training location	Central training topics	Rationale of the content
Florindo et al. (2018) ²² , Brazil	Online training 3 h: divided into 1 h/week, for 3 weeks	UNRS	¹ Researchers ² Physician and Nurses (n = 24)	Distance-learning	PA	Based on previous studies (Florindo and Andrade, 2015) and the 'Healthy Europe Through Learning and Practice' project
Bandeón et al. (2018) ²³ , Ecuador	Face-to-face training 4 h intensive	RCT	¹ Researchers ² Physician (n = 15) ^{***}	Primary care outpatient clinics	PA, nutrition and medication use	The proposal was based on national and international guides on the main approach of the study
Dopp et al. (2020) ²⁴ , Brazil	Face-to-face training 24 h: 3 months with 12 weekly meetings and 2 h per meeting	UNRS	¹ Researchers ² CHWs (n = 26)	-	Body practices as a strategy to promote active habits in adolescence	The proposal was based on the National Policy for Permanent Education in Health and the Geração Movimento Program, awarded by the United Nations Development Program

Legend: * (n = 30 intervention group; n = 35 control group); ** (n = 22 intervention group; n = 20 control group); *** (n = 8 intervention group; n = 7 control group); CHWs - Community Health Workers; PHC - Primary Health Care; NRCT - Non-Randomised Controlled Trial; UNRS - Uncontrolled and Non-Randomized Study; RCT - Randomized Control Trial; PA - Physical Activity.

and Baldeón et al. (2018) were showed comparisons between health users who received advice from trained professionals versus those who were not trained and found positive effects on the increase in

the promotion of PA/food counseling and improvement in some health variables (Table 3).

According to Table 4, it is possible to verify that, on average, 44% of the dominion "reach" and "imple-

Table 3 - Main results of training promoted for PHC health professionals (n = 7).

References	Main results evaluated	Results
Study with analysis of quantitative data		
Florindo et al. (2014) ¹⁸	1. Compared the knowledge of the CHW in the pre and post training period and with the control group.	1. Scoring for accessing information about PA (Pre 8.1 x Post 9.3)*; Score for knowledge about the benefits of PA (Pre 9.3 x Post 9.7)*.
Study with analysis of qualitative data		
Sá et al. (2016) ¹⁹	1. Limits and potential were identified in the PA education course in the Family Health Strategy.	1. Information on work organization and education at work was collected; relationship of professionals with PA; professionals point of view on the health-disease process and on counseling; lack of care for health professionals; and evaluation of the key elements of the pedagogical strategy.
Study with analysis of quantitative data		
Malta et al. (2016) ²⁰	1. Compared the knowledge of the HP pre and post training and with the control group; 2. Compared pregnant woman who composed the intervention group (received counseling by trained HP) x control group (attended by untrained HP).	1. Physical knowledge score on walking at leisure in the Intervention group (Pre 3.8 x Post 7.3)* and Control group (Pre 3.6 x Post 3.9); Scores for knowledge of the HP about healthy eating in the Intervention group (Pre 3.6 x Post 3.9) and Control group (Pre 3.4 x Post 3.6); 2. Percentage of pregnant women who received counseling by the intervention group (trained HP) versus the control group on the themes: walking at leisure (50.7% and 19.1%)* and healthy eating (58.6 and 33.3%)*.

(continued)

Table 3 - Continuation

References	Main results evaluated	Results
Nascimento et al. (2017) ²¹	1. Compared support for the autonomy that health users received from CHWs before and after 6 months; 2. Compared eating habits, exercise and adherence to medication before and after 6 months of health users; 3. Compared blood pressure, cholesterol and triglycerides of health users pre and post 6 months.	1. My CHW understood my point of view about my diabetes (19% increase)*. My CHW expressed confidence in my ability to make decisions about my diabetes (24% increase)*. My CHW understood how I want to take care of my diabetes (21% increase)*. My CHW encouraged me to ask questions about my diabetes (18% increase)*. 2. Number of servings of fruits/vegetables per day (increased by 12 points)*; Number of days with five or more fruits/vegetables (increased by 27 points)*; Number of days that were performed 30 min of exercise (increased 18 points)* and Adherence to diabetes medications (improvement of 0.58 points)*. 3. Reduction of LDL cholesterol of 16.1 mg/dL*; TG reduction of 38.7 mg/dL*; No differences in BP and HDL cholesterol.
Study with analysis of qualitative data		
Florindo et al. (2018) ²²	1. To assess the perception of the HP about the training received.	1. Positive points: PA associated with quality of life and well-being; disease prevention and health improvement; treatment and rehabilitation of diseases and risk factors; PA in the aging process; focus on promoting PA, other topics such as healthy eating, PA counseling skills; PA directed at recreation centers; PA for social support; PA for self-esteem; PA for self-care. Points for improvement: Very good training and no changes required; include PA sessions for health professionals; link between counseling with the public and facilities for PA; include teaching materials on CD-ROM and films; other physical activities such as dancing to improve adherence; PA for different ages and PA for different diseases.
Study with analysis of quantitative data		
Bandeón et al. (2018) ²³	1. To assess the medical attitude to deliver counseling on PA, nutrition and medication before and after training; 2. Compared the perception of health users in the intervention group (received advice from trained professionals) versus the control group (usual care); 3. The anthropometric, blood pressure and biochemical parameters of the intervention group (received advice from trained professionals) and the control group (usual care) were compared before and after 6 months.	1. Positive reduction of 3.5 points*; 2. Advice: discussed the beginning or continuation of the exercise (difference of 19.4% for the intervention group)*; made an agreement with the patient about changes or specific dietary goals (difference of 11.1% for the intervention group)*; he prescribed cholesterol-lowering medication (difference of 17.6% for the intervention group)*. 3. Intervention group: BMI reduction of 0.77 kg/m²*; LDL cholesterol reduction of 14.21 mg/dL*; No differences in BP; No differences in HDL cholesterol; No differences in TG. Control Group: BMI reduction of 0.36 kg/m²; LDL cholesterol reduction of 6.98 mg/dL*; Systolic BP reduction of 4.64 mmHg*; No differences in HDL cholesterol; No differences in TG.
Study with analysis of qualitative data		
Dopp et al. (2020) ²⁴	1. Presented the products generated by the training (eg. number of projects produced by the CHWs).	1. Thirteen intervention projects were created, serving children and adolescents, highlighting the potential of the applied action, based on an expanded approach to PA for health promotion in communities.

Legend: PA - Physical Activity; CHWs - Community Health Workers; HP - Health Professionals; PHC - Primary Health Care; BMI - Body Mass Index; TG - Triglycerides; BP - Blood Pressure; * - $p \leq 0.05$.

mentation" indicators were described in the publications, followed by the organizational level of "adoption" (33%), individual level of "adoption" (27%) "effectiveness/efficiency" (27%), individual level of "maintenance" (24%) and organizational level of "maintenance" (0%).

It was also observed that more than 86% of the articles cited the items: "description of the target population", "demographic and behavioral information of the target population", "target population identification method", "number of eligible individuals invited to be recruited", "sample size" (reach domain), "primary results report" and "report by moderators" (efficacy/effectiveness domain) and more than 71% of the articles mentioned "theories/principles used", "number of intervention contacts", "contacts period" and "duration of contacts" (implementation domain).

The average score of most papers analyzed using PRECIS received 3 points (equally pragmatic/explanatory). The "eligibility" and "flexibility (adherence)" domains had more pragmatic scores. The first indicates that the participants are similar to those who attend a routine of usual care and the second domain is related to the type of recruitment, in this case, no more than the usual encouragement to adhere to the intervention, eg. how they are treated of healthcare

settings, many of the patients need to attend the spaces periodically to perform primary treatments. The "primary outcome" and "primary analysis" domains had less pragmatic scores. The first indicates that the results are usually significant to the participants, being an experience that might not be available in the usual treatment, while the second domain obtained less pragmatic scores for avoiding intention-to-treat analysis (Table 5).

Discussion

This scope review aimed to summarize the methodological characteristics of educational interventions on the PA content offered to health professionals working in PHC in Latin America and to describe the degree of compliance reported by studies on their internal and external validity.

Based on data from seven original studies, distinct methodological characteristics were observed between the studies, however, five interventions focused on training PHC professionals to advise PA to people with chronic diseases. The description of the articles suggested low internal and external validity by the RE-AIM model and the PRECIS tool indicated that interventions are on a more pragmatic path.

Table 4 - Proportion reported of the dimensions RE-AIM (n = 7).

Dimensions of RE-AIM	%
Reach	
Description of the target population	86
Demographic and behavioral information of the target population	86
Target population identification method	86
Recruitment strategies	28
Inclusion criteria	14
Exclusion criteria	0
Number of eligible individuals invited to be recruited	86
Sample size	86
Participation fee	0
Recruitment cost	0
Use of qualitative methods to measure reach	14
Mean	44
Efficacy / Effectiveness	
Primary results report	100
Reporting by mediators	0
Report by moderators	86
Treatment intent or present in the follow-up	14
Quality of life measures	0

Continuation

Dimensions of RE-AIM	%
Measured unintended (negative) consequences on results	0
Percentage of dropouts at the completion of the program	0
Cost-effectiveness	0
Use of qualitative methods to assess efficacy/effectiveness	43
Mean	27
Adoption – Organizational level	
Number of eligible and invited (exposed)	100
Number of participants	100
Participation fee	0
Description of the target location	14
Criteria for inclusion/exclusion of scenarios	14
Description of the intervention site	0
Scenario identification method	0
Mean	33
Adoption – Individual level	
Number of eligible and invited (exposed)	100
Total participants who agreed to participate	100
Participation fee	0
Method of identifying program helpers	0
Level of knowledge of helpers	0

Table 4 - Continuation

Dimensions of RE-AIM	%
Inclusion/exclusion criteria for recruitment of helpers	0
Adoption cost measures	0
Mean	27
Implementation	
Theories/Principles used	100
Number of intervention contacts	100
Contacts period	71
Duration of contacts	71
Extent to which the protocol was executed as expected	0
Consistency in implementation between scenarios and enforcement agents	0
Attendance/completion rates of participants	43
Cost measures	0
Use of qualitative methods to measure implementation	14
Mean	44

Continuation

Dimensions of RE-AIM	%
Maintenance – Individual level	
Assessment of individual behavior after completion of the intervention	43
Abandonments	14
Use of qualitative methods to measure individual maintenance	14
Mean	24
Maintenance – Organizational level	
Alignment report with the organization's mission	0
Is the program still running?	0
If not: reasons for discontinuity	-
If yes: has the program been modified?	0
Has the program been institutionalized?	0
Wear	0
Mean	0

It should be noted that, even covering Latin America, six of seven (85.8%) included studies were conducted in Brazil, in cities in the state of São Paulo, which suggests the need for research in different Latin American countries, involving multidisciplinary health professionals in the context of PHC.

Regarding the objectives of the included studies, all interventions focused on training professionals to develop techniques/contents of counseling for PA and, in three of the seven studies (42.9%) the objectives were also associated with healthy eating and the use of medications.

From a methodological point of view, the intervention period ranged from three to fifty-four hours, lasting from three weeks to six months of intervention, and six studies took place in person and one remotely. All surveys referenced one or more theoretical con-

structs, citing the transtheoretical model, ecological model, behavior change techniques, government guides and documents. About the experiments, only the work developed in Quito-Ecuador²³ applied randomization in health centers. This methodological variation was also identified in the systematic review that sought to survey studies that trained health professionals to promote PA in neurological populations²⁵. In both reviews, the trained professional and the final target audience of the studies were different, which may have favored heterogeneous methodological conditions.

The professionals who received the most training were the CHA, followed by physicians and nursing professionals. This fact is justified because most studies are carried out in the Brazilian health system, where the CHA has been inserted since 1991, with the

Table 5 - PRECIS scores (n = 7).

References	PRECIS score									
	Eligibility	Recruitment	Setting	Organization	Flexibility (delivery)	Flexibility (adherence)	Follow-up	Primary outcome	Primary analysis	Mean
Florindo et al. (2014) ¹⁸	3	3	3	3	3	4	3	2	3	3
Sá et al. (2016) ¹⁹	4	4	3	3	4	4	4	3	4	4
Malta et al (2016) ²⁰	4	3	3	3	2	3	2	3	2	3
Nascimento et al. (2017) ²¹	2	3	3	3	4	3	2	2	2	3
Florindo et al. (2018) ²²	3	3	4	3	2	4	4	2	2	3
Bandeón et al. (2018) ²³	3	3	3	3	3	3	3	2	2	3
Dopp et al. (2020) ²⁴	4	4	4	3	3	3	4	4	4	4

function of carrying out the reception and home visits to health users²⁶ and, more prevalent in PHC. The target audience for professional performance after training was represented by adults, pregnant women, diabetics, people at cardiovascular risk, and the study by Dopp et al.²⁴ aimed at actions to influence the PA of adolescents.

Evidencing the reason for working with these populations, a survey identified that women, adults and patients with chronic diseases are the most frequent population in the Brazilian PHC space²⁷, which corroborates the focus of educational actions offered to health professionals, because of the seven studies, six took place in Brazil.

However, the concern of the study by Dopp et al.²⁴ with younger populations is relevant, since this population is not very present in the PHC environment, directly impacting their health habits. There are recommendations and evidence of the benefits of PA practice for the health of this age group, with chances of the behavior becoming a habit in adult life²⁸⁻³⁰. In addition to this action, the one developed by Malta et al.²⁰ with pregnant women, were the only ones aligned with prevention, unlike other training courses that adopted populations with pre-existing diseases as their target audience.

Regarding the observed outcomes, it was found that five of the seven studies (71.4%) valued the knowledge acquired by professionals after training and three of these interventions were analyzed quantitatively and presented positive and significant results to the end of the research, as observed in systematic review of four interventions that trained health professionals to provide PA counseling in PHC residency programs, with a focus on obesity and healthy lifestyle³¹. Although the reviews present heterogeneous methodologies, positive results on the content learned can be identified, even though the practical application and its consequences is a gap to be filled in the long term.

The studies by Malta et al.²⁰ and Baldeón et al.²³ were concerned with comparing the results of health users who received counseling from trained professionals versus non-trained ones and identified a positive increase in the prevalence of PA counseling and healthy eating among users assisted by trained professionals. However, Baldeón et al.²³ compared some health variables after six months and found that both groups of health users showed a reduction in BMI and LDL cholesterol, while the control group showed a reduction in systolic pressure. On the other hand, the study by Nascimento et al.²¹, despite not having a control group, found an increase in the consumption of vegetables, fruits, days with at least 30 minutes of PA and adherence to diabetes medication, in addition

to a reduction in cholesterol and triglycerides in health users after six months.

The results both from the point of view of knowledge of professionals and the benefits received by health users are promising, since there is great methodological variety of interventions, as well as content. However, no study combined quantitative and qualitative data, which could favor the reproduction of interventions in different contexts. Still, the evaluation time of health users provided by the articles was of short duration (up to 6 months), since the incorporation of behavioral strategies and their real effects take time.

As presented by Orrow et al.³² in a systematic review and meta-analysis of studies of brief counseling applied by health professionals in the context of PHC, modest benefits were evidenced after 12 months of the intervention on the behavior of PA. Also, in line with the aforementioned studies, a review and meta-analysis by the US Preventive Services Task Force on healthy eating and PA counseling in the context of PHC identified a small number of studies that reported health variables and follow-up analyses at long-term, in users at risk for cardiovascular disease⁵.

Regarding the objective of evaluating the internal and external validity by the RE-AIM instrument, it was found that the dimensions that had the most items cited by the interventions were "reach" (44%) and "implementation" (44%). The first is usually the most cited by RE-AIM studies and the second domain was evidenced because all the studies in this review describe the "theories/principles used" and the "number of contacts in the intervention", in addition to the majority showing the "period of contacts" and "duration of contacts". Unlike Konrad et al.³³ who, when reviewing behavior change programs for PA and healthy eating with the adult population, identified that only a third of the studies surveyed cited the theoretical framework, suggesting a gap, as there is a great need for these interventions, as well as this review, in clarifying their guiding parameters for future reproduction. Still, the authors carried out the evaluation of the works using the RE-AIM instrument and the implementation domain corresponded to an average value of 17% and Silva et al.³⁴ found an average of 35% when using the RE-AIM model to analyze PA intervention programs in Brazilian schools.

The central elements of an intervention are described in "implementation", that is, studies that mention several items in this domain favor the development of a new intervention or its adaptation¹⁶. In addition to the domains at the individual level, the RE-AIM model addresses issues at the organizational level by "adoption" and "maintenance", in which the success of the latter is related to the former, as the more

institutions and partners are affiliated to the program, the chances of continuity increase.

However, although some studies in this review describe aspects of the maintenance domain at the “individual level”, reports were not observed at the “organizational level”, being a recurrent condition in interventions or presenting low frequencies^{35,34,33}. Overall, of the 52 RE-AIM items analyzed, five were cited by all articles and eight by almost all, which characterizes the description of the studies in a condition of low internal and external validity.

Still on the validity of the studies, from the PRE-CIS tool it was observed that the majority had an average score of three, “neither pragmatic nor exploratory” and two studies of qualitative methodology were classified as “very pragmatic”^{19,24}. However, beyond the average, it was observed that the research scores in different domains moved towards a more “pragmatic” condition.

The domains “primary analysis” and “primary results” were more exploratory in quantitative studies and when compared to other domains. The first says about how the analysis is relevant to the research objective and, the second, a more exploratory analysis is linked to participants who performed all stages of the intervention, excluding the ineligible, since the more pragmatic score is associated with the analysis of intention to treat. In this sense, because this review analyzes the content for health professionals about the content of PA and because it is a small number of professionals, often allocated in one or two health centers (in the case of a control group), there is a more controlled situation in terms of participation, which favors more positive scores.

Unlike the item “flexibility - adherence” with more “pragmatic” descriptions, implying that the encouragement of adherence to interventions was not very different from usual care, as opposed to an approach with criteria for adherence and measures to improve it. The “organization” domain, on the other hand, indicated that it was neither pragmatic nor exploratory. The item is about verifying how the resources, experiences of the provider and their organization are different from the usual care and, as it is very similar to the daily routine, it is defined as “very pragmatic”.

However, the studies included in this literature review sought to train health professionals for PA counseling in PHC, which increases the score for the domain, but not to the point of becoming “very exploratory”, as the interventions did not require an increase in the number of staff, resources and experience beyond the usual to participate in the survey.

Interventions in community contexts, which mimic the real world, such as those raised in this

review, tend to be more pragmatic in that they preserve internal validity and maximize external validity, in order to avoid changes in routine care processes, as opposed to exploratory interventions, which favor internal validity to demonstrate that the intervention is the cause of the results³⁶. Furthermore, pragmatic interventions can be more reproducible due to the proposed study design. However, it is worth considering that they are less effective³⁷.

Limitations

Most studies were carried out in Brazil, restricted to a single Brazilian state and the heterogeneity of methodologies prevents comparisons of their effects. On the other hand, there is still a vast field to be explored by the different countries of Latin America, with the possibility of developing new training protocols for PHC Professionals on the content of PA and, verifying, also, its practical implications in the community context.

Conclusion

Based on data from seven original studies, distinct methodological characteristics were observed, however, five studies trained PHC professionals to guide people with chronic diseases about PA content. The description of the articles suggested low internal and external validity by the RE-AIM model. The PRE-CIS tool indicated that the interventions follow a more pragmatic path, due to their insertion in less controlled environments, such as the PHC space. Based on the scarcity of studies found in this review, interventions are suggested that analyze the effects of long-term professional training, in different contexts of PHC in Latin America, considering different populations and based on the logic of health promotion.

Acknowledgements

This work was supported by the Higher Education Improvement Coordination (CAPES).

AI use statement

No AI was used in this research.

Funding

The authors declare no funding for this project.

Data availability statement

For all due purposes, that the research data is available in the body of the document.

Conflict of interest statement

The authors have no conflicts of interest to declare. All co-authors have seen and agree with the contents of the manuscript and there is no financial interest to report.

Author contributions (CRediT)

Letícia Spósito: conceptualisation, investigation: methodology, data curation, writing - original draft, writing - review and editing, visualisation. **Paulo Guerra:** conceptualisation, investigation, methodology, data curation, writing - review and editing, visualisation. **Jean Coelho:** investigation, methodology, data curation, writing - review and editing, visualization. **Erik Dopp:** investigation, methodology, data curation, writing - review and editing, visualization. **Serene Yoong:** investigation, methodology, data curation, writing - review and editing, visualization. **Hasan Elsangedy:** investigation, methodology, data curation, writing - review and editing, visualization. **Eduardo Kokubun:** conceptualisation, investigation, methodology, data curation, writing - review and editing, visualisation.

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Manuscript received on December 15, 2023

Manuscript accepted on September 18, 2024



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