



Isolated and simultaneous perceived barriers to physical activity counseling

Barreiras percebidas isoladas e simultâneas para o aconselhamento para atividade física

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ABSTRACT

The aim of this study was to determine the prevalence of perceived barriers and their isolated and simultaneous association with the practice of counseling for physical activity by primary health care workers. This is a cross-sectional study with 591 health workers, who work in the Family Health Teams. Counseling for physical activity was defined as the accomplishment of such a practice for more than six months. The barriers investigated were lack of time, lack of knowledge, lack of professionals to guide, lack of available instructional material, lack of environmental resources and lack of financial resources of the user. Binary logistic regression was used to evaluate the possible relationships between perceived barriers and the practice of counseling for physical activity. Non-counselors reported a lack of time (68.8%), knowledge (68.5%) and orientation (63.2%) compared to their peer counselors ($p \leq 0.001$). Professionals with three or more barriers were more likely not to advise (OR = 3.91; 95%CI: 2.10 - 7.29) when compared to those who reported no concurrent barriers. These results indicate that the simultaneity of perceived barriers is negatively associated to the practice of counseling for physical activity of health workers.

Keywords: Health personnel; Counseling; Motor activity; Primary health care.

RESUMO

O objetivo deste estudo foi determinar a prevalência das barreiras percebidas e sua associação isolada e simultânea com a prática de aconselhamento para atividade física por profissionais da atenção primária à saúde. Foi conduzido um estudo transversal com 591 profissionais da Estratégia de Saúde da Família. O aconselhamento para a atividade física foi definido como a realização de tal prática há mais de seis meses. As barreiras investigadas foram a falta de tempo, falta de conhecimento, falta de profissionais para orientar, falta de material instrucional disponível, falta de recursos ambientais e falta de recurso financeiro do usuário. Utilizou-se a regressão logística binária para avaliar as associações entre barreiras percebidas e a prática de aconselhamento. Profissionais não aconselhadore relataram em maior proporção a falta de tempo (68,8%), de conhecimento (68,5%) e de orientação (63,2%) comparados aos seus pares aconselhadore ($p \leq 0,001$). Profissionais com três ou mais barreiras apresentaram maior chance de não aconselhar (OR = 3,91; IC95%: 2,10 - 7,29) quando comparados com aqueles que não relataram barreiras simultâneas. Os resultados sugerem que a simultaneidade de barreiras percebidas contribui negativamente na prática do aconselhamento para atividade física.

Palavras-chave: Pessoal de saúde; Aconselhamento preventivo; Atividade motora; Atenção primária à saúde.

Introduction

Several governmental strategies are gradually being implemented in Brazil to consolidate the promotion of physical activity in the context of the Unified Health System (SUS)¹. Considering that primary health care (PHC) is the front-line of health promotion and care of Brazilian people², one of the main strategies used in promoting physical activity in this context is cou-

nseling³, which can be understood as a general and structured orientation directed to motivate a user or patient of the SUS to initiate or continue physical activity practice, especially in the domains of leisure and transportation⁴.

Previous studies have shown beneficial effects of physical activity counseling⁵, as well as improvement in clinical and physical fitness indicators⁶⁻⁸. In considering

its systemic development, this is also a low-cost strategy that can be performed by any well-trained health worker and in different contexts (e.g., routine health care, home visits, health promotion)⁹. The Brazilian National Policy on Health Promotion indicates physical activity counseling as one of the priority themes¹⁰. However, it is observed that few *SUS* patients have received counseling aimed at performing physical activity to improve health¹¹.

Some perceived barriers may explain the low adherence of health workers to physical activity counseling to health users^{11,12}. These may be related to the training of professionals (either in initial training and/or continuing education), absence of support (lack of teaching materials, lack of referral options), sociocultural issues of users (poor living conditions, lack of success in changing patients' behavior),¹³ or the management of health services (lack of time due to excess demand, low priority for preventive actions)^{12,14}.

However, it should be mentioned that the identification of almost all of these barriers occurred in international studies conducted in high-income countries where health systems and social structures are quite discrepant from the Brazilian reality. In addition, these studies only focused on describing and/or verifying isolated association of such barriers in health workers' counseling practices, thereby ignoring the cumulative or synergistic effect such barriers may have on worker practice. Thus, analyses involving the possible associations of simultaneous exposure to perceived barriers by Brazilian health professionals working in the *SUS* context may contribute to a better understanding of the factors that hinder the actions of promotion of physical activity in basic health units. Therefore, this study aimed to determine the prevalence of perceived barriers and their isolated and simultaneous associations with the lack of physical activity counseling by PHC workers.

Methods

A cross-sectional epidemiological study was conducted targeting health workers of the Family Health teams in the city of Joao Pessoa, Paraíba. The following parameters were adopted in the sample calculation: finite population size equal to 2,009 health workers (192 physicians, 204 nurses, 194 nursing assistants and 1419 community health agents); 50% counseling prevalence for performing physical activity; acceptable maximum error of five percentage points; confidence level of 95%; designing effect equal to 1.5; 30% increase for

losses and refusals. This resulted in a sample size of 628 health workers (62 physicians, 63 nurses, 62 nursing assistants and 441 community agents).

Participants were selected using single-stage clusters, considering that each health team has at least one physician, one nurse, one nursing assistant and seven community health agents.

Forty-three out of 98 health units were randomly selected, considering stratification by health district (I, II, III, IV and V) and size of units (according to the number of family health teams): those with a (isolated) team; with two and three teams; and with four and five teams, maintaining representation by professional category. We included workers from the permanent and temporary staff of the Municipal Health Department who had been working for at least three months. Health workers who were inactive, on vacation or medical leave were excluded.

Data were collected by a previously trained research team between May and October 2017. All information was collected using the previously validated "Assessment Questionnaire for Counseling and Physical Activity Promotion by Health Workers"¹⁵. The instrument covered questions about the level of physical activity, knowledge, skills and attitudes related to the physical activity subject, sociodemographic data, initial and continuing training of workers, among others. Participants filled out the questionnaire at health facilities during team meetings, following instructions provided by the research team.

Physical activity counseling was assessed by asking the question "Considering physical activity counseling as a structured and general advice for physical activity practice in different domains (i.e. commuting and leisure), mark an option that better represents your behavior related to physical activity counseling". A six option scale based on the transtheoretical model¹² was used as follow: precontemplation (i.e. I do not advise physical activity and I do not intend to begin); contemplation (i.e. I do not counsel physical activity, but I am starting think to do); preparation (i.e. Sometimes I do counsel physical activity, but not in a regular basis); action (i.e. I counsel physical activity, but I started to do it just recently); maintenance (i.e. I have been counseling for physical activity for at least 6 months); relapse (i.e. I used to advise physical activity, but I do not do anymore). Health workers who had not performed such practice for more than six months were classified as "non-counselors" ($\kappa = 0.92$; 95%CI: 0.87 - 0.97).

Barriers to physical activity counseling were identified through a multiple-choice question with six items: “lack of time due to job demand”, “lack of knowledge about the subject”, “lack of educational material (i.e. folder, booklets)”, “lack of environmental resources (i.e. parks, streets)”, “lack of specialized professional to teach how to do it” and “lack of financial resources of the user”. The option “other” was given in a blank field and health workers could mark more than one option. Satisfactory reliability levels were found for this measure, with kappa values ranging from 0.56 to 0.83.

Finally, independent variables included gender (male and female), age (categorized as: 20-29, 30-39, 40-49 and ≥ 50 years of age), educational level (high school, technical course, higher education, graduation), skin color (parda, black, white, yellow and indigenous), gross income based on minimum wage (*SM - salário mínimo* [R\$ 937,00]) (grouped in 1 to 2 SM, 3 to 4 SM and ≥ 5 SM) and number of patients attended per day (classified as excessive [3rd tertile] *vs* non-excessive [1st/2nd tertiles]), cut-off points were: 30, 20, 60 and 32, respectively, for doctors, nurses, nursing technicians, and community health workers]. Reliability of socio-demographic variables was high with kappa values higher than 0.87.

Descriptive analysis included frequency distribution for categorical variables, mean and standard deviation for continuous variables. Chi-square test for heterogeneity was used to compare the proportion of workers who reported barriers according to physical activity counseling status.

Binary logistic regression was used to evaluate the crude and adjusted association between the isolated and simultaneous barriers and physical activity counseling. A score was created based on the count of perceived barriers, ranging from none to six barriers. Potential confounders considered in this study were gender, age, educational level and number of patients attended per day. The independent variables were selected by the backward method, and all were considered in elaborating the multiple model (including isolated barriers), being introduced at the same level of analysis and kept in the model together with the confounding factors regardless of their respective levels of significance. Those with higher values for deviance, BIC and AIC were maintained, as well as those that showed changes of at least 10% in the ORs (Odds Ratios), regardless of the p-value of the variable. In order to ascertain the quality of the models, variance inflation factor values (less

than five were considered adequate) were used to avoid the possibility of multicollinearity. The Hosmer-Lemeshow test was used to evaluate the quality of fit of the model.

Interaction was tested to analyze if the association between the isolated and simultaneous barriers and the practice of physical activity counseling were different in relation to the professional category (undergraduate *vs* high school/technical level). However, this variable had no significant interaction with the other study variables ($p > 0.05$). The statistical analyses were performed in Stata 13.0, adopting a significance level of 5% for two-tailed tests.

This study was approved by the Human Research Ethics Committee of the Health Sciences Centre from the Federal University of Paraiba (Protocol number 0349/16. CAAE: 56780116.5.0000.5188).

Results

From the 667 health workers participating in the study, 18 refused to participate, 20 were not found on at least three visits from the data collection team and 38 were excluded because they did not meet the inclusion criteria. Thus, the final sample of this study was composed of 591 health workers (88.6%). Calculations carried out *a posteriori* showed that this sample has a power of 80% ($\beta = 20\%$ and $\alpha = 5\%$) to detect odds ratios equal to or greater than 1.63 as significant with prevalence of outcome between 50.7% and 54.9% (among the exposed) and between 62.4% and 66.5% among the unexposed.

Table 1 shows that the majority of health workers were female ($n = 459$, 78.6%), with a mean age of 43.2 years (± 9.6), married ($n = 345$, 58.6%), non-white ($n = 424$, 72.2%), with monthly income of 1 to 2 minimum wages ($n = 472$, 80.3%) and did not provide counseling for physical activity for at least six months ($n = 314$, 53.6%).

A higher proportion of non-counselors reported lack of time (68.8%), knowledge (68.5%) and guidance by a specialized professional (63.2%) as barriers ($p < 0.05$) compared to their peers who do counsel for physical activity (Figure 1).

Table 2 presents the crude and adjusted analysis for the association between perceived barriers and not counseling for physical activity by health workers. After adjusting for all barriers and other variables, three barriers remained associated: lack of time (OR = 2.08; 95%CI: 1.26 - 3.42), lack of knowledge (OR = 2.39; 95%CI: 1.55 - 3.69) and lack of orientation of a specialized professional (OR = 1.63; 95%CI: 1.09 - 2.46).

Table 1 – Sociodemographic characteristics, professional demands and practice of physical activity counseling of health workers, stratified by profession category, Joao Pessoa, Northeast Brazil, 2017.

Variables	Physician		Nurse		Nurse assistant		CHW*		All	
	n	%	n	%	n	%	n	%	n	%
Gender										
Female	29	61.7	65	97	53	100	311	74.8	459	78.6
Male	18	38.3	2	3	-	-	105	25.2	125	21.4
Age (in years)										
20 – 29	17	37.8	3	4.5	1	1.9	10	2.4	31	5.3
30 – 39	9	20	21	31.8	18	33.3	174	42	222	38.2
40 – 49	2	4.4	17	25.8	20	37	140	33.7	179	30.8
≤ 50	17	37.8	25	37.9	15	27.8	91	21.9	149	25.7
Education										
Complete high school	-	-	-	-	-	-	216	51.5	216	36.6
Technical course	-	-	-	-	44	80	76	18.1	121	20.5
Higher education	25	53.2	16	23.2	7	12.7	97	23.2	145	24.5
Graduation	22	46.8	53	76.8	4	7.3	30	7.2	109	18.4
Gross income										
1 to 2 minimum wage	-	-	-	-	55	100	416	100	472	80.3
3 to 4 minimum wages	6	12.8	65	94.2	-	-	-	-	71	12.1
≤ 5 minimum wages	41	87.2	4	5.8	-	-	-	-	45	7.6
Skin color										
Parda	22	46.8	32	46.4	30	54.6	270	64.4	357	60.0
Black	-	-	2	2.9	5	9.1	43	10.3	50	8.4
White	23	49.0	30	43.4	18	32.7	91	21.7	162	27.5
Yellow	1	2.1	4	5.8	1	1.8	8	1.9	14	2.4
Indigenous	1	2.1	1	1.5	1	1.8	7	1.7	10	1.7
Number of patients attended per day										
Excessive [3rd tertile]	14	29.8	20	29	18	32.7	82	19.6	135	22.8
Non-excessive [1st/2nd tertiles]	33	70.2	49	71	37	67.3	337	80.4	456	77.2
Physical activity counseling										
Do counsel	35	74.5	41	60.3	17	31.5	179	42.9	272	46.4
Do not counsel	12	25.5	27	39.7	37	68.5	238	57.1	314	53.6

*CHW = Community health work

There was a tendency to increase the odds of not counseling physical activity as the number of barriers reported by workers increased (OR = 3.91; 95%CI: 2.10 - 7.29) - Figure 2. The Hosmer-Lemeshow test result ($\chi^2 = 7.17$; $p = 0.34$) showed that the model fit the data well. The values of the variance inflation factor - VIF did not identify multicollinearity (VIF < 5; Mean VIF = 1.41).

Discussion

The main perceived barriers to physical activity counseling among health workers were lack of time, know-

ledge and specialized guidance on the subject. Health workers who reported a greater number of barriers were more likely not to undertake counseling for physical activity for more than six months.

A common obstacle to encompass physical activity into the daily routine of primary healthcare and associated with non-counseling is lack of time, which has consistently been cited both in quantitative^{11,16} and qualitative^{17,18} studies. A systematic review pointed out lack of time during the health consultations, lack of knowledge and/or skill, followed by the absence of periodic training in physical activity counseling as

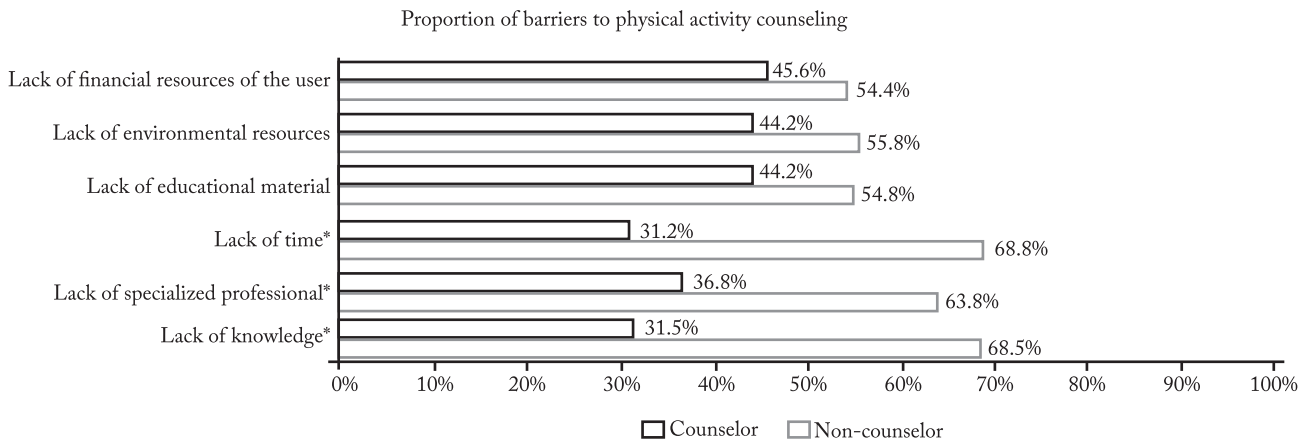


Figure 1 – Prevalence of perceived barriers to physical activity counseling among health workers from Joao Pessoa, Northeast Brazil, 2017. * p < 0.05 for the chi-square test.

Table 2 – Crude and adjusted analysis of the association between perceived barriers and non-performance of physical activity counseling among health workers from Joao Pessoa, Northeast Brazil, 2017.

Variables	Do not counsel for physical activity	
	Crude OR (95%CI)	Adjusted OR* (95%CI)
Lack of time		
No	1	1
Yes	2.13 (1.34 - 3.40)	2.08 (1.26 - 3.42)
Lack of knowledge		
No	1	1
Yes	2.27 (1.52 - 3.39)	2.39 (1.55 - 3.69)
Lack of orientation from specialized professional		
No	1	1
Yes	1.74 (1.21 - 2.50)	1.63 (1.09 - 2.46)
Lack of educational material		
No	1	1
Yes	1.14 (0.81 - 1.60)	1.09 (0.74 - 1.61)
Lack of environmental resources		
No	1	1
Yes	1.11 (0.74 - 1.65)	1.22 (0.78 - 1.91)
Lack of financial resources of the user		
No	1	1
Yes	0.68 (0.42 - 1.10)	0.62 (0.37 - 1.08)

*Adjusted for all perceived barriers plus gender, age, education and number of patients attended. OR = odds ratio; 95%CI = confidence interval

frequent barriers to performing physical activity counseling by health workers¹³. Patra et al.¹⁹ found physicians who attended up to 30 patients daily were five times more likely to perform physical activity counseling compared to their peers who had a greater number of daily consultations.

A telephone survey conducted in Brazil with physi-

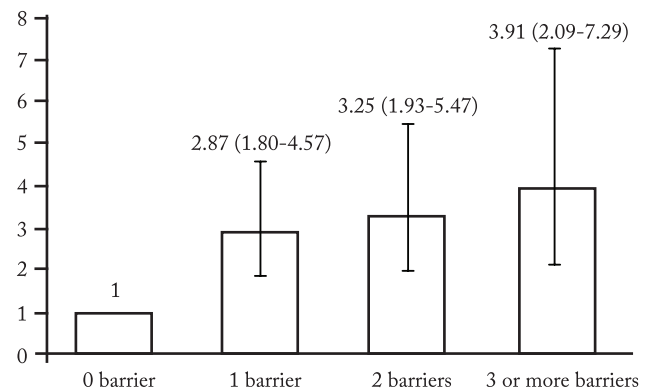


Figure 2 – Simultaneity of perceived barriers and non-performance of physical activity counseling in health workers in Joao Pessoa, Northeast Brazil, 2017. * p < 0.001 for linear trend

cians and nurses showed a linear relationship between the weekly number of patients attended and the workers' reports about lack of time as a barrier to counseling¹¹. These findings point to the need to build and accommodate a work process in the PHC which will provide an organizational solution to this problem in order to ensure a better balance between promotion, prevention, treatment and rehabilitation actions. Although service organization is important, structural determinants can directly and negatively impact on the capacity of health workers to act on an educational perspective²⁰.

Another commonly associated factor with non-counseling for physical activity is the lack of professional knowledge about how to do it. In fact, available evidence suggests that general recommendations as well as health education strategies to address physical activity is poorly embraced by initial training courses for physicians, nurses and other health workers^{4,21}. On the other hand, curricula which systematize physical activity as a subject of physicians training seems to be effective for

improving attitude, knowledge, skills and self-efficacy of the graduates to perform physical activity counseling²¹.

Training the health workforce seems to be critical for consolidating physical activity counseling as a health promotion strategy in PHC. It may contribute to the disruption of the still predominant biological, curative and physician-centered practices in PHC. On the other hand, it may help consolidate structuring principles and practices in health advocated by the National Primary Care Policy². Ideally, health work training should encompass both initial (i.e. undergraduate courses) and continuing education (i.e. multiprofessional residence, in-service training).

Multiprofessional residence can contribute with different backgrounds, willing to move between different knowledge centers, articulate their specific knowledge in the organization of work, and allow both share actions and delegate activities to other health workers in the form of a collaborative practice. Therefore, strategies based on training PHC residents on physical activity counseling comprise an important step to disseminate this educational intervention to health users²². In this same study, the authors reinforced the need for educational actions which are more specifically aimed at increasing the perception of self-efficacy and positive attitudes of residents, seeking to contribute to attenuate the perception of barriers and increase the probability of engagement in this practice²².

While curricular reforms and multiprofessional residency do not clearly cover the promotion and education for physical activity subjects in the Brazilian universities, an alternative and already available strategy to face this deficiency comprises the in-service training. The well-known Family Health Support Center, now called the Family Health and Primary Health Care Expanded Support Center (*NASF-AB*), comprises an multiprofessional team aimed at expanding the action scope of primary health care teams, providing specialized rearward training in health actions and increasing the effectiveness of healthcare in primary care²³. Through technical and pedagogical support to the teams, as well as the assistance dimension of support, health workers of several scientific areas can assist initiatives of health teams, and collaboratively build working processes that promotes health care integrality. Physical education comprises the list of possible professional categories on *NASF-AB*, and therefore has the potential to lead actions focused on physical activity promotion and health education.

Perception of lack of environmental resources, instructional material and financial resources did not present an isolated association with physical activity counseling; however, it was cited by half the workers, and therefore also deserves attention when discussing actions to promote health in the community. These aspects contributed to the simultaneity analyses, which indicated that health workers who perceive a greater number of barriers have a greater chance of not performing physical activity counseling. Such a finding suggests that the perceived barriers to practice counseling for physical activity are prone to accumulate. This is possibly associated to other factors such as the development, implementation and effect of socio-organizational and sociopolitical innovation, resources and support, as well as characteristics of workers, users and the socioeconomic context²⁴.

A closer connection between referral teams and *NASF-AB* workers can potentially relieve some of the barriers perceived by doctors, nurses and community health workers. With support from specialized professionals it is possible to face the shortage of instructional material (i.e. collective construction of folders and educational materials), knowledge and intervention models (i.e. discussion of methodological alternatives for intervention), time (i.e. optimization and rationalization of work processes) and even environmental resources (i.e. mapping of the territory and creation of physical activity networks)²³. In addition, the *NASF-AB* worker can form a link with the other health network equipment and services, such as the Health Academy Program (*Programa Academia da Saúde - PAS*), which was proposed as a key element for expanding and articulating actions to promote physical activity within the scope of PHC, aiming to promote health and quality of life for the population, based on the requalification and/or construction of buildings with infrastructure to physical activity practice, linking educational health actions that foster favorable conditions for health development and the empowerment of individuals and communities²⁵.

Although the questionnaire used has an open field for including other barriers by the respondents, it is possible that many important and determinant aspects to perform counseling have not been contemplated. Care in constructing and validating the instrument contributed to the quality of the information, but the effects of suggesting barrier options are unknown. Also, we are unaware of the effect of data collection period on the counseling practices as well as time of

health worker experience at the health unit. Therefore, qualitative studies may aid in the more comprehensive and in-depth understanding of the investigated phenomenon.

We can therefore conclude that health workers who perceive educational barriers, as well as those related to the structure and functioning of health services, are more unlikely to perform physical activity counseling. The scenario is even worse when increasing the number of perceived barriers. Thus, acting on the physical activity theme in the initial, continuous and in-service education of health workers seems to be fundamental to promote changes in professional practices and the organization of work itself in PHC, as well as to contemplate one of the priority guidelines in the context of Brazilian health promotion policies. Multiprofessional health teams that includes physical education professionals is, therefore, important to cover some of these needs.

Conflict of interest

The authors declare no conflicts of interest.

Autor's contributions

Souza Neto JM, participated in the article design, data collection and analysis, literature review and manuscript writing. Guerra PH, contributed to the writing and critical revision of the manuscript. Rufino EA, participated in the collection and analysis of data and writing of the manuscript. Costa FF, participated in all stages of the study, including article design, data collection and analysis, and critical review of the manuscript.

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