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Promotion of physical activity in primary health care settings: evaluation of the Saúde Ativa Rio Claro Program

Promoção de atividade física na Atenção Básica de Saúde: avaliação do Programa Saúde Ativa Rio Claro

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ABSTRACT

To evaluate the association between participation in the SaúdeAtiva Rio Claro (SARC) program and physical activity (PA) levels among adult women. A case control study was conducted in seven primary health care settings in Rio Claro, São Paulo, Brazil. The sample included 111 women participating in the intervention (mean age: 58±13 years). For each participant, we selected a non participant, matched to the intervention participant by age (± 5 years) and neighborhood. The program provides 1-hour multimodal exercise twice a week as well as general advice about health self-care. PA was measured using the International Physical Activity Questionnaire (IPAQ) long version. While 18.0% of the non participants reported practicing 150 min/wk of leisure-time PA (LTPA) or more, 61.3% of the participants achieved such threshold (OR= 7.2; IC95%: 3.8-13.3). Participants performed more minutes compared to non-participants, even omitting the 100 min/wk of PA provided by the intervention (p<0.001). In addition to providing 100 min/wk of PA, SARC, an exercise promotion intervention in primary health care settings in Brazil, stimulates participants to increase PA levels in other settings.

Keywords: Motor activity; Primary health care; Health promotion; Public health; Family health.

RESUMO

O objetivo do estudo foi avaliar a associação entre participação no programa Saúde Ativa Rio Claro (SARC) e níveis de atividade física (AF) entre mulheres adultas. Trata-se de um estudo caso controle realizado em sete unidades da Atenção Básica de Saúde de Rio Claro, São Paulo, Brasil. A amostra incluiu 111 mulheres participantes da intervenção (média de idade: 58 ± 13 anos). Para cada participante, foi selecionado uma não participante, correspondente a participante da intervenção por idade (± 5 anos) e por vizinhança. O programa oferece exercícios físicos multimodais duas vezes por semana por uma hora em cada sessão, bem como conselhos sobre autocuidado de saúde. A AF foi medida usando a versão longa do International Physical Activity Questionnaire (IPAQ). Enquanto 18,0% dos não participantes relataram praticar 150 min./semana de AF de lazer ou mais, 61,3% dos participantes atingiram esse limiar (OR=7,2; IC=3,8-13,3). Os participantes realizaram mais minutos em comparação com os não participantes, mesmo omitido os 100 min./semana de AF oferecidos pela intervenção (p<0,001). Além de fornecer 100 min./semana de AF, o SARC, uma intervenção de promoção de exercícios no contexto de atenção primária de saúde no Brasil, estimula os participantes a aumentar os níveis de AF em outros ambientes.

Palavras-chave: *Atividade motora; Atenção primária de saúde; Promoção de saúde; Saúde pública; Saúde da família.*

Introduction

Since the 1988 constitution, Brazil has a unified public health system. Primary health care units play a central role in the system; in most cases, being the first contact between the subject and the system[1]. Primary health care teams typically have physicians, nurses, nurse assistants and community health workers, but more recently the multidisciplinary teams can also include health professionals from different areas, including a Physical Education professional[1]. This team has a goal of caring out prevention and health promotion for population.

In Brazil, public primary health care units are distributed within the cities, and mainly deal with patients suffering from chronic diseases and other non-emergent health problems. Because wealthier individuals in Brazil either use private health care or pay for health insurance, public primary health care units are used mainly by individuals from intermediate or poor socioeconomic groups[2]. They need more health care compared with other socioeconomic groups, especially in the prevention and control of non-communicable diseases[1-3].

Physical activity promotion has been identified as an important strategy for disease prevention and health promotion[2]. However, despite all reported benefits of physical activity for health, most people do not meet the recommended levels of physical activity, particularly women and older adults[4,5]. Some community-wide interventions have been implemented around the world in order to tackle this public health problem[6-8].

Physical activity interventions at the community level have been useful to promote health in Brazil. Examples of such interventions include "Academia da Cidade" and "CuritibAtiva", each of them having demonstrated positive results in increasing physical activity levels and improving health[9-10]. International evidence suggests that physical activity interventions can also be delivered in primary health care settings[8,11-13].

Primary health care settings have been used as a strategic context to promote health through physical activity practice in Brazil[2]. Although physical activity interventions in primary health care are recommended by the Brazilian Ministry of Health and there is evidence that they can play a key role in changing the practice of health care providers[7], data about existing physical activity interventions in this context are still lacking[14]. Such studies are warranted because they can provide insights on the applicability of successful interventions to other settings[2,6,7]. In this context, the aim of this study was to evaluate the association between participation in SARC, an exercise promotion intervention in primary health care settings in Brazil, and physical activity levels among adult women.

Methods

A survey was carried out in Rio Claro, São Paulo, Brazilian in 2009. Rio Claro has a flat surface and is located in Sao Paulo state. Its population comprises 186,210 inhabitants and its human development index is 0.825. The study protocol was approved by the Sao Paulo State University ethics committee (protocol number: 5313) and written informed consent was obtained prior to data collection.

Saúde Ativa Rio Claro (SARC) Program is a local program launched in 2001 to promote physical activity in Rio Claro, São Paulo State. It includes a supervised physical activity intervention in 14 primary health care units. It is a partnership between the UNESP – University of State São Paulo and the City Health Department[16]. Initially, it was targeted for people with uncontrolled chronic disease and obese subjects. The program initially included only 20 participants from one primary health care unit in 2001. From 2001 to 2009, more than 900 people participated in it. By the years, the program started attending also friends, relatives of the participants and other heterogenic patients groups from the neighborhood around the health centers without any specific diseases.

Physical education teachers coordinate the activities, which include recreational, aerobic and neuromuscular exercise in light to moderate intensity, twice a week, for 60 minutes each session using alternative materials. Safer physical activities are prioritized because of the participants' health conditions. Of the 60 minutes of each class, approximately 50 are spent on walking and moderate physical activity practice. Health tips were provided in the end of all classes. The topics included: take more water, use sunscreen, do more minutes of exercise per week, eat healthy food, use light clothes to exercise, eg. The dissemination of the program has been performed over the years through flyers and counseling by the nurses, physicians and health service workers around the neighborhood of the health units. Most of them start in the program through an invitation of a SARC participant.

In addition to classes, SARC provides advice on healthy living through short health counseling in the end of the classes, and social events including lectures twice a year. In addition to that, capacity building events with health professionals take place yearly. The focus is on the benefits of physical activity in primary care and how the professionals can encourage people to be more active.

The intervention takes place in squares or other public areas around the primary health care units and attends from 20 to 40 users with different health conditions in each health center. At the time of the study, there were 213 individuals taking part in the intervention in 14 units around the city, most of them women (94.3%). From all primary health care units, we selected female participants with at least six months of participation and belonging to units with at least two years of PA intervention (seven centers). Men were excluded because of their small participation compared to women.

The sample included 111 women aged 20 years or more participating in the SARC intervention (mean age: 58 ± 13 years) who met the inclusion criteria. For each participant, we selected a non-participants subject (mean age: 57 ± 12 years), matched to the intervention participant by gender, age (± 5 years) and neighbor-

hood. This matched methodology was previously used in other Brazilian study about an ongoing physical activity program[11].

A questionnaire was administered by previously trained interviewer. They were trained to approach people at home and to apply questionnaires. Interviews took place at the participants' homes and lasted from 20 to 40 minutes. Interviews of non-participants were performed around the neighborhood, usually within two blocks from participants' home. Interviewers approached an average of 4.8 (± 5.5) houses before finding a neighbor meeting the inclusion criteria. Data collection lasted nine months.

We assessed sociodemographic characteristics, health-related variables, whether physician advised for physical activity practice, and whether individuals received information about the importance of physical activity for health. Categories of these variables were created based on the distribution of the items: *Age* - Divided into three categories based on the distribution of the sample; ≤49 years, 50–59 years, or ≥60 years or older; *Education level* - coded as less than 4 years, 4 to 12 years or ≥ 12 years; *Socioeconomic status* - It was classified using a standard Brazilian classification, which ranks families into five groups, from A (wealthiest) to E (poorest) based on household assets and schooling of the household head; *Marital status* - Divided into single, married, widower and divorced; *Perceived Health* – It was classified as excellent/very good, good or bad/very bad; Body Mass Index (*BMI)* – Divided into obese, overweight and normal; Chronic diseases - Self-report of chronic diseases: diabetes mellitus, arterial hypertension, cardiovascular and joint diseases. They were coded in 0, 1-2 or >2 chronic diseases; *PA information and Counseling* - The following question was used: "Have you ever been advised by a health professional for PA practice?" and "Have you ever received information about benefits of PA?" – yes or no; *Physical Activity* –Minutes per week of Leisure Time Physical Activity (LTPA) were assessed through the leisure-time section of the long version of the International Physical Activity Questionnaire (IPAQ)[17]. Participants were classified as inactive or active based on the global recommendation of physical activity for improving health[18]. We use a cut-off point of 150 minutes per week to all dependent variables (total LTPA, walking for leisure, moderate intensity PA), except for vigorous intensity physical activity (75 minutes a week). The perception of change in physical activity level in the leisure and transportation time after entering the intervention was asked by a questionnaire with three options. They were coded in "decreased", "did not change" or "increased".

We compared participants and non-participants of the intervention according to sociodemographic characteristics, health factors, counseling and PA information. We conducted descriptive statistics, compared percentages using the chi-square test and compared median using the Mann-Whitney. We also evaluated the associations between PA and participation in SARC using logistic regression, incorporating adjustment for socioeconomic status, age and education level. We used SPSS statistics (version 16.0) for all analysis and the significance level was set at 5%.

Results

Refusal rate for participants and non-participants was 0.0% and 20.7%, respectively. Table 1 shows the characteristics of the studied population and compares those who took part in the intervention and not. Most participants and non-participants, respectively, were elderly (49.5% and 47.7%), had five to 12 years of schooling (50.5% and 47.7%), belonged to intermediate socioeconomic groups (55.6% and 60.0%) and were married (67.6% and 62.4%).

Around 92.0% and 65.0% of participants and non-participants were advised by the health professional to exercise, respectively (p<0.001) (Table 2). The participants received more information about the importance of physical activity for health (92.7%) than non-participants (73.0%) (p<0.001) (Table 2). High proportions of overweight and obesity were found in both participants (45.0% and 27.5%) and non-participants (43.2% and 28.8%) respectively without significant difference between the groups. Around 53.2% of the participants have any chronic disease compared to 51.4% of the non-participants. Most individuals from both groups perceived their health as good (66.7% of participants and 64.0% of non-participants) (Table 2). Joining SARC increased LTPA (54.6%) and transportation PA (44.4%) according to the perception of the participants (Table 2). The participants reported 32.6 (±26.0) months of participation.

We found that participants performed more minutes per week of total LTPA compared to non-participants, even omitting the 100 min/wk of PA provided by SARC (p=0.000). Minutes per week in walking for leisure, total LTPA, total LTPA without participation on SARC and moderate-intensity PA were higher for participants (p=0.000) (Table 3), with the exception of vigorous-intensity PA (p=0.053).

Table 1 – Comparison analysis according to age categories, education level and socioeconomic status between participants and non-participants of SARC program (2009; n= 111).

Variables	Categories	Participants		Non- participants		p-value*
		n	%	n	%	
Age categories						0.897
	≤ 49	30	27.0	29	26.1	
	50 – 59	26	23.4	29	26.1	
	≥ 60	55	49.5	53	47.7	
Education level (years)						0.917
	<4	26	23.4	28	25.2	
	5 – 12	56	50.5	53	47.7	
	>12	29	26.1	30	27.0	
Socioeconomic status						0.196
	A1/A2/B1/B2	34	31.5	23	21.1	
	C1 and C2	60	55.6	67	60.0	
	D and E	14	13.0	19	14.0	
Marital status						0.167
	Single	6	5.4	4	3.7	
	Married	75	67.6	68	62.4	
	Widower	25	22.5	23	21.1	
	Divorced	5	4.5	14	12.8	

*Chi-Square test.

Table 2 – Counseling, PA information, health factors and physical activity characteristics of participants and non-participants of SARC program (2009; n= 111).

Variables	Categories	Participants		Non- participants		p-value[1]
		n	%	n	%	
Counseling and PA information						
Have you ever been advised by a health professional for PA* practice?	Yes	101	91.8	72	64.9	0.001
	No	9	8.2	39	35.1	
Have you ever received information about benefits of PA?	Yes	102	92.7	81	73.0	0.001
	No	8	7.3	30	27.0	
Health factors						
BMI** (weight/height^2)	Normal	30	27.5	31	27.9	0.964
	Overweight	59	45.0	48	43.2	
	Obesity	20	27.5	32	28.8	
Number of chronic Diseases	0	32	28.8	27	24.3	0.472
	1-2	59	53.2	57	51.4	
	>2	20	18.0	27	24.3	
Perceived health	Excellent/very good	21	20.6	19	17.1	0.434
	Good	68	66.7	71	64.0	
	Very bad/bad	13	12.7	21	18.9	
Leisure-time PA	Decreased	9	8.3			
	Did not change	40	37.0			
	Increased	59	54.6			
Transportation PA	Decreased	2	1.9			
	Did not change	58	53.7			
	Increased	48	44.4			

*PA – physical activity;.** BMI – Body Mass Index. ***SARC – Saúde Ativa Rio Claro; 1-Chi-Square Test.

The prevalence of physical activity in different intensities is shown in Table 4. Participants (61.3%) were more likely to achieve 150 min/wk of LTPA than non-participants (18.0%). The proportion of individuals 150 min/wk of walking for leisure was 30.6% and 9.0% among participants and non-participants respectively. In the moderate-intensity analysis, 17.1% of the participants and 3.6% of the non-participants reported achieving 150 min./wk. In terms of vigorous intensity PA, the proportions were 9.9% for participants and 2.7% for non-participants.

Results of the crude and adjusted logistic regression are presented in Tables 4. The adjusted analysis showed that participation in SARC was associated with reaching PA recommendations in total leisure-time physical activity (OR= 7.2; IC95%: 3.8-13.3), walking for leisure (OR= 3.9; IC95%: 1.8-9.6), moderate-intensity PA (OR= 6.2; IC95%: 1.9-19.6) and vigorous-intensity PA (OR= 4.0; IC95%: 1.0-15.2).

Discussion

The main finding of the present study was that participation in SARC increases the likelihood of meeting PA guidelines. In addition, participants reported that their PA level increased after entering the intervention. Although both groups were from the same environment and presented similar sociodemographic characteristics and knowledge about the importance of physical activity for health, they presented different behaviors regarding physical activity habits. The strongest finding of the study was participants performed more minutes per week of LTPA compared to the control group, even discounting the minutes per week provided by SARC.

The population attended by SARC is predominantly from low-income groups, older adults, and women; interestingly, these subgroups of the population have consistently been classified as less active than their peers in population studies[4,5]. This shows that SARC is in line with the equity principles of the Brazilian public health system[2]; the aim of reducing inequalities is being achieved.

In this context, previous studies have demonstrated that achieving long-term participation in ongoing programs is a challenge because people can modify their behavior in the long-run[3,18-20]. Family commitments, diseases, motivation, injury or work can be some adherence barriers[22-24]. The participants of SARC have participated for a long period in the program, which suggests good sustainability of this type of intervention.

This is the first study that analyzes the association between participation in an ongoing supervised PA intervention-taking place within primary health care units and PA levels in Brazil. Most of existing studies in primary health care have analyzed association of participation and physical fitness, inflammatory biomarkers or use of health services[25-27]. They are descriptive, qualitative, cross sectional or quasi-experimental studies with small samples[9-10,14,15,28,29]. Most of them presented few data about positive impact of PA programs[14].

Table 3 – Comparison analysis according to leisure-time physical activity categories between participants and non-participants of SARC program (2009; n= 111).

Variables	Participants		Non- participants		p-value*
	Median	Interquartile Range	Median	Interquartile Range	
Walking for leisure (min./week)	100	180	0	0	0.001
Moderate-intensity LTPA (min./week)*	0	0	80	120	0.001
Vigorous-intensity LTPA (min./week)**	0	0	0	0	0.053
Total LTPA (min./week)**	200	180	0	30	0.001
Total LTPA without participation on SARC	100	180	- 100	30	0.001

*Mann Whitney test.

Table 4 – Unadjusted and adjusted prevalence odds ratios for participation in SARC associated with leisure-time physical activity recommendation (2009; n= 111).

Variables	Total leisure-time PA (≥150 min./week)			Walking for leisure (≥150 min./week)			Moderate-intensity PA (≥150 min./week)			Vigorous-intensity PA (≥75 min./week)		
Participation on SARC	%	OR (95% CI)*	OR (95% CI)**	%	OR (95% CI)*	OR (95% CI)**	%	OR (95% CI)*	OR (95% CI)**	%	OR (95% CI)*	OR (95% CI)**
No	18.0	1.0	1.0	9.0	1.0	1.0	3.6	1.0	1.0	2.7	1.0	1.0
Yes	61.3	7.2 (3.8-13.3)	6.6 (3.5-12.6)	30.6	4.4 (2.0-9.5)	3.9 (1.8-9.6)	17.1	5.5 (1.8-16.8)	6.2 (1.9-19.6)	9.9	3.9 (1.0-14.6)	4.0 (1.0-15.2)

*Unadjusted. ** Adjusted by socioeconomic status, education level and age categories.

Studies in Recife, and Curitiba found results which are somewhat similar to ours; exposure to large-scale PA interventions was associated with higher physical activity levels[9,10]. However, the results are not directly comparable to ours, because SARC takes place in primary health care settings, differently from these other interventions taking place in parks and other places.

In all capitals of Brazil, men (35.7%) are more active than women (45.2%) in LTPA[5]. Also, men are less likely to adhere to community PA programs[20-23]. Men tend to prefer sports or individual activities instead of exercising in community groups[24]. In the specific case of primary care, this profile is even more striking. SARC attends only 5.6% of men and this was the reason why only women were studied. Scraiber et al.[24] showed that primary care has been used mainly by women in Brazil.

The SARC program is a multiple-component intervention, designed to deliver supervised exercise to partially meet the physical activity recommendations. In order to reach physical activity guidelines, during the supervised exercise sessions, SARC professionals advise participants to be active in their leisure time, provide socio-educational events including lectures on healthy lifestyle, tours and hikes to places suitable for physical activity practice, and promote meetings with health professionals to discuss strategies to promote physical activity. As a whole, these strategies seem effective to increase the likelihood of participants to meet physical activity guidelines.

This study has some limitations. We had a higher response rate among participants compared with non-participants. In addition, because the intervention was already taking place when we planned to evaluate it, we were obligated to use a design with some similarities to a case control epidemiologic design. Due to the nature of the data, we were unable to establish temporality; in this case, it is possible that participants of SARC were already more active than non-participants even before the intervention started. However, one should note that because our participants are predominantly low-income, elderly females, it is unlikely that it is the case, because these groups have consistently been shown to be highly exposed to physical inactivity[4]. Therefore the intervention evaluated is likely to be effective for increasing levels of physical activity exactly of the least activity groups of the population, thus reducing inequalities in physical activity practice.

We have some limitations to generalize our findings as well, because we only evaluated women from primary health care units in a middle town in Brazil. We suggest that future studies carry out experimental studies since this study present limited conclusion about effectiveness of the intervention. However, the results are promising to other primary health care settings in the country and other countries since the profile of attended people in this context is similar (typically middle-aged and older adult females) to others. We are also aware that the instrument IPAQ (long version) overestimates participation in physical activity when compared against accelerometers[30]. However, this bias is likely to be of similar magnitude in both groups (participants vs. non-participants), and therefore, our relative risks are likely correct or even underestimated.

We present here one of the first studies in low and middle income countries evaluating a large scale physical activity intervention delivered through the primary health care system. In conclusion, the SARC program showed positive results and is a good example of physical activity promotion in primary care settings. Therefore, expansion of the SARC as a health promotion strategy to other Brazilian localities is desirable and can benefit the health of the population.

Competing interests

The authors declare that they have no competing interests.

Authors' contributions:

All authors made substantial contributions to the design of the study. Gomes GAO and Kokubun E, were responsible for the initial conception and design the study. Maciel FM, Daniel JC and Gomes TC, were involved in the acquisition of the data. Gomes GAO interpreted the data and wrote the draft version. Hallal PC and Kokubun E were involved in the writing of the paper, critical revision of the manuscript, and have given their approval for the submitted manuscript. All authors read and approved the final manuscript.

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