Rev Rene. 2021;22:e61717.
DOI: 10.15253/2175-6783.20212261717
www.periodicos.ufc.br/rene

Original Article

Factors that interfere with total physical inactivity in overweight women*

Fatores que interferem na inatividade física total em mulheres com excesso de peso

How to cite this article:
Mussi FC, Nascimento TS, Palmeira CS, Pitanga FJG, Ferreira FS, Coelho ACC, et al. Factors that interfere with total physical inactivity in overweight women. Rev Rene. 2021;22:e61717. DOI: https://doi.org/10.15253/2175-6783.20212261717

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*Extracted from project entitled "Monitoramento remoto de enfermagem de mulheres com excesso de peso", Universidade Federal da Bahia, 2015.

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ABSTRACT

Objective: to investigate the variables that interfere with total physical inactivity in overweight women. **Methods:** cross-sectional research that collected sociodemographic data, self-perceived health, self-efficacy for physical activity, weight, and height in 142 women. The International Physical Activity Questionnaire was used to evaluate physical activity. Descriptive and inferential statistics were used. A 5% statistical significance level was adopted. **Results:** the prevalence of total physical inactivity was 34.5%. A significant association between total physical inactivity and age was found in the bivariate analysis. In the multivariate analysis, only women with regular and poor self-perceived health showed an increase of 124% and 150%, respectively, of total physical inactivity. **Conclusion:** physical inactivity was associated with regular and poor self-perception of health, being a health parameter for the development of health promotion policies and actions.

Descriptors: Motor Activity; Epidemiologic Factors; Women; Obesity; Sedentary Behavior.

Objetivo: investigar as variáveis que interferem na inatividade física total em mulheres com excesso de peso. **Métodos**: pesquisa transversal que realizou levantamento de dados sociodemográficos, autopercepção de saúde, autoeficácia para atividade física, peso e altura em 142 mulheres. O *International Physical Activity Questionnaire* foi utilizado para avaliar a atividade física. Empregou-se estatística descritiva e inferencial. Adotou-se significância estatística de 5%. **Resultados**: a prevalência de inatividade física total foi 34,5%. Constatou-se associação significante entre inatividade física total e idade na análise bivariada. Na análise multivariada apenas mulheres com autopercepção de saúde regular e ruim apresentaram aumento de 124 e 150%, respectivamente, da inatividade física total. **Conclusão**: a inatividade física associou-se à autopercepção de saúde regular e ruim, sendo um parâmetro de saúde para a elaboração de políticas e ações de promoção à saúde.

Descritores: Atividade Motora; Fatores Epidemiológicos; Mulheres; Obesidade; Comportamento Sedentário.

Received: Jan. 8th 2021; Accepted: Apr. 19th 2021.

Introduction

Regular physical activity contributes to physical, mental and social health, promoting well-being and healthy aging. Despite this, it is estimated that 23.0% of the world population has not reached the global levels recommended in 2016[1]. In Brazil, the insufficient level of physical activity reached 44.8% of the adult population in 2019[2].

Physical inactivity exposes more than 1.4 billion adults to the risk of developing or exacerbating chronic noncommunicable diseases[3]. The economic impact of these diseases is costly and accounts for the high cost of medications, hospital admissions, and clinic visits. The costs of the physically inactive population and chronic diseases are included in the major public health expenditures[4].

Physical activity is defined as any body movement with energy expenditure greater than resting levels[1]. Its domains include work, commuting, home environment, and leisure[5] and, if performed regularly, with sufficient duration and intensity, brings benefits to health, including fighting obesity[1]. To obtain benefits, it is recommended to practice at least 150 minutes per week of light or moderate intensity or, at least, 75 minutes of vigorous activity per week[1]. Total physical inactivity is characterized when the individual does not reach this recommendation, considering the analysis of the dimensions of physical activity.

The factors that interfere with physical inactivity have been the subject of recent national[6] and international research[7-10] mainly conducted with the general population and workers. In these, gender issues such as the roles of wife and caregiver, body-related experiences, common mental disorders, sleep pattern[8], age[8-9], social support, self-efficacy (stress, lack of motivation, pleasure, energy, sports skills), financial conditions, built environment[9-10], public safety, education level[8,10], self-evaluation of health, use of technologies, and climate[9] stand out.

However, studies on factors associated with the level of physical activity in overweight and obese women are scarce. We highlight an American study that observed that fear of injury and social influence (support from family or friends and cultural barriers) increased by 2.3 times the probability of a barrier to physical activity in overweight women compared to those with normal weight[7]. No current studies evaluating factors associated with insufficient total physical activity level, specifically in overweight women, were found in the national and international literature, even though physical inactivity is more frequent in females and physical activity is a critical point in combating the adverse effects of obesity, recognized as a global public health problem[1].

The identification of variables associated with the level of total physical inactivity, proposed in this investigation, advances the knowledge of barriers faced by overweight women to engage in this practice and shows their vulnerability to disease. Moreover, it can guide the health team in creating and conducting effective strategies and educational programs to minimize health risks.

Based on the above, the present study aimed to investigate the variables that interfere with total physical inactivity in overweight women.

Methods

Cross-sectional research conducted in a reference outpatient clinic for overweight people, users of public health services, in Salvador, Bahia, Brazil. About 300 people were enrolled in this outpatient clinic, of which 91.0% were women, who justified the inclusion of females in the study.

In consulting the medical records, 174 women met the inclusion criteria: being overweight (body mass index ≥25 kg/m^2), aged eighteen years or older, having had a medical appointment in the last year, and having a landline and/or mobile phone. As exclusion criteria, we defined physical limitations such as lower limb amputation to measure weight, height, and waist circumference and/or cognitive limitations to answer the research questions, psychiatric disorders, use of

weight reduction medications, and having undergone bariatric surgery. Eligible women were invited to participate in the study by telephone.

Data were collected from July 2016 to March 2017. The interview technique was used for data collection and anthropometric assessment, in a private room. We also used an instrument with multiple choice questions about sociodemographic variables, including age, self-reported race/color, marital and employment status, education, monthly family income, and dependents at home.

The International Physical Activity Questionnaire (IPAQ), long version, in Portuguese[5] was used to assess the level of physical activity, which consists of questions about the frequency (days per week), duration (time per day) and intensity (mild, moderate and vigorous) of physical activity in the domains of work, commuting, home and leisure. The classification of physical activity level by domain met the following criteria: a) Very active (performed vigorous activity for ≥ five days/week and ≥30 minutes (min.)/session or ≥ three days/week and ≥20min/session + moderate activity or walking ≥ five days/week and ≥30min/session; b) Active (performed vigorous activity for ≥ three days/week and ≥20min/session or moderate activity or walking ≥ five days/week and ≥ 30 min/session or any activity added together ≥ five days/week and ≥150min/week including walking + moderate activity + vigorous activity); c) Insufficiently active (performed insufficient activity by not meeting frequency or duration recommendations); d) Sedentary (did not perform physical activity for at least 10 continuous minutes during the week).

The level of physical activity was analyzed in each of the four domains. Women who were highly active/active in at least one domain were classified as highly active/active in the total physical activity level, and those who did not meet this recommendation in any domain were considered insufficiently active/sedentary, i.e., inactive in the total physical activity level.

Self-perception of health was raised by the question: how do you judge your current health?[11]. The alternatives for this question were: awfully bad, bad, regular, good and exceptionally good, being later recategorized into incredibly good/good; regular; bad/awfully bad.

Self-efficacy for physical activity was assessed by a specific scale[12] with 10 items, divided into two blocks and analyzed separately: 1) Performance of leisure-time walking (5 items) and 2) Performance of moderate and/or vigorous physical activity (5 items). The scores were obtained by summing the answers in each block. The answer "yes" was assigned a value of one, and the answer "no" was assigned a value of zero. The total score of the scale ranges from 0 to 10 points. The scale does not propose cut-off points, but the higher the score obtained, the higher the self-efficacy. The scores obtained by quartiles made it possible to classify women's self-efficacy in good (7 to 10 points); satisfactory (5 to 6 points); fair (3 to 4 points), and poor (0 to 2 points). For further analysis, the classifications were grouped into good/satisfactory and regular/bad.

Anthropometric measurements were measured according to specific procedures[13]. For weight, a Techline® TEC 30 digital scale was used, with 0.1kg accuracy and maximum load of 150kg, and for height, a portable stadiometer was used, graduated every 0.5cm. The body mass index (BMI) was obtained by the formula BMI=weight/height^2, adopting the classification overweight (25 to 29.9kg/m^2); obesity grade I (30 to 34.9kg/m^2); obesity grade II (35 to 39.9kg/m^2) and obesity grade III (BMI≥40kg/m^2)[13]. Next, BMI was recategorized into overweight and obesity.

Data were analyzed by STATA® version 12. Categorical variables were analyzed as absolute and percentage frequencies, and continuous variables as means and standard deviation. The dependent variable was total physical inactivity, and the independent variables were sociodemographic, BMI, number of comorbidities, self-perception of health, and self-efficacy for physical activity. The prevalence ratio with the respective 95% confidence interval was used to verify the association between the independent variables

and total physical inactivity. In the bivariate analysis, Pearson's chi-square test was used, and the independent variables with p≤0.20 were selected for multivariate modeling. In this first phase, the goodness of fit of the logistic regression model was evaluated based on the degree of accuracy, the Hosmer-Lemeshow test, and Akaike's Information Criterion (AIC). Since the total physical inactivity event was common (34.5%), we applied the Robust Poisson regression model, calculating the prevalence ratio (PR) with the respective 95% CI. The level of statistical significance adopted for the study was 0.05.

The study was approved by the Research Ethics Committee, opinion number 1,152,259/2015, in which the national and international recommendations for research with human beings were respected, and the Informed Consent Form was signed by the participants.

Results

The sample was composed of 142 women with a mean age of 50.7 years (standard deviation (SD) = 11.59), minimum age of 21 and maximum of 81 years. There was a predominance of black race/color (93.7%), complete/incomplete high school education (66.2%), married/stable union marital status (55.6%), no domestic worker (95.1%), paid employment status as they were self-employed, retired with an activity or had an employment relationship (51.4%) and workload < 8 hours per day (65.7%). The most frequent monthly family income was > 1 to < 3 minimum wages (39.4%), followed by ≤ 1 wage (35.2.7%). The average monthly wage was 2.04 wages (dp=1.19).

The minimum and maximum weights and heights were 57.9 and 128.9 kg and 1.76 and 1.45cm, respectively. The mean BMI was 36.29Kg/m2 (dp=6.23), minimum value of 25.0Kg/m2 and maximum of 50.4Kg/m2. There was a predominance of obese women (83.1%), being 31.7% obese grade III, 29.6% obese grade I and 21.8% overweight in 16.9%.

As for the level of total physical activity, 65.5% were highly active/active and 34.5% were insufficiently active/sedentary (characterized in the study as total physical inactivity). Tables 1 and 2 show the prevalence and associations between total physical inactivity and variables of interest. A statistically significant association was observed between total physical inactivity and age (Table 1).

Table 1 – Prevalence and prevalence ratio of total physical inactivity according to sociodemographic variables. Salvador, BA, Brazil, 2017

Sociodemographic characteristics	Total = 142 n (%)	Prevalence (%)	*p	†PR	‡IC 95%
Age (years old)			0.037		
28 to39	25 (17.6)	32.0			
≥40 to 59	90 (63.4)	28.9		0.90	047–1.75
≥60	27 (19.0)	55.6		1.74	0.89–3.38
Race/color			0.939		
White	9 (6.3)	33.3			
Black (brown and black)	133(93.7)	34.6		1.04	0.40–2.70
Marital status			0.092		
Without partner	63 (44.4)	27.0			
With partner	79 (55.6)	40.5		1.50	0.92–2.45
Schooling			0.363		
Up to elementary school	48 (33.8)	39.6			
High school incomplete/ complete	94 (66.2)	31.9		0.81	0.51–1.28
Labor Situation			0.260		
Without occupation	69 (48.6)	39.1			
With occupation	73 (51.4)	30.1		0.77	0.49–1.22
Dependent person at home			0.652		
No	98 (69.0)	35.7			
Yes	44 (31.0)	31.8		0.89	0.54–1.48
Monthly family income in minimum wages			0.343		
≥ 3	36 (25.4)	44.4			
> 1 a <3	56 (39.4)	30.4		0.68	0.40–1.17
≤ 1	50 (35.2)	32.0		0.72	0.42–1.24

*Pearson's Chi-square test; †RP: Prevalence Ratio; ‡ CI Confidence Interval

Table 2 – Prevalence and prevalence ratio of total physical inactivity according to clinical characteristics, self-perception of health, and self-efficacy. Salvador, BA, Brazil, 2017

Variables	Total = 142 n (%)	Prevalence (%)	*p	†PR	‡CI 95%
Body Mass Index			0.200		
Overweight	24 (16.9)	45.8			
Obesity	118 (83.1)	32.2		0.70	0.42–1.17
Number of comorbidities			0.197		
None	30 (21.1)	20.0			
1	45 (31.7)	33.3		1.67	0.73–3.81
2	53 (37.3)	43.4		2.17	0.99–4.74
3	14 (9.9)	35.5		1.79	0.65–4.89
Self-perception of health§			0.068		
Exceptionally good/good	37 (26,1)	18.9			
Fair	78 (54.9)	39.7		2.10	1.02–4.33
Bad/bad/awfully bad	27 (19.0)	40.7		2.15	0.96–4.84
Self-efficacy for physical activity§			0.126		
Good/satisfactory	65 (46.4)	27.7			
Fair/poor	75 (53.6)	40.0		1.74	0.85–3.55

*Pearson's Chi-square test; †RP: Prevalence Ratio; ‡CI: Confidence Interval; §(n=140)

In the multivariate analysis (Table 3), women with regular and awfully bad/poor self-perceived health showed 124.0% (PR: 2.24; 95% CI: 1.05-4.77) and 150.0% (PR: 2.50; 95% CI:1.10-5.67), respectively, increase in total physical inactivity, with the model adjusted for age, marital status, body mass index, number of comorbidities, and self-efficacy. The best model was chosen according to measures of goodness of fit.

Table 3 – Association between predictor variables of total physical inactivity in overweight and obese women. Salvador, BA, Brazil, 2017

Variables	Prevalence ratio	*CI(95%)
Age (years old)		
28 to 39		
≥40 to 59	0.67	0.32 – 1.37
≥60	1.11	0.49 – 2.53
Marital status		
Without partner		
With partner	1.30	0.78 – 2.18
Body mass index		
Overweight		
Obesity	0.78	0.45 – 1.34
Number of comorbidities		
None		
One	1.87	0.82 – 4.29
Two	2.12	0.93 – 486
Three	1.93	0.67 – 5.59
Self-perception of health		
Exceptionally good /good		
Fair	2.24	1.05 – 4.77
Poor/ awfully bad	2.50	1.10 – 5.67
Self-efficacy		
Good/satisfactory		
Fair/poor	1.51	0.95 – 2.39
Akaike information criterion = 178.6969		

*CI: Confidence Interval

Discussion

The limitations of the study were related to the cross-sectional design that does not make it possible to establish causality relationships, the non-probability sampling, and the use of one study site, making it impossible to widely generalize the results. The small sample size may have been insufficient to reliably detect a given effect that could be considered relevant.

It is noteworthy that women with lower limb amputation whose condition would limit physical activity were excluded, although this condition was not identified. Furthermore, recent studies on physical activity levels in overweight and obese women are scarce in the literature, making it difficult to discuss the results.

Considering the limitations exposed, the study contributes to knowing sociodemographic and clinical variables associated with total physical inactivity in overweight women, subsidizing the creation of strategies and health interventions that encourage the modification of insufficiently active behaviors and support the improvement of their health status. In this context, the work of the nurse integrated into the multi-professional team is fundamental.

It is noteworthy that women with obesity predominated and, considering that they were being followed up in the service, this result indicates the difficulty faced by them and the health team to achieve weight control. Despite this, regarding the total level of physical activity, two-thirds were highly active/active and, therefore, incorporated into their lifestyle a tool for promoting quality of life and health. This adherence to physical activity may result from the fact that they are monitored by the outpatient clinic where they are encouraged to take care of their health. The clinic has a multi-professional team that provides health education, encouraging the appreciation and incorporation of healthy behaviors. However, the total physical inactivity identified for a third of the sample still challenges the team's work to identify strategies and actions aimed at overcoming the factors associated with it.

Regarding the factors associated with total physical inactivity, the multivariate analysis showed an increase in women aged sixty years or older. These data corroborate the literature that highlights that older age is associated with a decline in the level of total physical activity[14] , and that in adulthood women may feel more motivated to do so, aiming to improve physical condition, aesthetics, and socialization[10]. A study with Brazilian workers corroborates our findings when we found that women aged over 66 years were less likely to engage in physical activity[6].

Although without statistical significance, women with aggregate comorbidities such as diabetes mellitus, hypertension and arthrosis, showed increased total physical inactivity. A worse health condition may be associated with insufficient levels of physical activity since this activity is related to a lower risk of metabolic disorders and comorbidities[15].

Body mass index was inversely associated with total physical inactivity, but without statistical significance. Differently from the findings of this study, it was verified that obese women were the most functionally impaired, particularly in activities that aimed at the function of the lower limbs, impacting the performance of physical activity[16].

An increase in total physical inactivity was found in women with worse self-efficacy for physical activity, however, this relationship was not statistically significant. Self-efficacy is related to the belief in one's ability to organize and execute the courses of action necessary to produce a given achievement. It is considered a person's ability to self-regulate motivations and behaviors while remaining physically active, even in the face of potential barriers. For people with heart failure, self-efficacy for physical activity was correlated with the reduction of obstacles, mediating the relationship between motivation and physical activity[17]. These findings reinforce the importance of knowing the self-efficacy beliefs for physical activity, since they permeate the relationship between the subject, the environment, and their behavior.

In this study, self-perception of health was the variable that was associated with statistical significance to total physical inactivity in the multivariate model. Women who perceived their health condition as regular and bad/awfully bad were more inactive than those with positive health perception. This varia-

ble has been considered a reliable indicator for monitoring health status, which encompasses quality of life and functional decline and can be used as a predictor for morbidity and mortality analyses[18]. It was observed that 41.6% of 1,246 adults and elderly had a negative self-perception of health, and among the women who reported a higher proportion of negative self-perception of health were those who did not work, had more than three noncommunicable chronic diseases, were food insecure, and did not engage in physical activity[19], results that reinforce the findings of this study. The identification of self-perception is essential to guide the care provided to overweight and obese women, since it may be associated with health behaviors. It is necessary to identify in other studies the factors associated with the negative perception of the health condition of overweight women to support the sharing of care through sensitive and effective communication between the actors involved.

This investigation has relevance for clinical practice, since it identified factors that interfere with physical activity in overweight and obese women and enables the health team to reflect on strategies that enhance physical activity, especially in the area of health promotion.

Conclusion

Most overweight and obese women were active according to the total score of physical activity. Physical inactivity was significantly associated with regular and poor self-perception of health, being an important health parameter for policies and interventions aimed at health promotion.

Acknowledgments

To the National Council for Scientific and Technological Development (*Conselho Nacional de Desenvolvimento Científico e Tecnológico*), Brazil, process number 421599/2016.2, for financial support.

Collaborations

Mussi FC, Nascimento TS, Palmeira CS, and Santos CAST participated in the project conception, data analysis and interpretation, article writing, relevant critical review of the intellectual content and final approval of the version to be published. Pitanga FJG, Ferreira FS, and Coelho ACC Santos participated in the interpretation of the data, writing of the article, relevant review of the intellectual content, and final approval of the version to be published.

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