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RESEARCH

Sedentary lifestyle in individuals with hypertension

Estilo de vida sedentário em indivíduos com hipertensão arterial

Estilo de vida sedentario en individuos con hipertensión

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ABSTRACT

Objective: to identify the prevalence of nursing diagnosis Sedentary lifestyle (SL) and to analyze its association with clinical indicators (CI) and related factors (RF) in patients with hypertension. **Method:** cross-sectional study with 285 patients with hypertension at a reference center for outpatient care in Northeastern Brazil. To collect data it was used an instrument based on operational definitions of the CI and RF previously validated. Four nurses rated SL as present or absent. To evaluate the association between CI and RF with the presence of SL it was applied the chi-square test. The prevalence ratio and confidence interval was calculated to verify the magnitude of the effect between RF and SL. Results: SL was identified in 55.8% of the sample. Five IC and six RF showed a significant association with SL. **Conclusion:** the study identifies main indicators for inference of SL as well as their possible causal factors among people with hypertension.

Key words: Nursing Diagnosis; Sedentary Lifestyle; Hypertension.

RESUMO

Objetivo: identificar a prevalência do diagnóstico de enfermagem Estilo de Vida Sedentário (EVS) e analisar sua associação com os indicadores clínicos (IC) e fatores relacionados (FR) em indivíduos com hipertensão arterial (HA). **Método:** estudo transversal com 285 pacientes com HAS em um centro de referência em atendimento ambulatorial no nordeste do Brasil. Para a coleta de dados, utilizou-se instrumento baseado nas definições operacionais dos IC e FR validados anteriormente. Quatro enfermeiros classificaram EVS como presente ou ausente. Para avaliar a associação entre IC e FR com a presença de EVS aplicou-se o Teste de Qui-quadrado. Calculou-se a razão de prevalência e intervalo de confiança para verificar a magnitude do efeito entre FR e EVS. **Resultados:** identificou-se EVS em 55,8% da amostra. Cinco IC e seis FR apresentaram associação estatística significante com EVS. **Conclusão:** o estudo identificou os principais indicadores para inferência de EVS, bem como seus possíveis fatores causais entre pessoas com HAS.

Descritores: Diagnóstico de Enfermagem; Estilo de Vida Sedentário; Hipertensão.

RESUMEN

Objetivo: identificar la prevalencia del diagnóstico de enfermería, estilo de vida sedentario (EVS) y analizar su asociación con indicadores clinicos (IC) y factores relacionados (FR) en pacientes con hipertensión. **Método:** es un estudio transversal con 285 pacientes con hipertensión, en un centro de referencia con atención ambulatoria en el noreste de Brasil. Para recolectar los datos, se utilizó un instrumento basado en las definiciones operacionales de la IC y FR previamente validado. Cuatro enfermeras calificaron EVS como presente o ausente. Para evaluar la asociación entre IC y RFcon la presencia de EVS se aplicó la prueba de chi-cuadrado. Se calculó la razón de prevalencia e intervalo de confianza para verificar la magnitud del efecto entre la FR y EVS. **Resultados:** EVS fue identificado en 55,8% en la muestra. Cinco IC y seis FR mostraron una asociación significativa con el EVS. **Conclusión:** el estudio identifica los indicadores clave para la inferencia del EVS, así como sus posibles factores causales entre las personas con hipertensión.

Palabras clave: Diagnóstico de Enfermería; Estilo de Vida Sedentario; Hipertensión.

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INTRODUCTION

A sedentary lifestyle is associated with other risk factors that may contribute to the elevation of blood pressure levels, which, in the long run, can lead to the development of systemic arterial hypertension (SAH). Literature highlights the sedentary lifestyle as one of the major risk factors for cardiovascular diseases. This was observed in a survey recently conducted to evaluate the control of blood pressure and cardiovascular outcomes in patients aged from 18 years[1]. Thus, the lack of physical exercise can be seen as a social problem that requires interventions capable of contributing to a change of lifestyle and to a reduction in the rates of morbidity and mortality related to chronic diseases.

In nursing, it is known that the use of appropriate interventions in the context of the patient depends on a correct diagnostic inference. Thus, it is important to know the clinical indicators (CI) and related factors (RF) more associated with the presence of each nursing diagnosis in different populations.

Despite the approach to a lifestyle without exercise and its consequences is increasing, few studies analyze this event as a nursing diagnosis. The nursing diagnosis Sedentary Lifestyle (SL) was included in the taxonomy of NANDA-I in 2004 and developed from studies of Spanish researchers[2]. According to the taxonomy II of NANDA-I[3], SL is defined as "a habit of life that is characterized by a low physical activity level", and composed of five related factors and three defining characteristics.

Despite the limited number of studies, SL has been found with considerable prevalence, deserving attention from nursing researchers. For instance, a study aiming to analyze the accuracy of the defining characteristics of this diagnosis in individuals with SAH identified SL in 60% of the sample[4]. Another study that evaluated a similar population identified that 47.7% of individuals presented the diagnosis SL, this being one of the most prevalent nursing diagnoses identified[5].

Recently, Brazilian researchers reviewed the elements that compose this diagnosis and created conceptual and operational definitions for the CI and RF[6]. In this review, the definition of SL was expanded and described as "a habit of life in which the individual does not exercise in the recommended frequency, duration and intensity or that do not provide significant energy expenditure for better physical conditioning." The authors also recommended that the defining characteristic "demonstrates physical deconditioning" was subdivided into "reduced cardiorespiratory capacity", "reduced muscle strength" and "reduced joint flexibility reduced". In addition, they recommended the addition of indicators "verbalize the preference for activities with little physical exercise", "does not perform physical activity in leisure time", "overweight" and "poorly performing instrumental activities of daily living". The characteristics "chooses a daily routine lacking physical exercise" and "reports preference for activities low in physical activity" remained unchanged in the aforementioned study.

In this study, the term clinical indicator refers to the signs and symptoms related to a sedentary lifestyle. It includes those proposed by NANDA-I, named defining characteristics, as well as those added after review of the elements of this diagnosis by the researchers previously mentioned.

Concerning the related factors, NANDA-I[3] mentions "lack of training for accomplishment of physical exercise", "lack of interest", "lack of motivation", "lack of resource" (time, money, companionship, structure) and "deficient knowledge of the health benefits of physical exercise". Guedes *et al*.[6] proposed modifications in some of these terms, namely: "lack of interest in exercising", "lack of motivation for the practice of physical exercise", "lack of resources (time, money, place, security, equipment) for the practice of physical exercise" and "deficient knowledge of the health benefits of physical exercise and/or on the consequences of sedentary lifestyle".

In addition, these authors identified "attitudes, beliefs and health habits that hinder the practice of physical exercise", "lack of confidence for the practice of physical exercise", "lack of social support for the practice of physical exercise", "impaired mobility", "activity intolerance" and "pain report" as other factors related to SL.

Therefore, this study aims to identify the prevalence of nursing diagnosis SL, as well as investigate the association of this diagnosis with their CI and RF in individuals with SAH, including modifications of these elements recently proposed by Brazilian researchers[6].

METHOD

Design and sample

Cross-sectional study, of exploratory and analytical quality, performed with 285 patients with SAH, aged between 19 and 59 years. They were monitored in an outpatient care center for individuals with SAH and diabetes mellitus, of state reference, located in northeastern Brazil. The sample was initially calculated for 285 individuals based on formula for prevalence studies, using as parameters a 95% confidence level, estimated proportion of individuals with sedentary lifestyle of 60%[4] and sampling error of 5.6%. Were excluded from the study individuals who showed contraindication to physical exercise.

Steps of the study

The study was carried out in two steps. The first one included the collection of the data, held by a nurse and four nursing students members of a research group on diagnoses, interventions and outcomes of nursing and with experience in data collection. This team was previously trained for familiarization with the instrument in order to minimize potential biases related to the collection. The collection procedure occurred through interview and evaluation of strength and flexibility. The evaluation of each patient took 30 to 40 minutes, being supervised by the nurse of the collection team.

The data were collected with the aid of an instrument elaborated based on the clinical indicators and related factors previously validated[6]. This instrument included variables to identify the sociodemographic profile, the RF and the CI that comprised the diagnosis in study with their operational definitions. To measure the indicator "reduced joint flexibility" anfleximeter was used as support material, offering a greater reliability when assessing the angulation of the joints.

"Poor performance in instrumental activities of daily living" was measured by means of Instrumental Activities of Daily Living validated in Brazil by Santos and Virtuoso Junior[7], with a population of older adults. For the CI "chooses daily routine lacking physical exercise", was used as a parameter an indication of the Brazilian Society of Cardiology[8] that recommends people with SAH to get used to the regular practice of aerobic physical activity for at least 30 minutes a day, three times a week.

The related factor "attitudes, beliefs and health habits that hinder the practice of physical exercise" was evaluated by means of the proposed instrument to measure the perception of possible barriers to the practice of physical activity[9], whose testing enabled to realize that the proposed questionnaire can be easily used and allows a reproducibility of responses, obtaining values of Pearson correlation test between 0.67 and 0.97.

"Deficient Knowledge of the health benefits of physical exercise and/or on the consequences of physical inactivity" was evaluated through twelve affirmative questions, translated from the questionnaire proposed by InteliHealth® Inc., which deals with health-related physical activity[10]. For the evaluation of the remaining Rf and CI, questions were elaborated in accordance with their respective empirical references suggested in the review of Guedes *et al*[6].

The second stage of the study was composed of training diagnostician nurses, diagnostic inference and data analysis. To classify the diagnosis in study as present or absent, recommendation of specialized literature[11] adopted regarding the number of diagnostician nurses indicated. Thus, four nurses, members of the research group previously mentioned, were selected. They should have an undergraduate degree as minimum degree. They were contacted by letter of invitation with information about the purpose of the research, the methods used and the availability required for participation in the study.

Diagnostician nurses attended a training lasting eight hours. Earlier studies in the diagnostic validation in study, as well as aspects related to the process of reasoning and diagnostic inference, were addressed. Besides, at this moment, the ability to properly classify the presence or absence of SL of each nurse was evaluated based on the recommendations of Lopes, Silva and Araujo[11], considering the measures of efficiency, false positive rate, false negative rate and trend.

To evaluate these measures, each diagnostician nurse received 12 fictitious clinical cases, created by the main researcher and validated by two professors with experience in research with nursing diagnosis, including the diagnosis in study, in order to determine the presence or absence of the aforementioned diagnosis. This process was performed three times, with the same cases and in random order, in accordance with the recommendations of the authors.

After analysis of these measures, it was noticed that the four nurses have obtained equal values of efficiency, false positive and false negative, respectively: 0.91; 0 and 0.16. The trend could not be calculated because the calculation involves a ratio between false positive and false negative rates, and, as previously exposed, the value of the false positive rate was zero. Considering that no nurse achieved the recommended levels[11], a second round of evaluation of clinical cases different from those previously used was performed. The second round took place after completion of a new training, in which were discussed the incongruences of inferences, resulting in an appropriate diagnostician profile.

The diagnostic inference process was carried out after the completion of data collection. Data were organized in an Excel spreadsheet and forwarded via e-mail to each diagnostician nurse. The spreadsheet was composed of 285 cases that correspond to data collected and indicated which CI were present or absent in each case.

The occurrence or not of the diagnosis was determined by absolute concordance between the diagnosticians. In cases in which there was disagreement about the presence or absence of the diagnosis, the analysis was performed by the team of diagnostician nurses. The correlation between the evaluators was measured by the Kappa coefficient. This agreement ranged from 0.790 to 0.979, indicating the excellent agreement[12].

The data were organized in Excel for Windows® software, and statistical analysis was performed in SPSS version 20.0 and R version 2.12.1 programs. Absolute and percentage frequencies of qualitative variables with their respective confidence intervals are given. Quantitative variables are described based on measures of central trend and dispersion. To evaluate the association between the presence of the diagnosis "sedentary lifestyle", and clinical indicators added and related factors, the Chi-square test was applied, considering that all the expected frequencies were higher than five. For verification of the magnitude of the effect between related factors and the presence of the diagnosis sedentary lifestyle, the prevalence ratio and its confidence interval were estimated with a significance level of 5%.

Ethical aspects

The study was approved by the Ethics Committee of the institution and fulfilled the ethical recommendations for research with human beings. Data collection and diagnostic inference began by the signing of an informed consent form by patients and diagnostician nurses, respectively.

RESULTS

The majority of individuals evaluated were female (n = 158). Regarding the schooling and age variables, half the individuals (n = 143) had elementary school and up to 53 years old, respectively. Regarding family income, 50% of the sample had an income of up to 500 BRL, below the minimum wage for the period of the study (Table 1).

It was found that 77.2% of individuals with hypertension evaluated presented diabetes mellitus (DM) in an associated manner. Moreover, 42.4% of respondents claimed to have some type of complication resulting from one of these diseases. Half of individuals (n = 143) presented knowledge about hypertension diagnosis time for at least 10 years, and 12 years regarding DM.

The diagnosis Sedentary Lifestyle has been identified in 55.8% of the sample. The most common CI in the study include "reduced joint flexibility" (93.7%), "overweight"

(85.3%), "does not perform physical activity in leisure time" (83.9%), "reports preference for activities low in physical activity" (83.9%). As for the related factors, the most frequent were: "lack of resources for the practice of physical exercise" (87.4%), followed by "deficient knowledge of the health benefits of physical exercise" (78.6%), "lack of social support for the practice of physical exercise" (76.8%), "attitudes, beliefs and habits that hinder the practice of physical exercise" (62.5%).

Clinical indicators "chooses a daily routine lacking physical exercise", "does not perform physical activities in leisure time", "reports preference for activities low in physical activity", "reduced cardiorespiratory capacity" and "poor performance in instrumental activities of daily living" showed statistically significant association with sedentary lifestyle (Table 2).

As for the related factors, six showed statistical association with the diagnosis, namely: "lack of motivation for the practice of physical exercise", "lack of interest in exercising", "attitudes, beliefs and health habits that hinder the practice of physical exercise", "lack of training for accomplishment of physical exercise", "lack of social support for the practice of physical exercise" and "lack of confidence for the practice of physical exercise". Related factors "lack of motivation for the practice of physical exercise" and "lack of interest in exercising" presented the highest prevailing reasons (PR = 5.358), which indicates that these factors can increase by five times the probability of presence of diagnosis (Table 3).

Table 1 - Distribution of patients with arterial hypertension from a specialized center according to sociodemographic data

Variables	n	%	95% CI
1. Gender			
Male	127	44.6	38.83 – 50.37
Female	158	55.4	49.63 – 61.63

	P value*	Mean	Standard deviation	Median	IQR
2. Age (years)	< 0.001	51.34	7.09	53.00	9
3. Schooling (years)	< 0.001	9.52	4.41	10.00	8
4. Per capita income (BRL)	< 0.001	797.32	858.43	500.00	530.82

*Notes: CI Confidence interval; IQR: Interquartile range; * Kolmogorov-Smirnov Test.*

Table 2 - Distribution of individuals with arterial hypertension, according to clinical indicators of nursing diagnosis "Sedentary Lifestyle"

Variables	Sedentary lifestyle		
	Present	Absent	P value*
Clinical indicators			
Chooses a daily routine lacking physical exercise			
Present	159	20	< 0.001
Absent	0	106	
Does not perform physical activities in leisure time			
Present	155	84	< 0.001
Absent	4	42	
Reports preference for activities low in physical activity			
Present	72	41	0.029
Absent	87	85	
Poor performance in instrumental activities of daily living			
Present	155	84	< 0.001
Absent	4	42	
Reduced cardiorespiratory capacity			
Present	84	39	< 0.001
Absent	75	87	

*Note: *Chi-square Test.*

Table 3 - Distribution of individuals with arterial hypertension, according to related factors of nursing diagnosis "Sedentary Lifestyle"

Related factors	Sedentary Lifestyle		P value PR CI
	Present	Absent	
Lack of motivation for the practice of physical exercise			p < 0.001*
Present	138	19	RP = 5.358
Absent	21	107	IC 95% = [3.608 – 7.955]
Lack of interest in exercising			p < 0.001*
Present	138	19	RP = 5.358
Absent	21	107	IC 95% = [3.608 - 7.955]
Activity intolerance			p = 0.032*
Present	102	65	RP = 1.264
Absent	57	61	IC 95% = [1.012 – 1.579]
Pain report			p = 0.300*
Present	98	70	RP = 1.119
Absent	61	56	IC 95% = [0.902 – 1.388]
Deficient knowledge of the health benefits of physical exercise and/or on the consequences of sedentary lifestyle			p = 0.143*
Present	130	94	RP = 1.221
Absent	29	32	IC 95% = [0.917 – 1.625]
Attitudes, beliefs and health habits that hinder the practice of physical exercise			p = 0.001*
Present	113	65	RP = 1.477
Absent	46	61	IC 95% = [1.156 – 1.887]
Lack of resources (time, money, place, security, equipment) for the practice of physical exercise			p = 0.143*
Present	143	106	RP = 1.292
Absent	16	20	IC 95% = [0.883 – 1.891]
Lack of training for accomplishment of physical exercise			p = 0.002*
Present	83	43	RP = 1.378
Absent	76	83	IC 95% = [1.122 – 1.692]
Lack of motivation for the practice of physical exercise			p = 0.005*
Present	132	87	RP = 1.473
Absent	27	39	IC 95% = [1.081 – 2.007]
Lack of confidence for the practice of physical exercise			p < 0.001*
Present	62	20	RP = 1.582
Absent	97	106	IC 95% = [1.310 – 1.912]
Impaired mobility			p = 0.249*
Present	8	3	RP = 1.320
Absent	151	123	IC 95% = [0.905 – 1.925]

*Notes: PR: Prevalence ratio; CI Confidence interval; * Chi-square Test.*

DISCUSSION

In the literature, studies that discuss the diagnosis SL are still scarce. In this study, the prevalence of nursing diagnosis SL in individuals with hypertension was similar to the study of Guedes *et al*.[4], which found that 60% of the patients had the same diagnosis. Calegari *et al*.[5] found a lower prevalence of this diagnosis in individuals with hypertension monitored in a multiprofessional outpatient care center (47.7%).

The prevalence of SL in this study may be related to the context of the population evaluated. It is known that the diagnosis of SAH becomes more common with the advancement of age, as noted in the study of Nascente *et al*.[13], which investigated 1,168 individuals. In this study, the presence of SAH were associated with increasing age, being the prevalence of 14% in the age group from 30 to 39 years, increasing to 34.6% from 40 to 49 years, and reaching 63.1% in individuals of 60 years or more ($p<0,001$).

In addition to age, it is necessary to emphasize that education and income may influence the quality of life of individuals. An unfavorable socioeconomic status can, for instance, hinder the access of the individual to the health service, to physical activity and the education level. Regarding schooling, the Brazilian Society of Cardiology[8] states that low levels of education are related to the presence of SAH. Poor schooling may impair the understanding and adherence to treatment, increasing the number of cases of hypertension and associated complications.

Clinical indicators identified in this study often exceeding 60% maintain relationship between themselves, as individuals with hypertension who report a preference for activities with little physical exercise will probably present a daily routine lacking such practice and, thus, will not use their leisure time with these activities[6].

Andrade *et al*.[14] corroborates these findings by studying health self-assessment, stress and productivity at work between active and sedentary bank employees. The research demonstrated that the active group exercised for pleasure and for providing oblivion of work related issues; meanwhile, the sedentary did not exercise routinely, verbalizing preference for activities with little physical exercise. Most sedentary bank employees sought hypokinetic and relaxing activities such as reading, watching television and showering.

Malta *et al*.[15] have developed a study that described the characteristics of the standard of physical activity performed during the period of leisure in the adult population of the Brazilian state capitals and the Federal District. Those authors identified that only 14.9% of the sample practiced enough physical activity in leisure. The exercise can be considered as a form of recreation and as a way to restore the health of the ill effects that the stressful routine of work and/or study can bring. The fact of performing physical exercise positively interferes on the quality of life of the individual, leading him/her to a better performance.

Another important clinical indicator identified in the sample studied was the "reduced cardiorespiratory capacity", which can be described as the maximum capacity of lungs, heart and blood have to provide and transport oxygen[16]. According to the definition, one can see that the proper functioning of the organism is related to appropriate cardiorespiratory capacity, being directly related to the sedentary lifestyle, a fact confirmed in this study by the statistical association identified.

The limitation of functional capacity can be considered a factor that exerts influence on performance of physical activity[17]. Such limitation is related to the "poor performance in activities of daily living", clinical indicator that presented statistical association with the sedentary lifestyle in this study.

Related factors "lack of motivation for the practice of physical exercise" and "lack of interest in exercising" increased by five times the probability of presence of the diagnosis. Guedes *et al*.[4] found similar results to the present study, identifying that the related factor "lack of motivation for exercising" increased four times the probability of the individual present SL, and that the "lack of interest in exercising" led to an increase of up to twice this probability.

These RF appear to be components of a single causal factor, since the individual does not have the proper motivation, it is likely that he/she shows no interest in exercising. A study conducted with 1069 adolescents aiming to analyze the prevalence of barriers and their association with the practice of physical activities, noted that 38% of this population reported to not have motivation for such activity[18]. These data corroborate the findings of this study, although it was developed with a different population.

A 58% increase in the prevalence of SL between individuals who showed a lack of confidence for the practice of physical exercise may be justified by the insecurity in exercising, leading the individual to sedentary habits. About this, the study of Daley *et al*.[19] identified an interchange in the prevalence of the group of women with hypertension who would like to exercise to the group of women who exercise, after educational interventions that stimulated their participation and engagement after advice sections.

As for RF "attitudes, beliefs and habits that hinder the practice of physical exercise" and "lack of social support for the practice of physical exercise", it was observed that the prevalence of SL has increased by 47% in the presence of these factors. On this, the authors point out that the support of family and friends can motivate the practice of physical exercises, as demonstrated in a study with people with hypertension developed in Paraná. This study, when evaluating the social support, identified that the family is the main source of support, including material, emotional and cognitive assistance[20].

Other RF that contributed to the prevalence of SL were: "lack of training for accomplishment of physical exercise" (37%) and "activity intolerance" (26%). It is known that the regular practice of exercises can improve the health condition of the individual, by assisting in the prevention and control of chronic diseases, such as hypertension[21]. The literature points out that the "activity intolerance" is associated with the discomfort, dyspnea and inadequate heart rate during the practice of physical exercises, which can hinder the accomplishment of such activity[6].

On these findings, we realize that most of the CI and RF proposed in the review of "Sedentary Lifestyle" of Guedes *et al*.[6] showed a statistically significant association of this diagnosis in individuals with arterial hypertension. These data can contribute to the practice of the nurse, primarily focused on primary care, prevention of complications, health promotion

and aid to the treatment of arterial hypertension. After knowing the reasons that lead the individual to maintain a sedentary lifestyle, the nurse can set priorities and establish a targeted therapeutic plan, with interventions effective to behavioral changes necessary for the adoption of a healthy lifestyle.

CONCLUSION

The study provided clinical indicators with greater association with nursing diagnosis "sedentary lifestyle" and pointed out the possible factors related to this diagnosis. It is expected that this information may help the nurse, in clinical practice, to direct his/her attention to variables associated with the diagnosis in question for an efficient diagnostic inference. In addition, the knowledge of CI and RF with the largest association with the presence of SL can assist professors to present important elements for the inference of this diagnosis to academics.

Although this study suggests possible causes for the manifestation of SL in the individuals evaluated, a longitudinal study to verify the causality relations for the presence of the diagnosis is recommended.

The present study was performed with a specific sample of adults with hypertension and with an outpatient monitoring. Thus, the results found should not be considered for the general population, and new research with the same nursing diagnosis is needed in different population profiles.

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