



Barriers and facilitators on the implementation of physical activity in Primary Health Care: A systematic review

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ABSTRACT

Barriers and facilitators influence the implementation of physical activity (PA) in Primary Health Care (PHC). This study aimed to analyze the scientific evidence on barriers and facilitators perceived by stakeholders on the implementation of PA in PHC. The search databases consisted of Web of Science, Medline, Scopus, and Lilacs. Two independent researchers reviewed the eligibility criteria and extracted and coded the information according to the Theoretical Domains Framework (TDF). The Consolidated Criteria for Reporting Qualitative Research was used to report the quality of the included studies. We analyzed 8,471 studies but included only 16. The studies identified 54 different reports on barriers and 48 on facilitators. Reports were often identified in the “environmental context and resources” domain, with 27 reports on barriers and 27 on facilitators. We found 25 reports of barriers and 16 of facilitators in the TDF domains that demonstrate professional profile characteristics. The low expectations in the professional profile for the implementation can influence the context and the organizational climate to identify more barriers than facilitators.

1. Introduction

Primary Health Care (PHC) is essential at the individual and community levels, supporting and encouraging the adoption, self-management, and maintenance of healthy behaviors acquired in the long term (Martín-Borràs et al., 2018). Studies show that community-based PHC interventions can increase participant physical activity levels (Martín-Borràs et al., 2018; Arija et al., 2017; Meurer et al., 2019). It also reduces the global rate of premature death (Strain et al., 2020), the incidence of chronic, non-communicable diseases (Stone and Baker, 2017), and the costs of highly complex procedures (Abu-Omar et al., 2017; Ananthapavan et al., 2019).

On the organizational level, the barriers and facilitators can hinder or contribute to decision-making regarding physical activity interventions (Nathan et al., 2018). Published systematic reviews indicate the perception of users on barriers and facilitators to adopting physical activities (de Lacy-Vawdon et al., 2018; Harrison et al., 2018) and of professionals on the adherence to clinical practices or counseling protocols (Breuing et al., 2018; Raaijmakers et al., 2013). However, the perceptions of stakeholders (defined as health professionals, managers,

administrators, and health secretaries) related to barriers and facilitators in implementing physical activity interventions are unclear in PHC (Cane et al., 2012; Cowdell and Dyson, 2019). Assessing the intervention implementation processes, based on barriers and facilitation, allows for enhancing the desirable results and improving the assistance to users (Waltz et al., 2019).

Few studies approach the barriers and facilitation strategies that effectively minimize the difficulties (Waltz et al., 2019). Translating evidence into recommendation models is complex and depends on a robust methodological approach. Using conceptual models to identify barriers and facilitation that influence interventions requires a methodological analysis that considers different factors (Glasgow et al., 2019; Harvey and Kitson, 2015; King et al., 2020). In this review, the Theoretical Domains Framework (TDF) was applied to help classify information about barriers and facilitations of the investigated studies (Cane et al., 2012). The TDF was designed to be applied in interviews, focus groups to provide possible behavioral influences, raise the problems faced, and identify processes in implementing interventions (Cane et al., 2012). Studies have adopted the model to evaluate interventions focused on health promotion and disease prevention in the health sector

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in different countries (Cowdell and Dyson, 2019; Grady et al., 2018; Rushforth et al., 2016; Seward et al., 2017) and educational sectors (Nathan et al., 2018; Weatherson et al., 2017). Classifying the evidence results based on validated conceptual models allows consolidating the information to assist in decision-making by managers and health professionals (Budd et al., 2018; Region, 2018).

Thus, the study's objective was to analyze the scientific evidence that investigated barriers and facilitators perceived by stakeholders (health professionals and managers) in implementing physical activity interventions in PHC.

2. Method

2.1. Protocol and registration

This review was registered in PROSPERO under the number CRD42019129528 (<http://www.crd.york.ac.uk/PROSPERO>). All procedures and information were written according to report items for systematic reviews and meta-analysis guidelines (PRISMA) (Moher et al., 2015) (Supplemental File 1). Additionally, the protocol for this systematic review is under review for publication [available at: https://osf.io/79er8/?view_only=45d39988610e4253a7efa4f936111a12].

2.2. Eligibility criteria

The eligibility criteria used were: (1) studies with reports from managers or health professionals about barriers or facilitators of a physical activity intervention; (2) qualitative (interviews or focus groups) or quantitative (open-ended questionnaires) studies on stakeholder perception for implementation; (3) original studies available and published in English, Portuguese, or Spanish in a peer-reviewed journal; (4) studies using physical activity interventions developed in the PHC context and, (5) studies reporting the barriers and facilitators for implementation in PA interventions.

The exclusion criteria used were: (1) interventions delivered in facilities not linked to the PHC; (2) lack of a report on professional perception; (3) reviews, systematic reviews, or commentary to the editor, guides, recommendations, plans and public policies on implementing interventions; (4) interventions for rehabilitation or care for populations in special conditions (e.g., pregnant women, post-surgical or post-trauma patients).

2.3. Information sources

The databases used were Web of Science, Medline, Scopus, and Lilacs. Additionally, one of the study's authors (PFS) searched data published until September 25th, 2019 (Supplemental File 2). No filter was used to limit the year of publication.

2.4. Search strategy

Searches for descriptors were carried out in English and combined by Boolean operators (OR and AND) in four blocks: organizational and implementation; health promotion and primary health care; physical activity; barriers and facilitators. The descriptors in each block were combined by the Boolean operator OR. The combination between the blocks was done using the AND operator. The combination matrix used in all bases is in Supplemental File 2.

2.5. Study selection

The studies were selected by defining barriers as any fact of a person's situation or environment that discourages or hinders the development of skills, independence, social competence, and adaptive behavior (Grady et al., 2018). Facilitators were considered any fact of a person's situation or environment that encourages the development of

skills, independence, social competence, and adaptive behavior (Grady et al., 2018).

Physical activity interventions in PHC were defined as those offered to users who access the service or by spontaneous demand. As the PHC is the first level of care for resolving health conditions, it demands a variety of workflows, professional teams, and interdisciplinary and multidisciplinary work to meet the comprehensive care of users (WHO European Region, 2018; WHO, 2018). In this context, the offer of physical activity is one of the health-promoting actions (e.g., counseling, health education, physical exercise, collective and individual practices of physical activities, and sports).

Duplicate titles were excluded (automatically and manually) using the Endnote software. Subsequently, the file was exported to an Excel spreadsheet customized for this study.

2.6. Data collection process

Two independent researcher pairs carried out the study selection stages (SWM and PFS, MC and LMC). The first stage consisted of reading the titles and the second of reading the abstracts. In the third stage, we read all included studies in full. The fourth stage was to extract information only from the studies included in the review. Finally, the pairs verified the inconsistencies in all selection stages. In case of disagreement, the other pair performed the analysis. In case of persistence in the inconsistency, a committee of researchers analyzed the case.

2.7. Data items

The information extracted from the studies consisted of study authors, country of origin, year of study and collection, objective and approach, identification of respondent professionals (sample number and professional training), characteristics of the physical activity intervention, data collection method, barriers, and facilitators. The classification of barriers and facilitators followed the 14 domains of TDF: (1) 'knowledge'; (2) 'skills'; (3) 'professional role and identity'; (4) 'beliefs about capabilities'; (5) 'optimism'; (6) 'beliefs about consequences'; (7) 'reinforcement'; (8) 'intentions'; (9) 'goals'; (10) 'memory, attention, and decision'; (11) 'environmental context and resources'; (12) 'social influences'; (13) 'emotions', and (14) 'behavioral regulation' (Cane et al., 2012). The conceptual definitions and constructs of the TDF are presented in Supplemental File 3.

According to the domains, the researcher pairs independently (SWM and MC, PFS and LMK) independently classified the information. Later, each pair discussed the codifications, and the scientific committee of researchers resolved the discrepancies.

2.8. Synthesis of results

The study information was summarized and described in tables. Two independent researcher pairs (SWM and PFS, MC and LMC) classified the information according to the TDF domains. Inconsistencies were verified in pairs. In case of disagreement, the other pair performed the analysis. In case the inconsistency persisted, the research committee analyzed the case. Finally, barriers and facilitators were presented by domains, the constructs described according to the information in the studies.

2.9. Quality of evidence

We used the Consolidated Criteria for Reporting Qualitative Research (COREQ) checklist to analyze the quality of the reports (Tong et al., 2007). The 32 questions were tabulated, and the information was extracted by the independent researcher pair (SWM and RMT). The inconsistencies were analyzed by a third author (PFS). The checklist is composed of three domains formed by categories and items. The categories were: 1- personal characteristics; 2- relationship with

participants; 3- theoretical framework; 4- participant selection; 5- data collection; 6- data analysis; and 7- reporting. Each category has a different number of items for scoring purposes, considering a score from 0 to 10. For example, each item could receive a score of zero (information missing) or 1 (information present). The sum of the items was multiplied by 10 and divided by the number of items in each category. For the general score of the study, the categories were added and divided by 7 (total number of categories). Thus, each study obtained a minimum score of zero and a maximum of 10. The checklist items are listed in Supplemental File 4.

3. Results

3.1. Study selection

The search identified 8,471 eligible articles, including publications in languages other than English. After the first screening, 756 duplicate titles were removed, and 7,715 titles were reviewed. Of these, the abstract of 1,337 and the full text of 137 were read. Finally, 16 studies were included for data extraction (Fig. 1).

3.2. Study characteristics

The description of the included studies is shown in Table 1. The studies were published between 1996 and 2019, with a higher proportion in European countries ($n = 8$) (Helmink et al., 2012; Vermunt et al., 2012; Middleton et al., 2014; Beighton et al., 2015; Berendsen et al., 2015; Costa-Pinel et al., 2018; Gustavsson et al., 2018; Plaete et al., 2015), followed by North America ($n = 5$) (Long et al., 1996; Weiner et al., 2011; Blonstein et al., 2013; Wozniak et al., 2015; Simmvong et al., 2019), South America ($n = 1$) (Belizan et al., 2019), Oceania ($n = 1$) (Laws et al., 2016), and Asia ($n = 1$) (Jayaprakash et al., 2016). Of the included studies, eight used interviews to collect data (Middleton et al., 2014; Beighton et al., 2015; Berendsen et al., 2015; Gustavsson et al., 2018; Long et al., 1996; Weiner et al., 2011; Wozniak et al., 2015; Simmvong et al., 2019; Belizan et al., 2019); one used focus groups (Plaete et al., 2015), and four combined interviews and focus groups to collect information (Helmink et al., 2012; Costa-Pinel et al., 2018; Laws et al., 2016; Jayaprakash et al., 2016). Only one study used a questionnaire containing open-ended questions (Vermunt et al., 2012). The included studies presented a total of 785 participants (ranging between 2 and 305; standard deviation [SD] = 71.6). Eight studies investigated health professionals and managers (Costa-Pinel et al., 2018; Gustavsson

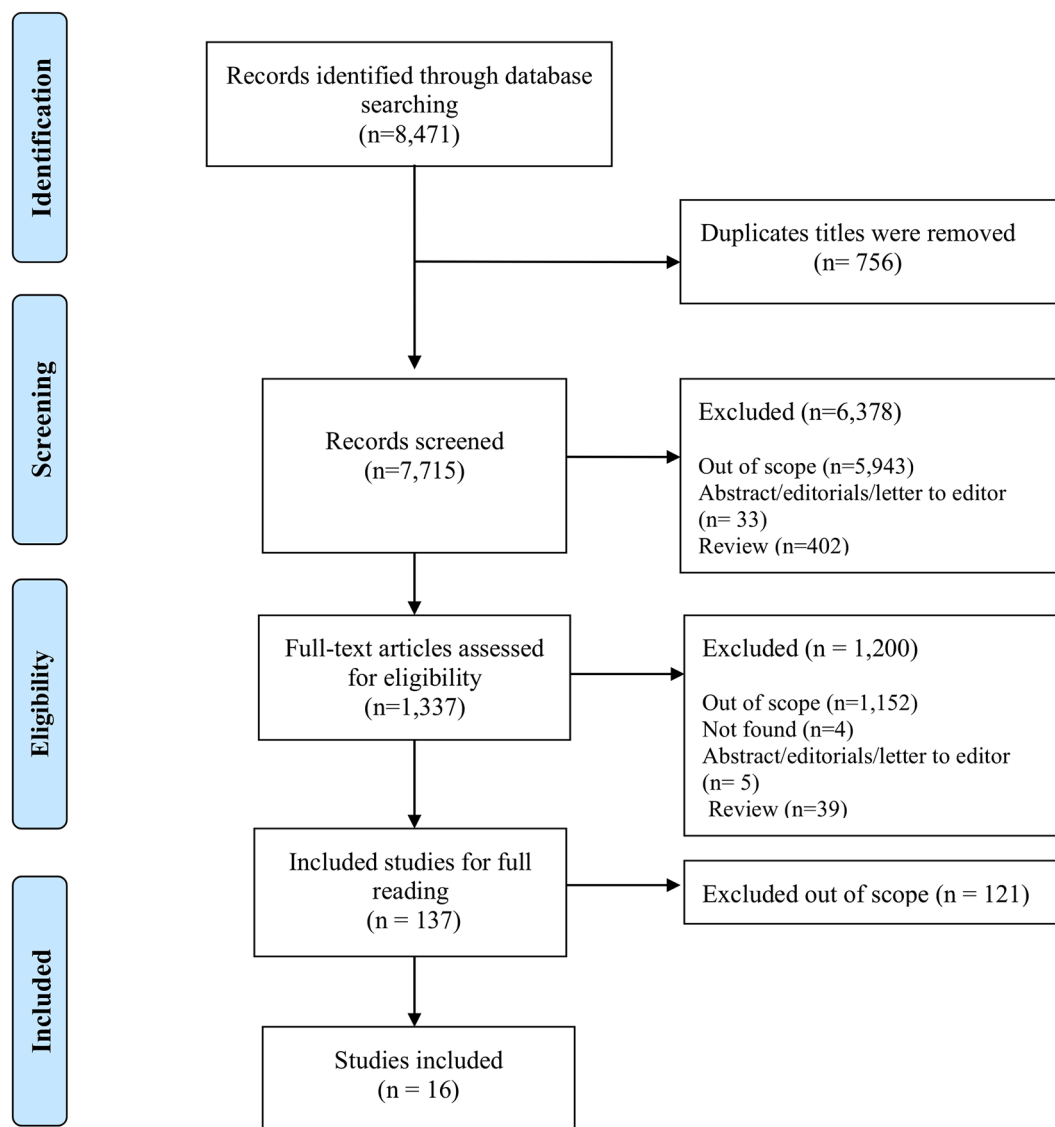


Fig. 1. PRISMA flow diagram showing the article identification and selection process (Moher et al., 2015).

Table 1

Characteristics of the included studies on barriers and facilitators for interventions in physical activity in the community environment of primary health care (n = 16).

1st Author	Year	Country	Method/Data source	Number of professionals	Profile professionals	Characteristics of the physical activity intervention	Reports according to the TDF domains	
							Barriers	Facilitator
Long (Long et al., 1996)	1996	USA	Quantitative/ Questionnaires, structured interviews, and telephone structured interviews	28	Physicians, Nurses, and Office Coordinator	PACE promotes the adoption and maintenance of PA in adults through brief counseling in primary care.	Knowledge Skills Memory, attention, and decision making	Organizational culture and climate Funding or costs Beliefs about consequences
Weiner (Weiner et al., 2011)	2011	USA	Qualitative/ Semi structured interview by telephone	68	Coordinator, Physician Champion, Facility Manager, supporters (dietetics, primary care, physical activity, and behavioral health), and Opinion Leader	MOVE! is a weight management, health promotion program designed to improve the lives of veterans-encouraging healthy eating behavior, increasing PA, and promoting even small weight losses.	Organizational culture and climate Management support	Organizational culture and climate
Helminck (Helminck et al., 2012)	2012	Netherlands	Qualitative/ Focus group and interviews	36	General practitioners; Physiotherapists, Nurses, and Dieticians	Evidence and practice-based intervention focusing on both dietary behavior and PA. 12-month intervention is to guide participants in achieving a sustained healthy lifestyle.	Organizational culture and climate Knowledge	Funding or costs Person × environment interaction Skills Social/ professional role and identity Pessimism or optimism NR
Vermunt (Vermunt et al., 2012)	2012	Netherlands	Quantitative/ Questionnaire assessed with open questions	72	Nurse practitioners	APHRODITE: individual lifestyle counseling and group consultations.	Organizational culture and climate Pessimism or optimism Reinforcement	NR
Blonstein (Blonstein et al., 2013)	2013	USA	Qualitative/Not informed	2	Dietitian and Exercise Specialist	The E-LITE trial was designed to compare a GLB in-person group intervention and a GLB DVD self-directed intervention with usual care.	Technical resources	Technical resources
Middleton (Middleton et al., 2014)	2014	UK	Qualitative/ Focus group and interviews	28	Senior health officials, public health workers, and community members	NHS Care Trust obesity prevention program interventions, changing nutrition and PA behaviors in the local community (all ages - schools, children's centers, worksites and leisure, health and community centers).	Person × environment interaction	NR
Beighton (Beighton et al., 2015)	2015	UK	Qualitative/ Semi structured interviews	11	Nurses	PACE-Lift (3 month/4 consultations) and PACE-UP (12 month/support handbook, diary, and practice nurse PA consultations will use BCTs.	Technical resources Knowledge Skills Beliefs about capabilities	Organizational culture and climate Pessimism or optimism
Berendsen (Berendsen et al., 2015)	2015	Netherlands	Quantitative-qualitative/Semi-structured interviews and questionnaire	25	Physiotherapists, Dieticians, and Nurses	The 'BeweegKuur' is a one-year intervention developed by the NISB and aims at adopting a sustained healthy lifestyle.	Organizational culture and climate Knowledge Skills Social/ professional role and identity Beliefs about consequences	Organizational culture and climate Funding or costs Human resources Skills Social influences
Plaete (Plaete et al., 2015)	2015	Belgium	Qualitative/ Focus group	62	Not identified	The eHealth program was based on goal setting and self-regulation principles to increase the autonomy of patients to change their behavior.	Material resources Social/ professional role and identity Beliefs about capacities	Material resources Social/ professional role and identity Beliefs about consequences
Wozniak (Wozniak et al., 2015)	2015	Canada	Qualitative/ Interviews, systematic documentation, and research team	10	Executive directors or chronic-disease managers, and program facilitator	The aim of HEALD, intervention pedometer-based, was to increase the PA (i.e., walking) in phase 1	NR	Human resources Physical resources Knowledge

(continued on next page)

Table 1 (continued)

1st Author	Year	Country	Method/Data source	Number of professionals	Profile professionals	Characteristics of the physical activity intervention	Reports according to the TDF domains	
							Barriers	Facilitator
			observations and reflection meetings			and the intensity of PA (i.e., brisk walking) in phase 2 by the patients.		Beliefs about consequences
Jayaprakash (Jayaprakash et al., 2016)	2016	South Asian	Qualitative/Focus group and interviews	5	Staff and Community-based organization	SAHELI was a 16-week lifestyle intervention that included group classes, experiential activities, behavior change counseling, and telephone support.	Organizational culture and climate Skills	Social influences
Laws (Laws et al., 2016)	2016	Australia	Qualitative/Focus group and interviews	28	Research staff; policy-makers; implementers (program coordinators, program facilitators, and local stakeholders)	An obesity prevention program for parents with infants aged 3–18 months. This included a facilitator manual, a parent handbook, a program website (https://www.infantprogram.org), and program implementation guide. InFANT Program research staff developed and delivered a one-day training program to facilitators. DE-PLAN-CAT, the 2-year lifestyle intervention, included a 9-hour basic module (6 sessions) and a subsequent 15-hour.	Funding or costs Human resources Critical events or incidents Knowledge Social/professional role and identity	Organizational culture and climate Funding or costs Human resources Management support Social/professional role and identity Beliefs about capabilities Goals NR
Costa-Pinel (Costa-Pinel et al., 2018)	2018	Spain	Qualitative/ Focus group and interviews	305	Coordinators, program facilitators, and supporters (endocrinologist, epidemiologist, dietitian, health technicians, nurses, general practitioners and resource managers)	SPAP, launched in Swedish health care to promote PA to prevent and treat lifestyle-related health disorders.	Beliefs about consequences	Management support Knowledge Skills Social influences
Gustavsson (Gustavsson et al., 2018)	2018	Sweden	Qualitative/ Interviews	18	Managers of health care centers, local coordinators, managers, and three health promotion coordinators in the central administration of the health care organizations, Physicians, Nurses, and Physiotherapists	The HMCP 'enabling and empowering people to take control over and improve the determinants of health'.	Organizational culture and climate Funding or costs Material resources Skills Beliefs about capabilities Pessimism or optimism	Organizational culture and climate Technical resources Management support Person × environment interaction Knowledge Social influences
Belizan (Belizan et al., 2019)	2019	Argentina	Qualitative/ Interviews	44	Healthy Municipalities and Communities Program, Provincial Referents (coordinate activities), Local Referents (stakeholders responsible for the implementation), and Municipal Authorities (secretary of public health)	HealtheSteps program = an 8-month lifestyle prescription program focused on three modifiable risk factors for type 2 diabetes: sedentary behavior, physical inactivity, and unhealthy eating.	Technical resources Human resources Material resources Management support Person × environment interaction Knowledge Social influences	Organizational culture and climate Technical resources Management support Skills Pessimism or optimism Social influences
Simmvong (Simmvong et al., 2019)	2019	Canada	Qualitative/ Interviews	43	Knowledge Broker, coach, Key Stakeholder, and Participant	HealtheSteps program = an 8-month lifestyle prescription program focused on three modifiable risk factors for type 2 diabetes: sedentary behavior, physical inactivity, and unhealthy eating.	Organizational culture and climate Technical resources	Organizational culture and climate Beliefs about consequences

Abbreviations: [PA]: physical activity; [PACE]: Physician-based Assessment and Counseling for Exercise; [MOVE]: Evidence-based Weight-management Program; [APHRODITE]: Active Prevention in High Risk individuals of Diabetes Type 2 in and around Eindhoven; [NHS]: National Health Service; [E-LITE]: Evaluation of Lifestyle Interventions to Treat Elevated Cardiometabolic Risk in Primary Care; [GLB]: Group Lifestyle Balance™ program; [PACE-Lift]: Pedometer Accelerometer Consultation Evaluation – Lift; [PACE-UP]: Pedometer Accelerometer Consultation Evaluation – UP; [BCTs]: Behavior Change Techniques; [NISB]: Netherlands Institute for Sport and Physical Activity; [HEALD]: Healthy Eating and Active Living for Diabetes in Primary Care Networks; [SAHELI]: South Asian Heart Lifestyle Intervention; [InFANT Program]: Community-wide Implementation of the Melbourne Infant, Feeding, Activity and Nutrition Trial; [DE-PLAN-CAT project]: Diabetes in Europe–Prevention using lifestyle, PA and nutritional intervention–Catalonia; [SPAP]: Swedish Physical Activity on Prescription; [HMCP]: Healthy Municipalities and Communities Program; NR: not reported.

et al., 2018; Long et al., 1996; Weiner et al., 2011; Wozniak et al., 2015; Belizan et al., 2019; Laws et al., 2016; Jayaprakash et al., 2016). The other studies investigated only health professionals. In three studies, the interventions presented increased physical activity as the primary outcome (Gustavsson et al., 2018; Long et al., 1996; Wozniak et al., 2015). In other studies, physical activity was combined with healthy eating, weight control (Helmink et al., 2012; Middleton et al., 2014; Beighton et al., 2015; Costa-Pinel et al., 2018; Weiner et al., 2011; Blonstein et al., 2013; Simmavong et al., 2019), or lifestyle behaviors (Vermunt et al., 2012; Berendsen et al., 2015; Plaete et al., 2015; Belizan et al., 2019; Jayaprakash et al., 2016). In the included studies (n = 16), 13 reported barriers and facilitators to implementing physical activity interventions in PHC, and three reported only barriers (Vermunt et al., 2012; Middleton et al., 2014; Costa-Pinel et al., 2018) (Table 1).

Based on the COREQ, seven studies meet 50% of the items for research quality (Fig. 2). Further detailed analysis of the quality of the research reports is presented in Supplemental File 4.

3.3. Barriers and facilitators reported

The included studies presented 54 different reports on barriers and 48 on facilitators. However, there were no reports identifying the “intentions”, “emotion”, and “behavioral regulation” domains (Table 2).

Reports were identified as “environment context and resources”, with 27 reports on barriers and 27 on facilitators. Of these, at least seven studies identified some barrier or facilitator in the “organizational culture and climate” construct, with more reports for facilitators (n = 8). In this construct, studies report barriers to implementation in situations such as lack of time to execute implementation strategies (Helmink et al., 2012; Vermunt et al., 2012; Berendsen et al., 2015; Simmavong et al., 2019; Jayaprakash et al., 2016) and the lack of routines in the health team for intervention planning (Gustavsson et al., 2018). Implementation facilitators were identified as the intervention’s congruence with team activities and use of site resources (WHO, 2018; Belizan et al., 2019), support from the research and local teams (Beighton et al., 2015; Weiner et al., 2011), and the design of the intervention and the possibilities of adaptation to the context (Long et al., 1996; Laws et al., 2016). In this same domain, at least four studies reported four distinct barriers in terms of technical resources. Examples of this reported the lack of technical support to manage interactive activities with patients and web resources (Blonstein et al., 2013), lack of technologies to support intervention (Beighton et al., 2015; Simmavong et al., 2019), lack of support for data analysis and interpretation (Belizan

et al., 2019), and lack of support for adapting activities to weather conditions and holidays (Beighton et al., 2015). The lack of human resources was identified as a barrier in two studies (Belizan et al., 2019; Laws et al., 2016). Among these barriers are the absence of settings in universities to support the delivery of interventions or storage of resources (Laws et al., 2016), the difficulties of professional turnovers to support the intervention (Laws et al., 2016), high administrative time for the program (Laws et al., 2016), lack of professionals to deliver the intervention (Laws et al., 2016), and lack of human resources for communication campaigns (Belizan et al., 2019). According to five different reports, the construct of human resources as a facilitator was identified in three studies (Berendsen et al., 2015; Wozniak et al., 2015; Laws et al., 2016). Examples consist of supporting implementation, such as collaborating with the municipality to train local professionals (Berendsen et al., 2015; Laws et al., 2016), the support of researchers in translating the program into the local context (Wozniak et al., 2015; Laws et al., 2016), and the scalability of the program for implementation in existing services (Laws et al., 2016). Another facilitator identified in the “environment context and resources” domain was support for funding, identified in four studies and four reports, which facilitates the sustainability of the intervention (Berendsen et al., 2015), staff in the areas of health prevention (Long et al., 1996; Laws et al., 2016), and interventions provided by health insurance (Berendsen et al., 2015) or at no cost to participants (Helmink et al., 2012).

The other domains of the TDF demonstrate greater characteristics of professional profiles, capacities, and abilities, such as: “knowledge”, “skills”, “social/professional role and identity”, “beliefs about capabilities”; “pessimism or optimism”, and “beliefs about consequences”, with 25 reports on barriers and 16 on facilitators. At least six studies reported a lack of knowledge and seven the lack of skills as barriers to implementing interventions.

The lack of knowledge was identified as a barrier, such as situations of uncertainty about the protocols to be followed to carry out interventions for counseling or communication of behavior changes (Beighton et al., 2015; Berendsen et al., 2015; Long et al., 1996). Other reports reinforced the difficulties in accessing documents or guidelines for professionals to direct interventions (Helmink et al., 2012; Beighton et al., 2015; Laws et al., 2016) and the lack of qualified professionals to perform specific tasks (Belizan et al., 2019).

The lack of skills reported by professionals was identified by the difficulty in adapting the materials (Beighton et al., 2015) or dynamics for different groups (Berendsen et al., 2015), the lack of ability to prescribe physical activities (Gustavsson et al., 2018), the difficulty in

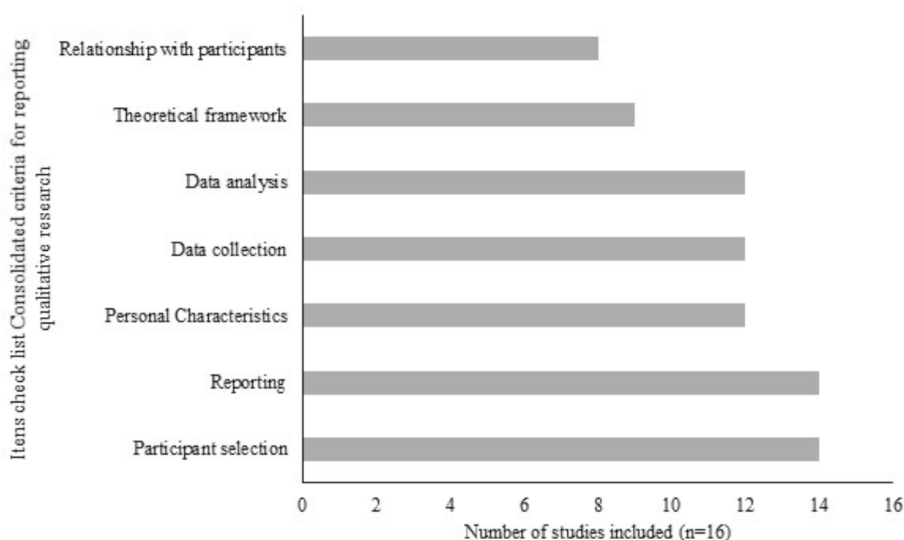


Fig. 2. Description of the number of studies included according to Consolidated Criteria for Qualitative Research Reports (COREQ) (n = 16).

Table 2

Frequency of studies that reported barriers and facilitators in implementing physical activity in Primary Health Care through the 14 domains of the Theoretical Domains Framework (TDF). Systematic review study (n = 16).

TDF Domain	Barriers		Facilitators	
	Number of studies [ref]	Number of reports	Number of studies [ref]	Number of reports
1. Knowledge	6 (Helmink et al., 2012; Beighton et al., 2015; Berendsen et al., 2015; Long et al., 1996; Belizan et al., 2019; Laws et al., 2016)	7	2 (Gustavsson et al., 2018; Wozniak et al., 2015)	2
2. Skills	5 (Beighton et al., 2015; Berendsen et al., 2015; Gustavsson et al., 2018; Long et al., 1996; Jayaprakash et al., 2016)	5	4 (Helmink et al., 2012; Berendsen et al., 2015; Gustavsson et al., 2018; Belizan et al., 2019)	3
3. Social/professional role and identity	3 (Berendsen et al., 2015; Plaete et al., 2015; Laws et al., 2016)	3	3 (Helmink et al., 2012; Plaete et al., 2015; Laws et al., 2016)	3
4. Beliefs about capabilities	3 (Beighton et al., 2015; Gustavsson et al., 2018; Plaete et al., 2015)	3	1 (Laws et al., 2016)	1
5. Pessimism or optimism	2 (Vermunt et al., 2012; Gustavsson et al., 2018)	2	3 (Helmink et al., 2012; Beighton et al., 2015; Belizan et al., 2019)	3
6. Beliefs about consequences	2 (Berendsen et al., 2015; Costa-Pinel et al., 2018)	4	4 (Plaete et al., 2015; Long et al., 1996; Wozniak et al., 2015; Simmavong et al., 2019)	4
7. Reinforcement	1 (Vermunt et al., 2012)	1	–	–
8. Intentions	–	–	–	–
9. Goals	–	–	1 (Laws et al., 2016)	1
10. Memory, attention, and decision processes	1 (Long et al., 1996)	1	–	–
11. Environment context and resources				
Organizational culture and climate	7 (Helmink et al., 2012; Vermunt et al., 2012; Berendsen et al., 2015; Gustavsson et al., 2018; Weiner et al., 2011; Simmavong et al., 2019; Jayaprakash et al., 2016)	7	7 (Beighton et al., 2015; Berendsen et al., 2015; Long et al., 1996; Weiner et al., 2011; Simmavong et al., 2019; Belizan et al., 2019; Laws et al., 2016)	8
Technical resources	4 (Beighton et al., 2015; Blonstein et al., 2013; Simmavong et al., 2019; Belizan et al., 2019)	4	2 (Blonstein et al., 2013; Belizan et al., 2019)	3
Funding or costs	3 (Gustavsson et al., 2018; Belizan et al., 2019; Laws et al., 2016)	3	4 (Helmink et al., 2012; Berendsen et al., 2015; Long et al., 1996; Laws et al., 2016)	4
Human resources	2 (Belizan et al., 2019; Laws et al., 2016)	5	3 (Berendsen et al., 2015; Wozniak et al., 2015; Laws et al., 2016)	5
Material resources	3 (Gustavsson et al., 2018; Plaete et al., 2015; Belizan et al., 2019)	3	1 (Plaete et al., 2015)	2
Management support	2 (Weiner et al., 2011; Belizan et al., 2019)	1	3 (Gustavsson et al., 2018; Belizan et al., 2019; Laws et al., 2016)	2
Person × environment interaction	2 (Middleton et al., 2014; Belizan et al., 2019)	2	1 (Helmink et al., 2012)	2
Physical resources	–	–	1 (Wozniak et al., 2015)	1
Critical events or incidents	1 (Laws et al., 2016)	2	–	–
12. Social influences	1 (Belizan et al., 2019)	1	4 (Berendsen et al., 2015; Gustavsson et al., 2018; Belizan et al., 2019; Jayaprakash et al., 2016)	4
13. Emotion	–	–	–	–
14. Behavioural regulation	–	–	–	–
Total	–	54	–	48

Abbreviations: TDF: Theoretical Domains Framework. [ref]: study as numbered in the reference list. (-): no studies or reports identified.

organizing the intervention to adapt the offer to the participants (Jayaprakash et al., 2016) and the lack of ability to manage the documents necessary for the intervention (Long et al., 1996).

At least four studies reported facilitators for “skills” and four for “beliefs about consequences”. The professionals’ abilities to convince the participants to the intervention (Helmink et al., 2012), the professionals’ ability to adapt the intervention to their experiences and work routines (Berendsen et al., 2015; Gustavsson et al., 2018), and previous intersectoral and team experiences to design activities and projects (Belizan et al., 2019) were facilitators in the implementation processes.

Domains that bring together more social or motivational characteristics such as “social influences”, “goals”, and “rewards” were identified with a lower number of reports for barriers (n = 2, in total) and facilitators (n = 5, in total). As an implementation facilitator, four studies and four reports identified the domain “social influences”. The reports identified facilitators, such as the influence of the responsible professional in holding meetings (Berendsen et al., 2015), participant perception of the presence of a specialized professional available for implementation (Gustavsson et al., 2018), community participation, and intersectoral support (Belizan et al., 2019), and the adaptation of the

intervention to cultural issues of language and experiential activities (Jayaprakash et al., 2016).

No study identified the physical environment as a barrier and ‘events or incidents’ as a facilitator.

4. Discussion

The present study aimed to analyze the evidence of interventional studies that investigated barriers and facilitators perceived by stakeholders to implement PA interventions in PHC. Most studies reported barriers (n = 7) and facilitators (n = 7) in the domain “environment context and resources”. The reports indicated that the most favorable characteristics of the context, such as greater receptivity of the team, support from the team of professionals to the intervention, availability of qualified human resources, and financing, tend to facilitate the implementation process. However, there were more reports on barriers (n = 25) compared to facilitators (n = 16) when referring to the characteristics of professional profiles, abilities, and skills. Professionals’ negative beliefs about capabilities, abilities, and consequences can influence the organizational context and climate, with difficulties in implementing PA interventions. However, a positive organizational

context and climate reflect better work processes with well-defined objectives, tools, and professional roles.

Other systematic reviews also perceived the organizational context as a barrier in the educational (Nathan et al., 2018; Grady et al., 2018) and health sectors (Al-Ghamdi, 2017; Hébert et al., 2012). In the same sense, the lack of time (Helmink et al., 2012) and local routines (Gustavsson et al., 2018), administrative changes (Simmavong et al., 2019); and workload of the professionals (Berendsen et al., 2015; Jayaprakash et al., 2016) were also perceived as barriers. Otherwise, the perceived facilitators for a positive organizational climate were related to the professionals' readiness to change behavior and attitude (Weiner et al., 2011), the congruence of interventions with existing services and policies (Laws et al., 2016), adaptation of the intervention to the local reality (Simmavong et al., 2019; Laws et al., 2016), the planning of necessary resources, and the role of the professionals involved (Weiner et al., 2011). Studies show that the implementation of successful physical activity interventions in PHC must be linked to the contextual characteristics and capabilities of the teams to meet the needs of the service (Cane et al., 2012; Harvey and Kitson, 2015). The PHC requires a workflow of teams of professionals to guarantee full service to users (WHO European Region, 2018). In this sense, actions aimed at promoting physical activity should be incorporated into the work dynamics of all professionals (WHO European Region, 2018). Thus, including physical activity interventions in care line protocols, counseling, health education sessions, or health promotion practices can add more information to professionals for the work process.

The review identified that the 'skills' domains and the lack of 'knowledge' were perceived as barriers to the implementation (Beighton et al., 2015; Berendsen et al., 2015; Gustavsson et al., 2018). The lack of continuing education may reflect the low readiness of health professionals for changes, which reinforces the lack of knowledge and skills for decision-making, as observed in other studies (Breda et al., 2018; Lion et al., 2019; Long et al., 2018). On the other hand, the facilitators identified in this review reinforced the adequate training for the implementation of the intervention, consequently, with positive results for reaching the participants and adapting the intervention to their professional experiences (Helmink et al., 2012; Berendsen et al., 2015; Belizan et al., 2019). A better understanding of professionals about capacities, skills, and beliefs about the consequences of the intervention to the participant or the context may favor a more positive organizational climate in the context. Consequently, social influences reinforce more security and recognition in effective and sustainable work (Gustavsson et al., 2018; Belizan et al., 2019).

In this review, the facilitators related to 'social/professional role and identity', 'optimism', and 'believe about consequences' are believed to influence obtaining good results in professionals' perception. Evidence shows that the quality of the intervention implementation process reflects the technical capacity of the responsible professionals, even in the face of non-ideal contexts (Cranley et al., 2017; Cranley et al., 2019). Therefore, different public or private health contexts can benefit from PA interventions as an interdisciplinary and multi-professional action to enhance the engagement of professionals and beliefs about the results (Budd et al., 2018; Häfele and Siqueira, 2018).

The lack of management support was identified as a barrier perceived by professionals (Weiner et al., 2011; Belizan et al., 2019) due to the difficulty of continuous funding (Belizan et al., 2019; Laws et al., 2016). As a facilitator, management support proved to be positive in achieving health indicators (Belizan et al., 2019; Laws et al., 2016). Other evidence suggests that management support is reflected in the improvement of specialized teams to offer physical activities (James et al., 2017; Becker et al., 2016), in the integration with multi-professional teams (Vermunt et al., 2012; James et al., 2014), and, consequently, in the increase in PA of PHC users. The greater the investments in professional training, the better the management and technological tools to facilitate the work process (Hendriks et al., 2016; Karasick and Peik, 2017). Additionally, it can stimulate government

actions to promote PA in the PHC territory to raise financial, technical, and material resources to favor the achievement of positive health indicators.

The strengths of this review are the presentation of the use of a model to investigate barriers and facilitators that can support professionals and managers in areas that identify the problems and potential of interventions (Cane et al., 2012; Grady et al., 2018). Previously, barriers and facilitators were hardly investigated in implementing public health interventions and classified into appropriate conceptual models (Furtado et al., 2019). Also, the information can help improve the work dynamics of health professionals and their planned activities (Laws et al., 2016).

However, some limitations must be considered. First, most of the studies included were reported by professionals and managers who mostly portrayed PHC from European (Helmink et al., 2012; Vermunt et al., 2012; Middleton et al., 2014; Beighton et al., 2015; Berendsen et al., 2015; Costa-Pinel et al., 2018; Gustavsson et al., 2018; Plaete et al., 2015) and North American countries (Long et al., 1996; Weiner et al., 2011; Blonstein et al., 2013; Wozniak et al., 2015; Simmavong et al., 2019). In this sense, the data must be analyzed with caution as it highlights the political, organizational, and formation characteristics of different cultures and societies. The studies included are evidence-based practices. Consequently, they derive from intervention research protocols, in which barriers and facilitators can influence the replicability of research in the local context (Grady et al., 2018; Brownson et al., 2009; Flannery and Rotondo, 2016). In this sense, the design of interventions is based on implementation protocols without considering the context in which it is applied (Glasgow et al., 2019). This, consequently, reflects on the influence of research in the implementation period, professionals' difficulty in adopting and maintaining protocols, and on adherence by participants (Blonstein et al., 2013; Simmavong et al., 2019). If the translation of knowledge is not feasible, the need for the context will increase the difficulties of sustainability (Laws et al., 2016; Jayaprakash et al., 2016). Furthermore, barriers and facilitators may reflect aspects of the knowledge translation process rather than the essential elements of implementation (Harvey and Kitson, 2015; King et al., 2020). However, more than half of the studies presented above-average quality, which may favor the replicability of interventions in other contexts.

5. Conclusion

Therefore, interventions in physical activity in PHC present barriers and facilitators on the 'contextual environment' domain and the 'organizational culture and climate' construct. We identified more reports of barriers than facilitators when considering the characteristics of professional profiles, capacities, and skills. The negative beliefs in the professional profile for the implementation can influence the context and organizational climate to identify more barriers than facilitators. Therefore, future studies must investigate facilitation strategies to minimize barriers and empower facilitators of the implementation process to achieve good results in PHC.

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Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Appendix A. Supplementary data

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