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Epidemiological profile of the level of physical activity of undergraduate and postgraduate university professors

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ABSTRACT

OBJECTIVE

To verify the anthropometric, professional, pain and physical activity characteristics of university professors working in undergraduate and graduate courses: a pilot study.

METHODS

Twenty teachers from a Higher Education Institution were evaluated, which were divided into two groups: group of undergraduate teachers (GPG, n = 10); group of postgraduate teachers (GPPG, n = 10). The assessment process was divided into: step 1, anthropometric and professional characterization; step 2, assessment of pain / discomfort using the Nordic questionnaire and step 3, assessment of the physical activity level, using the questionnaire: International Physical Activity Questionnaire-IPAC.

RESULTS

The GPPG showed 90% for females, 70% of whom were married with overweight BMI. Teaching time was 10 years. The practice of physical activity was 30 to 60 minutes. Hypercholesterolemia was found in 90% of cases. Discomfort remained at 90% in the lower back. The IPAC was 20% sedentary. In GPG, on the other hand, 80% can be observed for females, 70% single with 90% overweight. The teaching time was 10 years. Physical activity was 10 to 15 minutes. The prevalent disease was hypercholesterolemia. Discomfort was 90% in the lumbar region and 80% in the neck and shoulder. The IPAC was 60% sedentary.

CONCLUSIONS

It can be concluded that undergraduate teachers have more neck and shoulder pain, are overweight with a higher level of physical inactivity while graduate teachers have more lumbar pain with ideal weight and greater practice of physical activity.

DESCRIPTORS

Pain, Physical activity, Professor.

RESUMO

OBJETIVO

Verificar as características antropométricas, profissionais, de dor e do nível de atividade física de docentes universitários atuantes na graduação e pós-graduação: estudo piloto.

MÉTODOS

Foram avaliados 20 professores de uma Instituição de Ensino Superior, os quais foram divididos em dois grupos: grupo de professores da graduação (GPG, n=10); grupo de professores da pós-graduação (GPPG, n=10). O processo de avaliação foi dividido em: etapa 1, caracterização antropométrica e profissional; etapa 2, avaliação da dor/desconforto por meio do questionário Nórdico e etapa 3, avaliação do nível atividade física, por meio do questionário: *International Physical Activity Questionnaire-IPAC*.

RESULTADOS

O GPPG mostrou 90% para o sexo feminino, sendo 70% casados com IMC sobrepeso. Tempo de magistério foi 10 anos. A prática de atividade física foi de 30 a 60 minutos. A hipercolesterolemia foi em 90% dos casos. O desconforto se manteve em 90% na região lombar. O IPAC foi de 20% sedentário. Já no GPG, pode-se observar 80% para o sexo feminino, 70% solteiros com 90% de sobrepeso. O tempo de magistério foi de 10 anos. A prática de atividade física foi de 10 a 15 minutos. A doença prevalente foi a hipercolesterolemia. O desconforto foi de 90% na região lombar e 80% pescoço e ombro. O IPAC foi de 60% sedentário.

CONCLUSÃO

Pode-se concluir que os professores da graduação apresentam mais dores em pescoço e ombro, apresentam sobrepeso com maior nível de inatividade física enquanto os professores da pós-graduação apresentam mais dores lombares com peso ideal e maior prática de atividade física.

DESCRITORES

Dor, Prática de atividade física, Professor.

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INTRODUCTION

Society has recently undergone many significant changes in social, economic, and technological areas[1]. Although these changes are positive for economic and social development, they end up being negative in other areas for society, through the rush of daily lives and the great responsibilities and demands for productivity at work[1-3]. These greater demands at work mean people often leave to one side their physical and mental well-being, contributing to a poor diet, and lack of time for leisure, rest, and sleep[1]. In the case of university professors, the situation does not differ, given the continuous and daily demand for classes, the production of scientific knowledge with the development of research projects, participation in extension projects, in addition to the administrative work that includes meetings and other bureaucratic processes, thus demanding much of their free time, reducing their quality of life and favoring the sedentary lifestyle[2]. Despite dissemination through the media about the benefits of physical activity, a study carried out in 122 countries found that approximately 30% of adult individuals are considered inactive[3].

Sedentary behaviors require great attention from health professionals, since they can progress to chronic diseases and disorders such as obesity, diabetes mellitus, hypercholesterolemia, and arterial hypertension, among others. Prevalent sedentary behavior can aggravate these diseases and disorders, causing functional disability, chronic suffering, and premature death[3]. Sedentary lifestyle, in addition to being an aggravating factor for these diseases and noncommunicable diseases (NCDS), also contributes to obesity and overweight in the world population[3]. A study to evaluate the level of sedentary lifestyle in 293 professors indicated that 43.4% of them can be considered active and very physically active, while 56.6% are considered irregularly active or sedentary. According to the authors, one of the explanations for this could be the economic level, since professors who belonged to the classes with greater purchasing power showed less involvement in physical activities of longer duration and intensities[2]. Generally, university professors report barriers such as lack of time and psychological alterations to explain sedentary behavior[3].

Sedentary behavior in professors, associated with the stress of academic activity, contribute to musculoskeletal complications and pain discomfort, as well as absence from work[4]. A study showed a prevalence of musculoskeletal symptoms of 70% of both conditions in 40 teachers from a higher education institution, with a predominance of females, mean age group of 40.4 years, mean workload of 31.2 hours per week, with the lumbar and dorsal (50% each) and shoulder (42.5%) regions being most affected[4]. Musculoskeletal discomforts in professors can be explained by the amount of time that the professor teaches, working in more than one institution, the short rest time between classes, poor body positioning during classes, staying in the same standing position for a long time, professional devaluation, job dissatisfaction, and the distance from home to work[5].

It is known that professors commonly perform many repetitive movements, namely: writing or erasing the blackboard, proofreading, and daily use of the computer, in addition to remaining in a standing or sitting position for a prolonged time, leaving them more vulnerable to symptoms of musculoskeletal pain in different body segments, especially the lumbar spine[4,5]. There is wide evidence showing the reduction and prevention of these disorders in professors through the practice of occupational gymnastics, being developed in the workplace for the purpose of preventing occupational diseases and reducing stress[6]. Sedentary lifestyle in teachers can be justified by a double working day, socioeconomic issues, and lack of time, favoring muscle weakness and fatigue[5].

It is believed that the practice of physical activity improves and preserves health, thus leading to a better quality of life, controlling body weight, and improving fat metabolism, in addition to being associated with the prevention of chronic non-communicable diseases [7]. Among these diseases, arterial hypertension is one of the major challenges for the prevalence of morbidity in the population[8]. Similarly, to Hypertension, Diabetes Mellitus is also another factor of concern for global health, due to its high prevalence and acute or chronic complications[9]. A study showed improvement in the quality of life of individuals with heart disease through a better perception of physical, social, and emotional well-being[10,11]. Regardless of age, sex, and

profession, physical activity brings several benefits to the population; and becomes very pleasant after overcoming the initial period, bringing a better quality of life and general well-being to the individual[12]. Therefore, to enjoy all these benefits, physical activity must be performed regularly, through acquiring an active lifestyle[13,14]. However, despite being of great clinical importance for the subsequent prevention of musculoskeletal symptoms in professors, physical activity behavior and musculoskeletal pain in undergraduate and postgraduate professors are poorly understood. Thus, the purpose of the current study is to verify and compare the profile of the level of physical activity and symptoms of musculoskeletal discomfort in undergraduate and postgraduate university professors.

METHODS

Study design and cases

A cross-sectional, descriptive study was carried out. The sample was recruited by convenience and on a voluntary basis from the teachers of a Private Higher Education Institution (HEI) who teach in the morning shift and with several hours/classes equal to or greater than 20 hours/week. In total, twenty university professors participated in the study, divided into two groups: group of undergraduate professors (GPG, n = 10) and group of postgraduate professors (GPPG, n = 10), both aged between 25 and 50 years. All professors signed the Free and Informed Consent Term previously approved by the Research Ethics Committee of the Universidade Santo Amaro under number: 1.783.918. Exclusion criteria were professors who were on leave of absence (training, illness, maternity, etc.), with less than 20 class hours, symptomatic musculoskeletal diseases in the lower limbs, symptomatic diseases of the central and peripheral nervous system, rheumatological diseases, and those who did not agree to answer the questionnaires.

Initial evaluation

After the teachers has been contacted for an interview and after signing the consent form, a questionnaire on socio-demographic characteristics, teaching practice, and the presence of chronic non-communicable diseases was applied.

Evaluation of Pain

To evaluate pain and discomfort, a Nordic musculoskeletal questionnaire (NMQ) was delivered, which is made up of a human figure divided into nine anatomical regions. The NMQ also includes questions regarding the presence of annual and weekly musculoskeletal pain, the presence of functional disability, and whether the volunteer sought a health professional in the previous 12 months.

Evaluation of physical activity practice

To evaluate the level of physical activity, the *International Physical Activity Questionnaire - IPAQ* short version was used. This questionnaire enables estimation of the weekly time spent in physical activities of moderate and vigorous intensity, in different contexts of daily life, such as: work, transportation, domestic tasks, and leisure, and the time spent in passive activities, performed in a sitting position.

RESULTS

In the GPPG, the professors are 90% female and 10% male, with a mean age of 61.2±20.3, 70% married and 20% single, 70% with an ideal BMI and 30% overweight. Regarding professional characteristics, the professors have teaching experience of 10 years, with a workload of 40 hours or more in 90%, and 80% still perform clinical work. Physical activity was performed by 90% of the professors (80% 3 to 5 times weekly, for 30 to 60 minutes in 90% of teachers). In addition, 70% reported not having leisure time. The prevalent disease in 90% of cases is hypercholesterolemia. In relation to the GPG professors, 80% are females and 20% males, with a mean age of 41.3 ± 9.6. Of these, 20% are married and 70% single, with 10% demonstrating an ideal BMI and 90% overweight. The teaching time was 80% with 40h or more, and 90% perform other professional activities. Physical activity was practiced by 80% of teachers (80% 3 to 5 times weekly, for 10 to 15 minutes in 70%). The prevalent disease was also hypercholesterolemia in 90% of the volunteers. In addition, 70% reported not having leisure time, as can be seen in table 1.

Table 1. Representation of the demographic profile, teaching activity, and chronic diseases among undergraduate and postgraduate professors.

Variables	Postgraduate n (%)	Undergraduate n (%)
Sex	90% Female 10% Male	80% Female 20% Male
Age	61.2±20.3	41.3±9.6
Civil Status	70% Married 20% Single	70% Married 20% Single
BMI	70% Ideal weight 30% Overweight	90% Overweight 10% Ideal weight
Time of Teaching	90% More than 10 years 10% From 0 to 4 years	80% More than 10 years 20% From 5 to 9 years
Workload	100% 40 hours	80% 40 hours or more 10% 20 hours 10% 21 to 39 hours
How many times a week perform physical activity	80% From 3 to 4 times 10% From 1 to 2 times 10% Zero	80% From 3 to 5 times 10 % Zero 70% Zero
Duration of activity	90% From 30 to 60 min 10% From 10 to 15 min	10% From 10 to 15 min 10% From 30 to 60 min
Activity in leisure time	70% Yes 30% No	70% No 20% Yes
Have enough energy for the day	90% Yes 10% No	100% Yes
Frequency of alcoholic beverages	80% Monthly 20% Never drink	70% Never 20% Monthly
Smoking	100%	100% Never
Have high blood pressure	100% No	100% No
Have diabetes	100% No	100% No
High cholesterol	90% No 10% Yes	90% No 10% Yes
Uses medication	70% Yes 20% No	80% Yes 20% No

In the professors of the postgraduate group, pain or discomfort was reported in 90% of the cases for the lumbar region in the previous 12 months and in the previous 7 days it also prevailed in 90% in the lower back, but also in 20% in the thoracic and neck regions, but no absence from work was reported in

the previous 12 months. Regarding the IPAQ, 40% are very active, 40% insufficiently active, and 20% sedentary. In relation to undergraduate professors, pain or discomfort was reported in 90% of the cases for the lumbar region and in 80% of the neck and shoulder in the previous 12 months and in the last 7 days it prevailed in 80% in the neck and shoulder, and no absence from work was reported in the previous 12 months. With respect to the IPAQ, 20% are very active, 40% insufficiently active, and 60% sedentary (Tables 2, 3, and 4).

Table 2. Presentation of musculoskeletal pain symptoms in the previous 12 months in the body segments of undergraduate and postgraduate professors.

Location	Group	Result n (%)
	- Postgraduate	90% N 10% Y
Neck	- Undergraduate	20% N 80% Y
	- Postgraduate	80% N 20% Y
Shoulders	- Undergraduate	80% N 20% Y
	- Postgraduate	100% No
Elbows	- Undergraduate	100%No
	- Postgraduate	100% No
Wrists, hands and fingers	- Undergraduate	90% N 10% Y
	- Postgraduate	80% N 20% Y
Dorsal region	- Undergraduate	90% N 10% Y
	- Postgraduate	10% N 90% Y
Lumbar region	- Undergraduate	20% N 80 % Y
	- Postgraduate	100% No
Hips and thighs	- Undergraduate	90% N 10% Y
	- Postgraduate	90% N 10% Y
Knees	- Undergraduate	90% N 10% Y
	- Postgraduate	100% No
Ankles and feet	- Undergraduate	90% N 10% Y

Table 3. Presentation of painful musculoskeletal symptomatology in the previous 7 days in the body segments of undergraduate and postgraduate professors.

Locations	Group	Result n (%)
	- Postgraduate	90% N 10% Y
Neck	- Undergraduate	20% N 80% Y
	- Postgraduate	80% N 20% Y
Shoulders	- Undergraduate	90% N 10 % Y
	- Postgraduate	100% No
Elbows	- Undergraduate	100% No
	- Postgraduate	100% No
Wrists, hands and fingers	- Undergraduate	90% N 10% Y
	- Postgraduate	80% N 20% Y
Dorsal region	- Undergraduate	90% N 10% Y
	- Postgraduate	10% N 90%Y
Lumbar region	- Undergraduate	80% N 20% Y
	- Postgraduate	100% N
Hips and thighs	- Undergraduate	100% N
	- Postgraduate	90% N 10% Y
Knees	- Undergraduate	90% N 10% Y
	- Postgraduate	100% No
Ankles and feet	- Undergraduate	100% No

Table 4. Musculoskeletal pain as an interference factor in daily life activities in the previous 12 months of body segments among undergraduate and postgraduate professors..

Locations	Group	Result n (%)
	- Postgraduate	100% No
Neck	- Undergraduate	100% No
	- Postgraduate	100% No
Shoulders	- Undergraduate	100% No
	- Postgraduate	100% No
Elbows	- Undergraduate	100% No
	- Postgraduate	100% No
Wrists, hands and fingers	- Undergraduate	100% No
	- Postgraduate	100% No
Dorsal region	- Undergraduate	100% No
	- Postgraduate	100% No
Lumbar region	- Undergraduate	100% No
	- Postgraduate	100% No
Hips and thighs	- Undergraduate	100% No
	- Postgraduate	100% No
Knees	- Undergraduate	100% No
	- Postgraduate	100% No
Ankles and feet	- Undergraduate	90% N 10% Y

DISCUSSION

The results of the present study demonstrated a prevalence of females in both groups of professors (undergraduate and postgraduate), as well as the symptom of pain/discomfort in the lumbar spine and neck during the periods of 7 days and 12 months. Another important point was to observe that the most common chronic disease between the groups was hypercholesterolemia. Regarding the practice of physical activity, the group of postgraduate professors was more active, with a daily frequency, and 90 minutes of practice during the week, while the undergraduate professors present daily sedentary behavior, with a practical frequency from 10 to 15 minutes daily.

The literature highlights the importance of physical activity for the prevention of chronic non-communicable diseases and improvement in the quality of life of professors[2]. Despite being of great importance for disease prevention, the practice of physical activity remains higher among postgraduate professors[13-15]. The study of Tsuneta (2010)[15], in Maringá, showed a prevalence of 79% of insufficiently active individuals, with a prevalence in females and in those with less socioeconomic status, probably because individuals with a higher income are more likely to participate in health promotion programs, thus presenting a more active behavior[6]. These findings partially corroborate the findings of the current study, since postgraduate teachers have a higher workload, thus demonstrating better financial conditions to participate in sports activities. Despite the great impact of socioeconomic condition for physical activity, Hallal et al., (2003)[16] observed the opposite, in which the greatest practice of physical activity was in lower socioeconomic levels [6].

In general, undergraduate teachers present insufficient levels of physical activity. Matsudo et al. (2002)[17], evaluating university professors from several cities in the state of São Paulo, found an index of 54% of insufficiently active teachers. In another study, carried out by Martins (2000)[18] a low level of physical activity was observed among higher education teachers. According to the author, physical inactivity can be explained by a lack of time and related psychological factors, stress being one of the main factors. Carvalho and Alexandre (2006)[19], also reinforce these findings, observing that 46.5% of teachers do not perform physical activities due to lack of time and a double working day that results in continuous tiredness associated with muscle fatigue. In view of these literary findings and

those of the present study, the practice of physical activity is associated with a better lifestyle in university professors, and it is necessary to implement intervention programs using behavior change strategies.

In addition to the physical inactivity present in university professors, the presence of pain and discomfort in certain body segments is common. In a study conducted by Carvalho and Alexandre (2006)[19], the authors observed that in the previous 12 months, professors reported a higher occurrence of musculoskeletal symptoms in the following regions: lumbar (63.1%), thoracic (62.4%), cervical (59.2%), shoulders (58.0%), and wrists and hands (43.9%)[5]. Severo et al., (2012)[4] also demonstrated that the lumbar and dorsal regions are the most affected in professors, reaching a percentage of 70%. These findings can be corroborated by the current study, since both groups of university professors presented pain in the lumbar and thoracic spine[4]. According to Maehler (2003)[20], pain in the lumbar and thoracic region can be explained by the fact that the professor remains in the orthostatic position for long periods and thereby increases the muscular activities of the erector spinae, leading to muscle fatigue followed by musculoskeletal pain. Branco et al., (2011)[21] also explain that for professors, working for long periods with the arms abducted above 90o associated with the rotation of the trunk and a slight inclination of the neck causes greater overloads of muscular activation of the cervical, scapular, and thoracolumbar region, resulting in painful symptoms in the spine[5].

CONCLUSION

It can be concluded that undergraduate professors report more neck and shoulder pain, are more likely to be overweight, and have a higher level of physical inactivity, while postgraduate teachers report more lumbar pain, are more likely to have an ideal weight, and have greater practice of physical activity.

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