

# Occurrence of Osteomuscular Symptoms in Teachers of a Higher Education Institution

**ORIGINAL**

**Danielle Aurília Ferreira Macêdo Maximino<sup>1</sup>,  
Adriana do Carmo da Silva<sup>1</sup>, Eva Pôrto Bezerra<sup>1</sup>,  
Danielle Martins do Nascimento Oliveira<sup>2</sup>,  
Cássia Surama Oliveira da Silva<sup>2</sup>,  
Josélio Soares de Oliveira Filho<sup>1</sup>, Nereide de Andrade Virgínio<sup>1</sup>,  
Cláudia Germana Virgínio de Souto<sup>1</sup>,  
Déa Sílvia Moura da Cruz<sup>1</sup>, Amanda Benício da Silva<sup>1</sup>,  
Camila Navarro Rocha Saraiva<sup>2</sup>,  
Emmanuella Costa de Azevedo Mello<sup>3</sup>,  
Andréa Márcia Cunha Lima<sup>2</sup>, Lucas Cunha Pimenta Barbosa<sup>4</sup>,  
Daniela Karina Antão Marques<sup>1</sup>**

- 1 College the Nursing and Medical Nova Esperança (FACENE/FAMENE). João Pessoa (PB), Brazil.
- 2 University of Paraíba (UFPB). João Pessoa (PB), Brazil.
- 3 Faculty of Nursing São Vicente de Paula (FESVIP). João Pessoa (PB), Brazil.
- 4 Maternity Frei Damião. João Pessoa (PB), Brazil.

## Contact information:

**Danielle Aurília Ferreira Macêdo Maximino.**

 [dannyaurilia@hotmail.com](mailto:dannyaurilia@hotmail.com)

## Abstract

The objective of this study was to investigate the occurrence of musculoskeletal symptoms in teachers of a Higher Education Institution (HEI) located in João Pessoa -PB. This is a descriptive research with a quantitative approach, held at the Faculties of Nursing and Medicine (FACENE/FAMENE), in the city of João Pessoa-PB. The instrument for data collection consisted of a form with objective questions and divided into two parts, the first with data characterizing the sample and the second with the Nordic Musculoskeletal Symptoms Questionnaire. The data were analyzed quantitatively in percentage numbers and distributed in graphs. The results indicated that 30 teachers accepted to participate in the study with female predominance (67%). The regions most affected in the last 12 months were: dorsal (60%), lumbar (53%), neck, shoulders, wrists and hands (47%). Of the teachers interviewed, 20% reported having had difficulties in routine activities due to discomfort in the cervical region and 27% reported having sought medical or physiotherapeutic care due to neck pain, while 20% due to pain in the shoulders, dorsal, wrist/hands and hip/thighs. As for the occurrence of symptoms in the last week, the regions with the highest frequency of pain were shoulders (40%), neck and dorsal (27%). The significant percentage in the regions cited certifies that they are the re-

gions most burdened in the professors and, therefore, deserve special attention in possible projects of occupational preventive action. This research evidences the necessity of new approaches and deepening on the subject, including the formulation of intervention strategies in the process of sickness of teachers.

#### Keywords

Work-Related Musculoskeletal Disorders; University Teachers; Worker's Health.

## Introduction

Teaching is one of the oldest professions, however, the teacher who was previously seen as an essential figure for society, due to his social role, today is a worker who fights for appreciation and recognition [1, 2].

Being a teacher is being in constant learning, building, rebuilding and updating knowledge. The changes in our society and the technological advances oblige the teacher to seek improvement in his work in the classroom and in digital environments [3].

In this current scenario in which technological advances should facilitate human work, it is observed that the reality of the teacher does not follow this path. New needs arise in the labor relations that favor the teacher's exposure to stressful workloads and to have less time for leisure and family life, making it vulnerable to illness [4].

Teachers, regardless of the level of education they teach, are in the class of professionals who are more likely to become ill. Studies on the working conditions and health of teachers demonstrate that they are subject to the appearance of Work-Related Osteomuscular Disorders (DORT), this because the teaching work is understood as a repetitive activity, fragmented in tasks and submitted to intense work rhythms [5].

DORs are injuries to muscles, tendons, nerves, fascia and ligaments, isolated or combined, with or without tissue degeneration. It usually includes pain, paresthesia, feeling of weight and fatigue [6]. It consists of clinical pictures of the musculoskeletal

system acquired by the worker under certain working conditions [7].

The acronym DORT replaced the acronym LER, because in addition to the repetitive effort (dynamic overload), other types of overload at work can be harmful to the worker as the static overload is the use of muscle contraction for prolonged periods to maintain postures. As well as work performed with inappropriate postures [8].

These problems are responsible for a large part of health care expenses, as well as the impact on the worker's quality of life. Therefore, this constitutes a great projection leading to high rates of absenteeism, as well as being the second cause of work withdrawal in Brazil [9, 10].

The etiology of DORT cases is multifactorial [11]. Mechanical factors (repetition, strength, postures) are present, but some scientific studies and expert analyzes have shown the association of many cases of DORT with social, family, economic factors and with stress or dissatisfaction at work. This explains why many, even not involved in repetitive work, had similar symptoms [8].

Thus, teachers' health also reflects the lack of appreciation and low wages, poor working conditions, physical fatigue on the long journey, teachers' double journey (domestic and professional), the uncomfortable postures, the lack of frequent breaks, work in more than one school, the need to perform part of the work in the domestic universe (preparation of classes, correction of tests), the need to remain standing throughout the class, among others [12].

On the other hand, higher education teachers still have to combine teaching, research and extension activities [13]. The demand for higher levels of enrollment of these professionals to enter the labor market is often disproportionate to the quality of working conditions experienced. The teaching work presents great intellectual and psychoemotional requirements, and social and pedagogical skills [14].

The imposition of productivity parameters and the enormous diversity of activities transact between the demands of intellectual investment translated into classes, research, articles, books and etc., as well as bureaucratic requirements, work meetings, reading e- Mails and their response to them, etc. Teaching work is such as to allow it to be carried out, in part, outside the institutional environment and often extrapolates the specific limits of the contracted regimental journey. Thus, there is a great impact on the health and quality of life of teachers, as well as the quality of academic production that starts to have as main parameter the quantity [15].

Teachers often question the overload of activities, night and weekend work, lack of free time, etc., but consider it all normal. The so conquered academic autonomy and the labor flexibility imposed by the new times make many teachers put the commitment with their students, their colleagues, their scientific production, in short their institution, above their personal needs and conditions [16].

There are several researches that deal with the precariousness of work and the sickness of teachers [17]. Studies that discuss musculoskeletal disorders have become frequent among the diverse classes of workers, including the teaching profession, which requires great efforts of the musculoskeletal system. However, there is a shortage of data on higher education teachers [10, 18, 19].

Therefore, the study on this theme presents its relevance, due to the impact on the quality of life of teachers and, therefore, on the quality of higher education. Knowing the aspects that determine the occurrence of DORTs in higher education teachers is

essential for understanding the causal links of these diseases, contributing to the construction of a scientific reference that can guide the various forms of interventions in the educational sector in relation to teacher health.

Thus, this study aimed to investigate the occurrence of musculoskeletal symptoms in teachers of a Higher Education Institution (HEI) located in João Pessoa – PB and contributing to the deepening of the knowledge of the researched subject and from this observation to suggest some measures aimed at improving the quality of life of teachers.

## Method

It is a cross-sectional descriptive research with a quantitative approach. The descriptive study was adopted because its main objective was to study the description of the characteristics of a population [20]. Quantitative research, in general, is used when one wants to measure the prevalence of some data in a population through a sample that represents it. Thus the sample is nothing more than a fraction of the population [21].

The research was carried out in an IES located in the city of João Pessoa, Paraíba. The institution chosen was the Faculty of Nursing and Medicine Nova Esperança - FACENE/FAMENE, which consists of a private institution of higher education. This institution has an ethics committee in research and approved this study for research and publication on CAAE number: 61699816.9.0000.5179. In accordance with the guidelines of Law 466/2012.

The sample consisted of 30 teachers who make up the teaching staff of the IES. The data were collected according to the acceptance in participating in the research and the voluntary response of the teachers.

Data on sociodemographic and occupational conditions of the participants, for the characterization of the sample, were collected from a structured questionnaire. The instrument chosen for the

collection of information regarding musculoskeletal symptoms is the Nordic Osteomuscular Symptom Questionnaire - QNSO.

At the end of the data collection, they were submitted to statistical treatment through the program Microsoft Office Excel 2010, being exposed in a descriptive way in simple percentage numbers in order to present the results in graphs.

It is understood that the accomplishment of this research will contribute to the identification of possible musculoskeletal symptoms in teachers at the IES. The present research will bring innumerable benefits to the teachers, since the data contained in this study will subsidize new perspectives for the prevention of musculoskeletal symptoms in teachers.

## Results and Discussion

### Characterization of subjects

40 questionnaires were distributed, of which 30 were returned. Of the 30 teachers who accepted to participate in the study and answered the questionnaire, the female sex was predominant (67%), as can be seen in Table 1.

The age range of the studied population corresponds to a mean age of 39 years, being the youngest age of 30 and the greatest of 55 years. In relation to marital status, 67% are married or with a partner (**Table 1**).

These characteristics were similar to those of Severo [22]. He studied teachers from an HEI in Fortaleza/CE whose average age was 40.4 years. The female sex was predominant (60%), as well as the married civil status (72.5%). Lima Junior [7] at the UPE Petrolina, obtained a mean age of 39.12 years and a predominance of the female gender (71.4%). This female majority can be attributed to the fact that teaching is still a predominantly female work space since historically the entry of women into the labor market occurred in the educational field.

**Table 1.** Socio-demographic profile of the teachers studied.

Variables	N	%
Sex		
Male	10	33
Female	20	67
Marital Status		
Married	20	67
Single	6	20
Separate	2	7
Widower	2	7
Titulation		
Master	16	53
Doctor	12	40
Post Doctoral	2	7
Academic Activities		
Teaching Undergraduate	30	100
Teaching Post undergraduate	12	40
Search	14	47
Extension	12	40

As for the degree and academic training, because they were university professors, the minimum degree found was of the master with 53%, doctor 40% and teachers with postdoctoral 7% (Table 1). The average number of years as a teacher was 6.9 years, with 2 years being the minimum time and 12 years being the highest reported time.

It is observed the search for qualification / qualification by the HEI teachers studied, as well as the study by Leandro [17] that presented 59% of teachers and masters.

When asked what academic activities they are engaged in at the moment (Table 1), 100% are professors of undergraduate courses, 40% of whom are also postgraduate students, 47% are engaged in research activities and 40% in extension activities. Of these, 27% are in one activity that is undergraduate education, 33% are involved in two simultaneous activities, 27% in three activities and 13% are involved in the four academic activities asked for.

It is known that the increase in scientific teaching production is being stimulated by the institutions that regulate postgraduate and research promotion, which allows the teacher to remain in graduate programs and, consequently, obtain funding for research [4].

### Occupational Conditions

About 40% of the interviewees have other paid professional activity besides teaching and 67% only work in the HEI surveyed, while 27% in two and 7% in three or more institutions.

Also in Severo's study [22], 62.5% of the sample reported performing other paid occupational activity other than teaching, with 40% working in another teaching network. Carneiro [23] explains that the teaching work has suffered with the current forms of flexibilization of labor relations. Many teachers work in three shifts and in different HEI, working with temporary contracts and in hourly, being paid by class hour.

As for the duration of the workday, the average found was 37 hours per week, reaching up to 60 hours per week as reported by one of the sample subjects. 7% of teachers work in only one shift, 47% two shifts and 40% three shifts. 87% reported taking breaks, while only 13% reported no respite. Of those who stated a break in the work shift the shortest pause time was 15 minutes, while the longest was 120 minutes. When asked how many hours at a time work without breaks, only one subject answered 120 minutes.

The weekly workload was similar to that found by Lima Júnior [7], which was between 31 and 40 hours. According to Fontana [4], working more than 40 hours per week and taking multiple workdays, two or more jobs, can be predictive factors of tiredness, wear and muscle complaints, because without time to rest, recovery of musculoskeletal structures Gets impaired. Farm [10] warns that the double working day, in addition to implying a greater number of hours, supposes a predisposition to

the disease or its *chronification* and to suffer accidents.

Of the teachers interviewed in the present research, 100% answered affirmatively when asked if they usually take work home. 73% answered that after a day at work they still had a willingness to interact with their family, compared with 27% who answered no.

Granja [10] describes that teachers claim to spend a lot more hours working to prepare classes, didactic material, proofreading and work than predicted by the institution. For Carneiro [23], when the teacher starts to do the work at home, not having the obligation to perform in a place of his own as in school, he lays the relation between work, leisure and family.

### Health it Conditions

When asked about regular physical activity, 67% answered that they did not practice any activity and 33% answered yes, the activities mentioned being: walking, running, aerobics, bodybuilding and *pilates*. 7% of the teachers reported excellent health, 20% were very good, 40% were good, 13% were regular and none of the respondents answered that they had poor health.

Sanchez [16] points out that 46% of teachers do not perform physical activity, which can be explained by lack of time, double working hours, socioeconomic issues. It emphasizes that the lack of physical activity provides the individual with muscular weakness, greater possibility of muscular fatigue and makes it impossible to withstand the long hours of weekly work. The results found in this study confirm the affirmative of the above mentioned author regarding the lack of time to practice physical activities, since the weekly workload was 37 hours, not counting the workload that teachers have in the home environment Since 100% reported taking work home.

Fontana [4] presents different data from the present study, where 79% performed physical activity,

with the most reported walking. It also highlights that there is epidemiological evidences of the interrelation between health and physical activities, which, if practiced on a regular basis, may have health benefits.

### Musculoskeletal Symptoms

For the evaluation of musculoskeletal symptoms, the Nordic Osteomuscular Symptoms Questionnaire - QNSO. The questionnaire indicates the nine most common anatomical regions illustrated by means of a human figure.

The first question was as follows: In the last 12 months, you have had problems (such as pain, tingling/numbness)? The answer was yes or no to the occurrence of the symptoms surveyed in each region (**Figure 1**).

The most affected regions in the last 12 months were: dorsal (60%), lumbar (53%), neck, shoulders, wrists and hands (47%), respectively.

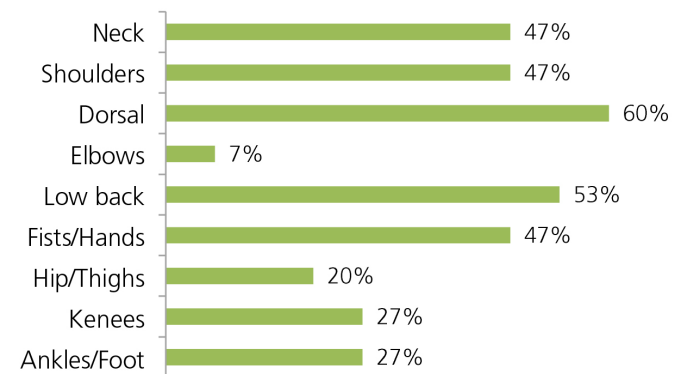
Sanchez [16] obtained similar results with a prevalence of 69% in the dorsal region, 80% in the lumbar region, 77% in the neck and cervical region, 72% in shoulders and 66% in wrists/hands/fingers. Leandro [17] also indicated that the anatomic regions most affected the cervical spine (34%) and the lumbar spine (27.2%). The predominance of pain symptoms and musculoskeletal discomforts in the lumbar spine in teachers was also found by Lima Júnior [7] with 54.8%.

Sanchez [16] reports that reports of pain in the back and lower back are common when using orthostatic posture for long periods, because in this posture there is more activity in the erector spinae, which generates muscle fatigue and consequent pain.

To the question: In the last 12 months, have you been prevented from carrying out normal activities (eg work, domestic and leisure activities)? The following responses were followed (**Figure 2**).

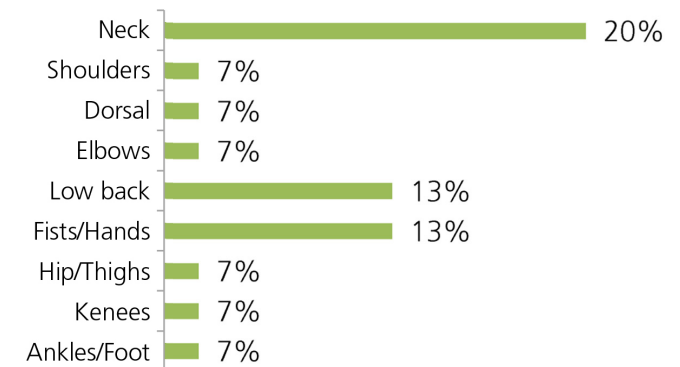
Of the teachers interviewed, 20% reported having had difficulties in routine activities due to dis-

**Figure 1:** Distribution of the occurrence of pain, tingling/numbness in the different parts of the body in the studied teachers.



Source: Direct Search, 2016.

**Figure 2:** Percentage of body regions that represented any impediment to routine activities in the teachers studied.



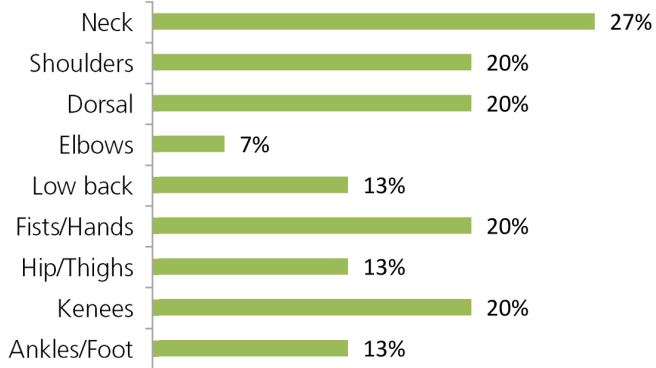
Source: Direct Search, 2016.

comfort in the cervical region (**Figure 2**). High prevalences of cervical spine are also mentioned in other studies with teachers presenting supposed associations with head tilting movements and, mainly, with muscular tensions generated by the maintenance of postures for long periods of time [7].

Santos [24] reports that in a study carried out by physiotherapists of the Teachers' Union of São Paulo, 72% of the teachers had an anterior postural pattern, that is, with anterior head, shoulder protrusion, dorsal kyphosis and retroversion of the pelvis.

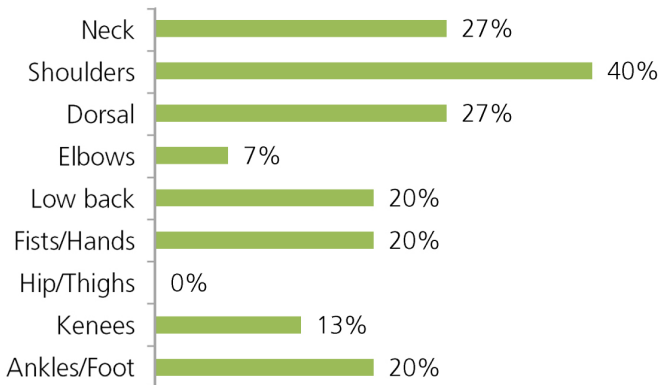
To the question: In the last 12 months, have you consulted a health professional (doctor, physiotherapist)?

**Figure 3:** Percentage of body regions that led teachers to seek medical or physiotherapeutic care.



Source: Direct Search, 2016.

**Figure 4:** Distribution of the occurrence of pain, tingling/numbness in the different parts of the body in the studied teachers.



Source: Direct Search, 2016.

Of those interviewed, 27% reported having sought medical or physiotherapeutic care due to neck pain, and 20% in the shoulders, dorsal, wrist/hands and hip/thighs (**Figure 3**).

It is worth noting that of the 47% of teachers who reported cervical pain in the last 12 months, only 27% sought care and, even more alarmingly, of the 60% who reported back pain, only 20%.

The professional when feeling these pains and not seeking a doctor to treat it, continues to perform daily and repetitive exercises, which can further aggravate the problem [25].

The coping of pain, according to those researched by Fontana [4] is done through stretching, massage,

acupuncture, homeopathy and use of medications such as anti-inflammatory and analgesic.

The last question referred to the same symptoms only in the last 7 days as can be observed the frequency in percentage numbers in **Figure 4**.

**Figure 4** shows the frequencies of musculoskeletal pain among teachers in the last week for all regions of the study body. It can be verified that, unlike the one reported in the last year, the regions with the highest frequency of pain were shoulders (40%), neck and dorsal (27%), respectively.

In a study also carried out with teachers from an HEI in Campina Grande/PB and 65.2% of the teachers felt pain in the last 7 days, 38.2% said they had pain in the spine and 30.3% felt pain in the upper limb [26, 27]:

A review of the literature on shoulder pain and occupational factors revealed that weight transport, the presence of physical exertion at work, and elevation of the upper limbs above shoulder level were associated with this type of pain. It can be observed that these factors are often present in the teacher's work routine. The transportation of materials, the presence of physical effort and the use of computers with the use of non-ergonomic tables and chairs, can lead to the incidence of pain both in the shoulders and in the neck region [28, 29, 30].

## Conclusion

It was verified that the occurrence of musculoskeletal pain was more predominant in the dorsal region, followed by the lumbar, neck, shoulders, wrists and hands. The significant percentage in the regions cited suggests that these are the most overloaded body regions in teachers and therefore deserve special attention in possible projects of preventive action in worker health.

It was also observed that the teachers of the studied sample have a profession other than teaching; Present an extensive working day; come to work the

three shifts; and are linked to more than one institution, characterized by work overload and greater requirement of the musculoskeletal system.

A limitation of the present study was the difficulty in finding the institution's teachers in the teachers' room, the place chosen for the distribution of the questionnaires, due to the fact that the data collection took place in the period of tests and closure of academic activities. Therefore, we suggest studies with a larger sampling so that, in addition to an internal validity, an external validity can be demonstrated.

This theme has its relevance, because when it becomes aware of the body regions most affected by musculoskeletal symptoms in higher education teachers, it is possible to suggest some measures aimed at the health of the teacher.

As the study was carried out at a health college, the knowledge of the risk factors related to musculoskeletal pain, as well as prevention strategies and treatment of the pain could be a focus of attention within the principles of teaching, research and extension. Where one could focus on injury prevention, combined with ergonomic strategies directed to the movements, postures and all the overload required during the work, as well as to stimulate the adoption of healthy habits. Thus, it could reduce the occurrence of musculoskeletal pain, improving the quality of life and productivity of teachers in their work activities.

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