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Prevalence of low back pain and associated factors in nursing professionals

Prevalência de lombalgia e fatores associados em profissionais de enfermagem

Prevalencia de lumbago y factores asociados en profesionales de enfermería

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The aim of the study was to determine the prevalence of low back pain and associated factors in nursing professionals. cross-sectional study involving 81 professionals from the nursing staff of the Regional Antônio Dias Hospital, Patos de Minas MG, Brazil, from May to August 2017, evaluated by sociodemographic questionnaire, working conditions and health, Nordic Musculoskeletal Questionnaire, Disability questionnaire Roland Morris and International Physical Activity questionnaire (short version). It was used Chi-squared Pearson test, $p \leq 0.05$. The average age of professionals was 39.8 ± 8.8 years, found prevalence of low back pain in 71.6%. When analyzed the association of health and working conditions in relation to low back pain, no significant differences were found. Professionals with low back pain, 62 1% were insufficiently active ($p < 0.001$) and 34.5% expended ≥445,00 min / day in sedentary behavior. It is suggested to create strategies to increase physical activity and decrease sedentary behavior in this population.
Descriptors: Low Back Pain; Occupational health; Life style.

O objetivo do estudo foi verificar a prevalência de lombalgia e fatores associados em profissionais de enfermagem. Estudo transversal, envolvendo 81 profissionais da equipe de enfermagem do Hospital Regional Antônio Dias, Patos de Minas-MG, de maio a agosto de 2017, avaliados por meio de questionários sociodemográfico, de condições de trabalho e de saúde, Questionário Nórdico de Sintomas Osteomusculares, Questionário de Incapacidade Roland Morris e Questionário Internacional de Atividade Física (versão curta). Utilizou-se teste de Qui-quadrado de Pearson, $p \leq 0,05$. A idade média dos profissionais foi de 39,8±8,8 anos, sendo encontrada prevalência de lombalgia em 71,6%. Quando analisada a associação das condições de saúde e trabalho em relação a lombalgia, não foram encontradas diferenças significativas. Dos profissionais com lombalgia, 62,1% eram insuficientemente ativos ($p<0,001$) e 34,5% despendiam ≥445,00 min/dia em comportamento sedentário. Sugere-se criar estratégias para aumentar o nível de atividade física e diminuir o comportamento sedentário nesta população.
Descritores: Dor lombar; Saúde do trabalhador; Estilo de vida.

El objetivo del estudio fue verificar la prevalencia de lumbago y factores asociados en profesionales de enfermería. Estudio transversal, involucrando 81 profesionales del equipo de enfermería del Hospital Regional Antônio Dias, Patos de Minas-MG, Brasil, evaluados a través de cuestionario sociodemográfico, de condiciones de trabajo y de salud, Cuestionario Nórdico de Síntomas Osteomusculares, Cuestionario de Incapacidad Roland Morris y Cuestionario Internacional de Actividad Física (versión corta). Se utilizó test de Chi cuadrado de Pearson, $p \leq 0,05$. El promedio de edad de los profesionales fue de 39,8±8,8 años, siendo encontrada prevalencia de lumbago en el 71,6%. Cuando analizada la unión de las condiciones de salud y trabajo en relación a la lumbalgia, no fueron encontradas diferencias significativas. De los profesionales con lumbalgia, 62,1% eran suficientemente activos ($p<0,001$) y el 34,5% dependían ≥445,00 min/día en comportamiento sedentario. Se sugiere crear estrategias para aumentar el nivel de actividad física y disminuir el comportamiento sedentario en esta población.
Descriptores: Dolor de la región lumbar; Salud laboral; Estilo de vida.

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INTRODUCTION

THe low back pain is a condition that is becoming increasingly constant in the industrialized world, causing impacts on physical health and interfering with the functionality and quality of life[1]. This change has been one of the most common complaints and is defined as pain or stiffness in the lower back end of the spine, above the buttocks[2].

It affects both genders, ranging from a sudden to an intense and prolonged pain, with the main complaint the pain in the lumbar region, characterized by sensorial and emotional experience caused by real or potential tissue damage. It is classified according to its duration in: acute, subacute or chronic. Acute back pain is defined as one with rapid onset and duration inferior to 6 weeks. The subacute pain lasts from 6 to 12 weeks and the chronic one lasts more than 12 weeks[2.3].

Furthermore, the low back pain can also be classified as specific and nonspecific. The nonspecific low back pains are those in which the anatomical and neurophysiological cause is not identifiable. The specific ones are identifiable as a result of specific pathophysiological mechanisms, such as herniated discs, spondylolisthesis, spinal canal stenosis, instability defined, vertebral fractures, tumors, infections, and inflammatory diseases of the lumbar spine[3].

The etiology of low back pain is not clearly defined, arising from various causes. However, some risk factors can be cited, as a work that generates high overload, excessive and repetitive movement of the flexor and rotator mechanisms of the spine, physical inactivity or sedentary lifestyle, smoking, obesity and bad posture[4.5].

There are several causes and risk factors that are associated with low back pain. Thus, it has been shown that low back pain is closely related to work and physical inactivity. A sedentary lifestyle and/or physical activity are closely related to pains in the spine, which can be demonstrated by the combination of poor musculoskeletal fitness and an occupation that overload the region[6].

Individual and professional risk factors are involved in the onset of the low back pain. The most common individual risk factors are gender, age, body mass index, muscle imbalance, muscle strength, socioeconomic conditions and the presence of other diseases. Professional factors involve the incorrect movement and postures arising from inadequacies of the work environment, the operating conditions of the equipment available and the forms of organization and work execution[7.8].

Some work situations, such as posture maintenance, sitting or standing for prolonged periods, repetitive, exaggerated and forced movements, weight lifting, light and heavy physical work, flexion, twisting and spine inclination can also attack the musculoskeletal structures stabilizing the lumbar spine, leading to pain in the region[9].

The workers of the nursing team perform the lifting of excessive weight by carrying patients, lifting and load handling incorrectly, maintaining certain posture for a long time and maintenance of improper postures[10].

The work of the nursing staff is characterized by a series of discontinued activities and tasks that involve various degrees of responsibility and complexity regarding the type of work performed. Planning and/or assistance activities that can range from simple to complex tasks, require different levels of knowledge and skills to carry out the activities by the nursing team[11].

In addition, one must consider that the work in the hospital has a number of risks arising from physical, chemical, psychosocial and ergonomic factors, which may cause damage to the health of these professionals[12]. Among these factors, there are musculoskeletal disorders and mental and behavioral disorders, with severe pain in the lumbar spine being one of the symptoms most reported by workers, so that many of them report that the pain becomes so strong they have to interrupt their activities at[13].

In this sense, the present study aimed to determine the prevalence of low back pain and associated factors in nursing professionals.

METHOD

This was an observational study with cross-sectional and quantitative nature. It was carried out after being approved by the Ethics and Research Committee of the University Center of Patos de Minas, under approval number 1.956.489. Data collection was conducted between May and August 2017.

The sample was established by convenience and consisting of the nursing team professionals (nurses, technicians and assistants) working in the Regional Hospital Antônio Dias/FHEMIG, in Patos de Minas-MG. All the professionals who participated in the study received guidance on it and after accepting it they signed a Free Informed Consent, in which all the necessary information about the research were described.

Inclusion criteria consisted of being working in the nursing team and be at work on the collection day. The study excluded workers who were on sick leave or other type of removal during the period of data collection.

As instruments, the sociodemographic questionnaire, working and health conditions were used to characterize the sample. In addition, the Nordic Musculoskeletal Questionnaire was used, which examined the musculoskeletal symptoms in a context of occupational or ergonomic[14] health and the Roland-Morris Disability Questionnaire was used to evaluate the inability of individuals with back pain, adapted and validated to Brazil[15]. To evaluate the level of physical activity and sedentary behavior the International Physical Activity Questionnaire (short form)[16].

The socio-demographic questionnaire consisted of questions encompassing the date of birth, age, gender and marital status. The survey of working conditions consisted of questions about the professional category, length of service, time in the current service, occupation or position, type of schedule, questioning on other occupations of the professional and availability and performance of labor gymnastics during work. Issues related to health conditions were about height, body mass, smoking and drinking and sleeping habits.

The Nordic Musculoskeletal Questionnaire consisted of questions regarding the occurrence of symptoms in certain anatomical regions, as well as questions about the occurrence of distancing from routine activities and the need to consult a health professional because any of these conditions. For the workers answering the questionnaire, the last 12 months and the seven days preceding the interview were considered to answer the questions[14]. Workers reported the frequency (no, rarely, often, always) that they had experienced the symptoms (pain, numbness or discomfort). However, for data analysis, the scale was dichotomized as only the presence or absence of musculoskeletal symptoms in the lower back region in the last 12 months.

When workers had low back pain they were asked to answer the Roland-Morris Disability Questionnaire, consisting of 24 items on the interference of back pain in activities of daily and practical life, which were included whether they were present on da daily routine. This questionnaire, developed and validated by Roland and Morris in 1983, was adapted for the Brazilian population[15]. The questionnaire score was analyzed continuously, with scores from 0 to 24, with scores lower than 14 suggesting mild disability and scores and equal to or greater than 14 suggesting moderate to severe disability.

The International Physical Activity Questionnaire (short form)[16] assessed the level of physical activity, according to the time spent on physical activities in a typical week. Workers were classified as insufficiently active (<150 min/wk) and sufficiently active (≥150 min/wk)[17]. Also through this questionnaire, the sedentary behavior[18] was evaluated, in which the workers reported the time spent in the sitting position in a usual weekday and on a usual weekend day. From the total sitting time, workers were divided into two groups according to the 75th percentile: 1) ≥ 75th percentile; 2) < 75th percentile.

Statistical analysis was carried out using the *Statistical Package for the Social Sciences (SPSS)* software, version 24.0, using a p-value significance level ≤ 0.05. The nominal and/or ordinal variables were described in frequency and percentage, and the numerical variables were described in mean and standard deviation. For analysis of categorical data, the Pearson chi-square test was used.

RESULTS

The study included 81 professionals of the nursing team, with a mean age of 39.8 ± 8.8 years, with 82.7% female and 17.3% male.

The professionals had a mean of 12.91 ± 8.90 years of work (nurse, technician or assistant) and an average of 7.33 ± 7.27 years in the current service (Regional Hospital Antônio Dias). Regarding the current function at work, 66.7% worked in care, 2.5% in management and 30.9% in both functions.

The prevalence of low back pain in nurses was 71.6% (n=58). Of the professionals with low back pain, 98.3% (n=57) had mild disability and 1.7% had moderate disability, according to the Roland-Morris questionnaire.

When analyzed the association of health and working conditions regarding lumbago, no significant differences were found (Table 1 and 2). Regarding the working conditions of the professionals evaluated, 86.4% were technician or auxiliaries, 74.1% had fixed schedule and 16% had another occupation besides the work in the hospital. Related to the labor labor gymnastics, 69.1% confirmed the presence of labor labor gymnastics, but of these, only 35.7% participated (Table 1).

Regarding the health conditions of the professionals evaluated, 8.6% said they use tobacco, 39.5% said they drink, 64.2% were overweight and 58.1% slept less than 8 hours per day (Table 2).

In relation to the level of physical activity, it was found that 62.1% of professionals who had lumbago were insufficiently active, with significant difference ($p<0.001$) compared to those without low back pain (Figure 1).

Furthermore, an association was found between low back pain and sedentary behavior ($p=0.005$), with 34.5% of professionals who had lumbago spent ≥445.00 min/day in sedentary behavior (Figure 2).

Table 1. Nurses' working conditions, Patos de Minas, 2017.

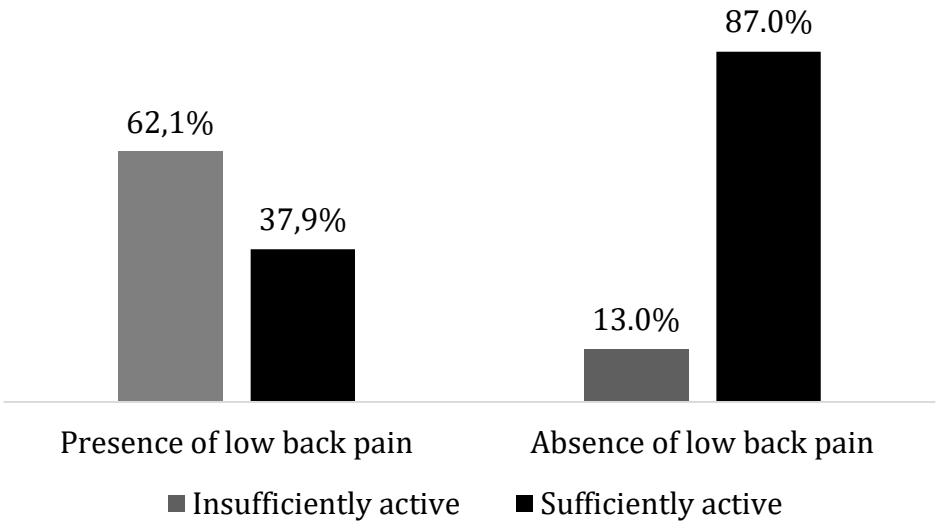
Work conditions	Total		Low back pain				P
			Absence		Presence		
	N	%	N	%	N	%	
Gender							0.504
Male	14	17.3	5	21.7	9	15.5	
Female	67	82.7	18	78.3	49	54.5	
Professional category							0.929
Technician / auxiliary	70	86.4	20	87.0	50	86.4	
Nurse responsible	11	13.6	3	13.0	8	13.8	
Type of schedule							0.590
Fixed	60	74.1	17	73.9	43	74.1	
Semi-Fixed	14	17.3	5	21.7	9	15.5	
Rotating	7	8.6	1	4.3	6	10.3	
Another occupation							0.380
No	68	84.0	18	78.3	50	86.2	
Yes	13	16.0	5	21.7	8	13.8	
Labor gymnastics Offer							0.122
No	25	30.9	10	43.5	15	25.9	
Yes	56	69.1	13	56.5	43	74.1	
Labor gymnastics practice **							0.119
No	36	64.3	6	46.2	30	69.8	
Yes	20	35.7	7	53.8	13	30.2	

Pearson Chi-square test - *p ≤ 0.05; ** in relation to labor gymnastics offer

Table 2. Health conditions of nursing professionals, Patos de Minas, 2017.

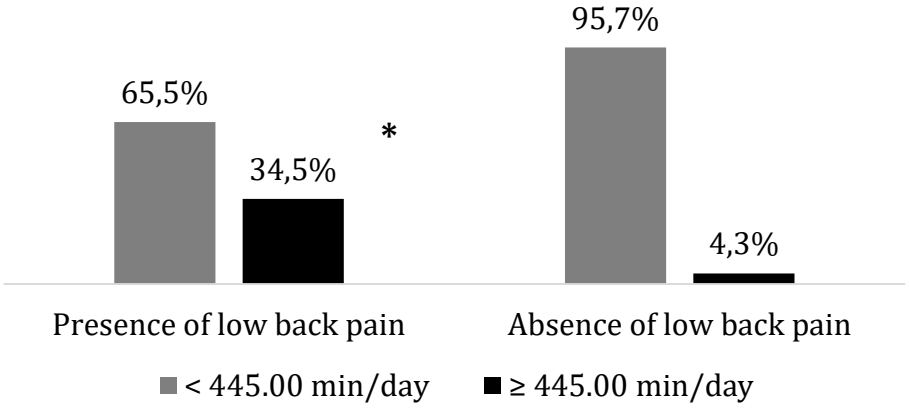
Health conditions	Total		Low back pain				P
			Absence		Presence		
	N	%	N	%	N	%	
Tobacco							0.375
No	74	91.4	20	87.0	54	93.1	
Yes	7	8.6	3	13.0	4	6.9	
Alcoholic beverage							0.965
No	49	60.5	14	60.9	35	60.3	
Yes	32	39.5	9	39.1	23	39.7	
Body mass index							0.904
Eutrophic	29	35.8	8	34.8	21	36.2	
Overweight	52	64.2	15	65.2	37	63.8	
Sleep							0.686
≥ 8 hours	31	41.9	10	45.5%	21	40.4%	
< 8 hours	43	58.1	12	54.5%	31	59.6%	

Pearson Chi-square test - * p ≤ 0.05.



* Chi-Square Test Person - p <0.001

Figure 1. Physical activity level of nursing professionals, Patos de Minas, 2017.



* Pearson Chi-square test - p = 0.005

Figure 2. Time spent in sedentary behavior of nursing professionals. Patos de Minas, 2017.

DISCUSSION

In this study, it was found a high prevalence of low back pain reported by 71.6% of professionals of the nursing team.

A study in a hospital in Tunisia, assessed 203 nurses, with a mean age of 39.8 years and found prevalence of low back pain in 58.1%. Risk factors associated with low back pain were: high body mass index, daily frequency in improper posture for activity that was being performed and the layout of the materials of the work place[12].

In another study, also conducted with workers of a nursing staff, in a university hospital in Rio Grande do Sul - Brazil, showed that the prevalence of low back pain has reached 71.5% last year[19].

In the professional group of the hospital area, lower back pain is significantly high in the nursing team. This situation occurs because of the fact that these professionals perform tasks that include trunk flexion, static postures and handlings of heavy objects, which may favor the onset of low back pain[20].

The working conditions of the nursing staff are not satisfactory in almost every country in the world, which may also be a risk that contributes to the emergence of diseases,

causing pain. These conditions can influenced by the inadequate remuneration, very long working hours with no rest period, shifts, type of schedule, professional category and the near impossibility of the ascension in professional career[21,22].

Regarding the working conditions of the professionals who were evaluated, 86.4% are technicians or assistants, 74.1% have fixed type of schedule and 16% have another occupation besides work in the hospital. In this study, there was no significant relationship between working conditions and chronic lumbago. Such a result may be due to the sample size.

The opposite has been demonstrated in a study with nurses registered in the Portuguese Order of nurses. It showed that low back pain is associated with the professional category, which may be related to the type of real work activities performed by professionals in each category. The categories most affected by low back pain were those closer to clinical care and consequently greater physical demands. Besides that, the study demonstrated that the type of time had a statistically significant effect, with the shift work increasing the likelihood of back pain when compared to regular working hours[23].

The labor gymnastics in the workplace is an important factor in health promotion, generating organic, emotional and social benefits[24]. In the present study, regarding the offer of labor gymnastics, 69.1% said that the hospital offers it, but of these, only 35.7% participate.

A study was conducted with a nursing team of Urgent and emergency care networks in Sobral (CE), in which labor gymnastics exercises were conducted with workers, such as stretching and strengthening exercises. The results showed that labor gymnastics has contributed to the work, as it improved the performance of the professionals in their activities, both in their routine work and everyday life[25].

On the other hand, one should consider physical inactivity and sedentary lifestyle, which have been identified as major contributors to low back pain. In this study, it was found that 62.1% of the professionals who had lumbago were insufficiently active. This association was also found in a study with nursing professionals working in the Sterilization and Supply Center of the Beneficent Association of Campo Grande / MS-Santa Casa Hospital, in Campo Grande/MS and found that the occurrence of low back pain was higher in the group considered insufficiently active[26].

In the present study, it was found that 34.5% of professionals have had lumbago spent ≥445.00 min/day in sedentary behavior.

In Brazil, about 60% of Brazilians do not practice any physical activity[4]. This can be demonstrated by a field research conducted in the UBS (Basic Health Units) in Floriano - Piauí, which investigated the prevalence of sedentary behavior in nurses, nursing technicians and community health workers. It was identified that 55.6% of the professionals who participated in the survey are considered sedentary[27].

When checking the comparison of the quality of life of sedentary women and physically active ones, the results showed that functional capacity was 16% higher in the active, the limitation by physical aspects and pain was higher in sedentary (19% and 33% respectively), the general health status 24% better in active, limitation by emotional aspects 39% higher in sedentary and mental health 28% better in the active ones[6].

Thus, the nursing team professionals should be encouraged to undertake regular physical activity[12]. A systematic review investigated the effectiveness of interventions for prevention and treatment of low back pain in nurses and found that a stretching exercise program appears to be better than the performance of routine activities and that a combination of spinal manipulation and Back school was better than passive physiotherapy[28].

CONCLUSION

There was a prevalence of low back pain in 71.6% of the nursing staff, and of these, 98.3% had mild disability and 1.7% had moderate disability. In addition, 62.1% of the

professionals who had low back pain were insufficiently active and 34.5% spent ≥445.00 min/day in sedentary behavior.

The main limitation of this study derives from the study using a convenience sample. Moreover, it was not possible to identify the employment status of respondents through the questionnaires applied.

Therefore, it is concluded by the results obtained that there was a high prevalence of chronic low back pain in nurse professionals, and that this was associated with physical inactivity and sedentary behavior. In this sense, it is necessary to create strategies to increase physical activity and decrease sedentary behavior in this population.

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CONTRIBUTIONS
Camilla Rivera Ribeiro participated in the conception and design of the research project and data collection. **Joilson Meneguci** contributed to the data analysis and review. **Cintia Aparecida Garcia Meneguci** worked in the design and project design, data analysis and review.

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