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USE OF THE OSWESTRY INDEX ON THE INFLUENCE OF PAIN, PRACTICE OF PHYSICAL ACTIVITY, AGE AND SMOKING ON LOW BACK PAIN IN UNIVERSITY STUDENTS

UTILIZAÇÃO DO ÍNDICE OSWESTRY SOBRE A INFLUÊNCIA DA DOR, PRÁTICA DE ATIVIDADE FÍSICA, IDADE E O FUMO SOBRE A DOR LOMBAR CRÔNICA EM UNIVERSITÁRIOS

Cesário Rui Callou Filho¹ | Allan Hudson Sobreira Pereira² | Aline Bandeira Vasconcelos³

ABSTRACT

The functional assessment instrument of the lumbar spine named Oswestry Disability Index is among the more specific questionnaires, and for this reason it is possible to characterize it in association with other variables or in relation with the factors that interfere with the pain status of backache. This study is characterized in describing the use of Oswestry index on the influence of pain, physical activity practice, age and smoking on chronic low back pain in university students. This was a quantitative and cross-sectional study, which was developed with students, regardless of gender, aged between 18 and 59 years and who practiced sport activity. Data collection took place individually in a private room under ethical approval with registration number 1.819.509. At the end of this study, we found the totality of n=186 individuals; with an amount of n=143 aged between 18 and 26 years; for the female gender, n=147 students; for marital status, n=161 reported being single; as for skin color, n=76 declared to be brown; and for the course, there was a greater frequency of students that reported they were attending Physiotherapy, with n=88. Regarding the pain status, the totality pointed out they felt pain, of these n=103 reported having mild pain and minimal disability. This research suggests that we should investigate why young/adults feel pain in the spine region, as well as why the relationship between age and smoking habit constitutes variables that are related to disability, since almost everyone surveyed practices physical activity.

KEYWORDS

Low Back Pain. Exercise. Students. International Classification of Functioning. Disability and Health.

RESUMO

O instrumento de avaliação funcional da coluna lombar denominado Índice de Incapacidade Oswestry está entre os questionários de maior especificidade, e por isso permite-se caracterizar associado a outras variáveis o a relação com os fatores que interferem no quadro algico da lombalgia. Este estudo caracteriza-se por descrever a utilização do índice Oswestry sobre a influência da dor, prática de atividade física, idade e o fumo sobre a dor lombar crônica em universitários. Tratou-se de um estudo transversal quantitativo, desenvolvido com discentes, independentemente do sexo, com idade entre 18 a 59 anos e que praticavam atividade esportiva. A coleta de dados ocorreu individualmente em uma sala reservada, sob aprovação ética, com registro de número 1.819.509. Ao final deste estudo, encontrou-se a totalidade de n=186 de indivíduos; com um quantitativo de n=143 na faixa etária entre 18 e 26 anos; para o sexo feminino, n=147 estudantes; para o estado civil, n=161 relataram ser solteiros; quanto à cor da pele, n=76 declararam ser de cor parda; e para o curso, houve uma maior frequência de estudantes que informaram estar cursando Fisioterapia, com n=88. Para o quadro algico, a totalidade indicou referir dor, e destes n=103 informaram apresentar dor leve e incapacidade mínima. Esta pesquisa sugere que seja investigado porque os adultos/jovens sentem dor na coluna, bem como a relação da idade e a prática do fumo serem variáveis que estão relacionadas com a incapacidade, uma vez que quase a totalidade dos investigados pratica atividade física.

PALAVRAS-CHAVE

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INTRODUCTION

Low back pain can be considered a public health problem (VIOLANTE; MATTIOLI; BONFIGLIOLI, 2015) as it represents the lead among diseases in terms of years lived with disability according to the Global Burden of Disease Study (MURRAY et al., 2012). It can be classified as pain, tension or stiffness in the lower spine (CORRÊA; GUEDES; VIEIRA; MUNIZ, 2015).

The Oswestry Disability Index (ODI) is an instrument that evaluates the functionality of the lumbar spine (COELHO et al, 2008), consisting of 10 questions with six alternatives whose scores range from 0 to 5. The first question assesses the intensity of pain and the other nine, the effect of pain on daily activities such as: personal care (dressing and bathing), weight lifting, walking, sitting, standing, sleeping, sexual life, social life, and locomotion (FALAVIGNA et al., 2011).

Among the etiological factors listed on involvement of lumbar spine pain, age and life habits such as smoking and alcoholism (PEDRO et al., 2016), social and economic level, schooling, practice of physical activity, and permanence for long periods in the same posture are among the ones that cause greater effects regarding the presence of chronic low back pain (SILVA et al., 2004).

Thus, due to the high pain rates in this region, 65% of people (WALKER, 2000) treat chronic low back pain every year (NASCIMENTO, 2015) in functional disability that generates an impediment in the performance of daily life activities when compared to a standard of normality and consequently a reduction in the quality of life of the affected individuals (VOLINN, 1976). However, chronic muscular dysfunctions and lumbar pain stand out in some sports practitioners and may even cause intolerance or withdrawal from the practice (MANCINI, 2008).

Thus, this study is a part of the ongoing project identified "Use of the Iliac spine normalization technique through the muscle energy method in university students". At the present, we are developing a randomized controlled study through the technique of muscle energy in the iliac spine. This article presents the results of the first phase, which is a study on the feasibility of the technique and the use of assessment tools. Therefore, the initial goal was to know the functional incapacity of students with prevalence of lumbar pain.

Methodology

This is a cross-sectional study with a quantitative approach developed in a Higher Education Institution in Fortaleza/Ceará, during the period of August to November of 2017, once a week in the morning and night shifts. The study had the approval of the ethics committee of the Maurício de Nassau University Center/PE, under the registration number 1,819,509.

The sample consisted of students of both sexes, with ages ranging from 18 to 59 years, who signed the Informed Consent Term (ICT). In order to include the participants, the following criteria were used to determine the eligibility of the students: presence of low back pain, form completely filled, and practitioners of physical activity with a minimum frequency of at least once a week.

The variables that compose this questionnaire were those related to the socioeconomic profile (age, sex, schooling, race, undergraduate course, shift and income), based on the study of OLIVEIRA; SILVA (2010). The ODI questionnaire was used to evaluate lumbar spine disability. In the case of complete filling of the 10 sections, the scores of the questions were calculated as follows: if the final score was 16 points, and a maximum possible score of 50 points, the calculation is $16/50 \times 100 = 32\%$. If a section is not selected or not applicable, the score is calculated just following the same reasoning of the maximum score above cited, as follows: if the final score was 16 points, the calculation is $16/40 \times 100 = 35.5\%$. The author recommends using integer numbers in the percentages. Interpretation of results: 0% to 20% - minimum disability; 21% to 40% mild disability; 41% to 60% severe disability; 61% to 80% crippled and 81% to 100% disabled (FALAVIGNA et al., 2011; MUNIZ et al., 2016).

The Visual Analogue Scale -VAS was used to assess pain by categorization into five groups, with the value 0 indicating no pain; values 1 to 4 indicating mild pain; value 5 indicating moderate pain; values 6 to 9 indicating severe pain; and value 10 indicating disabling pain (COMASSETTO et al.; 2017).

The process of data collection took place initially with a presentation in the places of circulation of students (library, cafeteria, coordination hall, entrance and exit of the University). The interested students would look for the place where the study was taking place, and the form was applied in a reserved place in the room of the multiprofessional laboratory of Kinesiotherapy.

For the analysis of the findings, a description was made based on frequency (n) and percentage (%) of data collected in the questions related to the socioeconomic profile and statistical correlations were made between variables of the VAS x ODI; practice of physical activity x VAS; age x VAS; practice of physical activity x ODI and smoking x ODI. The Mann-Whitney/Wilcoxon statistical tests were used for the latter, considering statistical significance in case of $p \leq 0.05$.

DEVELOPMENT

Results

At the end of this study, 100% of the questionnaires (n = 186) had been fully completed, comprising a sample with prevalence of the following characteristics: ages between 18-26 years, corresponding to 76.9% of the participants (n = 143); female sex, 79.0% (n = 147), and male sex, 21.0% (n = 39); single marital status, 86.6% (n = 161), and married, 13.4% (n = 25); brown self-reported skin color, 40.9% (n = 76); the majority of the participants were students of the Physiotherapy course, 47.3% (n = 88); most of them reported to be between the 6th-10th semester, 54.3% (n = 101); monthly family income varied from 1-3 minimum wages, 66.7% (n = 124); the majority of the sample consumed alcohol, 52.2% (n = 97), while 47.8% (n = 89) did not.

When the correlation between the ODI and the VAS was tested, it was observed that 100% of the total number of participants (n = 186), 10.6% (n = 16) stated to feel no pain while the majority, 68.2%, presented mild pain and minimal disability, and to a lesser degree, 100% (n = 1) of the students reported intense pain presented intense disability for the other variables, as shown in table I.

Table I: Description of the correlation between the characteristics of university students regarding VAS x ODI variables. Fortaleza-Ce/2018.

Oswestry Disability Index (ODI)	VAS					Total	p-value
	No pain	Mild pain	Moderate pain	Severe pain	Disabling pain		
Minimal disability f(n)	16	103	19	13	0	151	0.00
% line	10.6	68.2	12.6	8.6	0.0	100.0	
% column	100.0	97.2	90.5	31.7	0.0	81.2	
Moderate disability f(n)	0	3	2	27	2	34	0.00
% line	0.0	8.8	5.9	79.4	5.9	100.0	
% column	0.0	2.8	9.5	65.9	100.0	18.3	
Severe disability f(n)	0	0	0	1	0	1	0.00
% line	0.0	0.0	0.0	100.0	0.0	100.0	
% column	0.0	0.0	0.0	2.4	0.0	0.5	
Total f(n)	16	106	21	41	2	186	0.00
% line	8.6	57.0	11.3	22.0	1.1	100.0	
% column	100.0	100.0	100.0	100.0	100.0	100.0	

When correlating VAS with practice of physical activity, 36% (n = 67) of the participants did not practice physical activity and 64% (n = 119) practiced it. Of the 100% (n = 67) who did not practice physical activity, most of them, 49.3% (n = 33), said to feel mild pain and 13.4 (n = 9) presented moderate pain at a lower frequency. Of the 100% (n = 119) practitioners of physical activity, 61.3 (n = 73) reported mild pain and 1.7% (n = 2) disabling pain, as shown in table II.

Table II: Description of the correlation between the characteristics of university students regarding the Practice of physical activity x VAS variables. Fortaleza-Ce/2018.

VAS	Practice physical activity			p-value
	No	Yes	Total	
No pain f(n)	4	1	16	0.02
% line	25.0	2	100.0	
% column	6.0	75.0	8.6	
Mild pain f(n)	3	7	10	0.02
% line	3	3	6	
% column	31.1	68.9	100.0	
Moderate pain f(n)	9	1	21	0.02
% line	42.9	2	100.0	
% column	13.4	57.1	11.3	
Severe pain f(n)	2	2	41	0.02
% line	1	0	100.0	
% column	1.2	48.8	22.0	
Disabling pain f(n)	0	2	2	0.02
% line	0.0	100.0	100.0	
% column	0.0	1.7	1.1	
Total f(n)	6	1	18	0.02
% line	7	19	6	
% column	36.0	64.0	100.0	
	100.0	100.0	100.0	

Among the VAS variables correlated with the age of university students, 76.9% (n = 143) were in the age range of 18-26 years, of whom 10.5% (n = 15) said they not to feel pain, while the majority, 58.0% (n = 83), reported mild pain, as seen in table III.

Table III: Description of the correlation between the characteristics of the university students regarding the correlation of Age x EVA variables. Fortaleza-Ce/2018.

VAS	Age					Total	p-value
	18-26	27-35	36-43	44-52	53-59		
No pain f(n)	1	0	0	1	0	1	0.05
% line	5	0.0	0.0	6.3	0.0	6	
% column	93.8	0.0	0.0	50.0	0.0	100.0	
Light pain f(n)	8	1	3	1	0	1	0.05
% line	3	9	2.8	0.9	0.0	06	
% column	78.3	17.9	37.5	50.0	0.0	100.0	
	58.0	59.4				57.0	

Moderate pain f(n)	1 4	5 23.8	2 9.5	0 0.0	0 0.0	2 1	0.0
% line	66.7	15.6	25.0	0.0	0.0	100.0	5
% column	9.8	15.6	25.0	0.0	0.0	11.3	
Severe pain f(n)	3 0	7 17.1	3 7.3	0 0.0	1 2.4	4 1	0.0
% line	73.2	21.9	37.5	0.0	100.0	100.0	5
% column	21.0	21.9	37.5	0.0	100.0	22.0	
Disabling pain f(n)	1 50.0	1 50.0	0 0.0	0 0.0	0 0.0	2 100.0	0.0
% line	0.7	3.1	0.0	0.0	0.0	100.0	5
% column	0.7	3.1	0.0	0.0	0.0	1.1	
Total f(n)	1 43	3 2	8 4.3	2 1.1	1 0.5	1 86	0.0
% line	76.9	17.2	100.0	100.0	100.0	100.0	5
% column	100.0	100.0	100.0	100.0	100.0	100.0	

In the table on Practice of physical activity x ODI, 64% (n = 119) participants responded that they practiced physical activity, and the majority, 85.7% (n = 102), presented minimal disability, while 0.0% (0) had severe disability. A total of 36% (n = 67) answered that they did not practice physical activity and of these 73.1% (n = 49) presented minimal disability, and 1.5% (n = 1) severe disability, as shown in table IV.

Table IV: Analysis of the correlation between the students' profile regarding physical activity practice x ODI variables. Fortaleza-Ce/2018.

Practice of physical activity				
Oswestry Disability Index (ODI)	No	Yes	Total	p-value
Minimal disability f(n)	4	1	1	0.0
% line	9	02	51	3
% column	32.5	67.5	100.0	
	73.1	85.7	81.2	
Moderate disability f(n)	1	1	3	0.0
% line	7	7	4	3
% column	50.0	50.0	100.0	
	25.4	14.3	18.3	
Severe disability f(n)	1	0	1	0.0
% line	100.0	0.0	100.0	3
% column	1.5	0.0	0.5	
Total f(n)	6	1	1	0.0
% line	7	19	86	3
% column	36.0	64.0	100.0	
	100.0	100.0	100.0	

Regarding the questions that investigated the habit of smoking with the ODI, 96.8% (n = 180) of the study participants were not smokers, of whom 82.2% (n = 148) presented minimal

disability, and 0.6% (n = 1) severe disability. On the other hand, 3.2% (n = 6) were smokers, and 50% (n = 3) of these presented minimal disability and 50% (n = 3) moderate disability, as shown in table V.

Table V: Description of the correlation between the characteristics of university students regarding smoking x ODI variables. Fortaleza-Ce/2018.

Smoking?				
Oswestry Disability Index (ODI)	No	Yes	Total	p-value
Minimal disability f(n)	1	3	4	0.04
% line	48	2.0	51	
% column	98.0	50.0	100.0	
	82.2		81.2	
Moderate disability f(n)	3	3	6	0.04
% line	1	8.8	4	
% column	91.2	50.0	100.0	
	17.2		18.3	
Severe disability f(n)	1	0	1	0.04
% line	100.0	0.0	100.0	
% column	0.6	0.0	0.5	
Total f(n)	1	6	7	0.04
% line	80	3.2	86	
% column	96.8	100.0	100.0	
	100.0		100.0	

Discussion

The cut-off point for the Brazilian validation of the ODI to define low back pain is approximately 4.45 points (63.2% sensitivity and 81.8% specificity), representing the minimal clinically important difference (COELHO, 2008). The good reliability of the index used in the study made us to chose to use this tool in the research.

In terms of social and economic characteristics, this research corroborates the study of Callou Filho et al. (2017a) carried out in Fortaleza. It was possible to observe that, regarding marital status, 94.7% of the sample was single. Most participants were students of the Physiotherapy course, 31.3%, and the family income was of 0-3 minimum wages, 65.3% of the sample. Such results were correlated with to the findings of this research. Another research (RAMISI et al, 2012) describes different data from the above mentioned study, and it agrees with the results of the present study with respect to mean age, which was 21 years with standard deviation ± 3 , socioeconomic level class B, 49.2%, and mostly female participants, 53.9%.

When analyzing the number of male and female participants, regarding the habit of drinking alcoholic beverages, male university students showed a greater tendency to consume alcohol. This is in line with a survey of university students in Fortaleza-CE held in a private university where this practice was present in 57.7% of the students (CALLOU FILHO et al, 2017). During the academic years, the lifestyle is susceptible to influences of possible preset factors as to the habits of consuming alcoholic beverages and using tobacco according to SILVA; BRITO; AMADO (2014).

In the present study, the statistical analysis showed significant results for pain assessed by the VAS and the practice of physical activity as self-reported by the university students. Most of the university students who participated in the research are practitioners of physical activities, and yet the majority reported feeling some level of pain when they answered the VAS section of our questionnaire. It is known that the practice of physical activity brings several benefits to the health of the human being, and it is related to the pursue of aesthetic profiles associated with such practice, and not only health benefits, as seen in the study of Callou Filho et al. (2017). However, physical activity may end up becoming a factor leading to chronic pain, especially when performed without correct postural guidance. Moreover, at high performance levels, physical activity can cause pain to individuals due to excessive muscular effort and excessive repetition (TOSCANO; EGYPTO, 2001).

Another important finding related to the practice of physical activity in this research was seen in the analysis between this variable and functional disability. Individuals who performed physical activity compared to those who did not practice it mostly presented no functional disability despite feeling pain, suggesting that the practice of physical activity is not a determining factor for functional disability.

This study showed an important association regarding the practice of smoking, but it would be a preliminary observation to comment that the disability is not linked to smoking. It is known that the pain and stress are factors that can cause disability in individuals. However the practice of smoking causes in those who use tobacco the sensation of pleasure and relaxation of tensions and worries. However, cigarettes promote deleterious effects mainly in the cardiac, pulmonary, skeletal muscle and vascular conditioning. Thus, our data strengthen the idea that health practices minimize the chances of comorbidities. The results of this research were even expected because the sample was composed mostly by undergraduate health professionals who are aware of the damages caused by smoking and previous knowledge favors understanding and prevention.

During the development of this research, there was the limitation of a difficult applicability of the questionnaires due to the time in which the university students would have to answer the questionnaires, because the daily life in the academic environment is extremely fast. To minimize

this problem researchers were present at the library, cafeteria and at the entrance of the Higher Education Institution (HEI).

FINAL CONSIDERATIONS

As for the findings on the socioeconomic and alcohol intake profile of the participants of this study, these were expected due to the current profile of university students, the search for health courses, brown skin color, distinct socioeconomic conditions, and young adult age. It was not possible to conclude that pain and disability are related to the standard outcome of the sampling for these characteristics.

In the present study, we obtained statistical significance regarding the VAS and ODI scale. This result was already expected because pain can be a determining factor for disability, just as a given disability can be generated by pain. However, it is necessary to deepen the research using more tools to assess pain and disability among university students.

The results of this research allowed us to describe different characteristics of university students with low back pain, as well as differences in pain when compared to variables related to physical activity and smoking. However, it is important to emphasize that the observations made in this article concern a local sample.

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¹Docente da Faculdade Vale do Salgado (FVS) e Professor Coordenador do Grupo de Estudo em Saúde Coletiva (GESC). E-mail: ruifisio@gmail.com

²Fisioterapeuta, Membro do Grupo de Estudo em Saúde Coletiva (GESC).

³Fisioterapeuta, Membro do Grupo de Estudo em Saúde Coletiva (GESC).