3 - PREVALENCE OF DISCOMFORT AND PAIN AND LEVEL OF PHYSICAL ACTIVITY OF EMPLOYEES WORKING IN OFFICES IN PUBLIC AND PRIVATE COMPANIES IN PORTO ALEGRE, BRAZIL

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INTRODUCTION

Workplace modernization, new technologies and an ever more competitive market focused on productivity have demanded greater efforts from workers to achieve organizational goals. Working hours have increased and led to injuries in employees that use repetitive movements to perform their tasks. The prevalence of injuries have reduced productivity and increased absences and medical leaves, as well as company expenses with medications and hospitalizations (SILVA; MARCHI, 1997).

Occupational disorders in general and workplace accidents are associated with repetitive strain, muscle overload, physical and muscle fatigue, monotony, poor motivation and postures, and critical movements. Some factors contribute to the occurrence of these disorders, such as prolonged and repetitive actions of a low level of difficulty, as well as those performed as part of surveillance work, that raise little excitement but demand continuous attention. Poorly-lit, very hot, noisy and socially isolated environments are conditions that lead to monotony (MICHEL, 2000).

Of all working conditions, postures, such as standing or sitting for a long time, are determinant factors of muscle fatigue due to static work, and result in discomfort and pain in the body segments used to keep a certain posture. According to Iida (2005), it is highly recommended, from an orthopedic and physiological perspective, that the working demands alternates between sitting and standing during work. Sitting may also lead to fatigue complications, but they may be mitigated by alternating sitting and standing while working. The muscles used to keep a standing and a sitting posture are not the same. Therefore, alternating postures may reduce the use of certain muscle groups and apply loads to others. Renner (2002) studied seamstresses working in the shoe industry in the state of Rio Grande do Sul, Brazil, and found that prolonged standing is more harmful than sitting. However, postures should alternate, ideally, to demand less energy and provide a more comfortable biomechanical situation.

When muscle fatigue is not prevented, it may lead to repetitive strain injuries (RSI) and work-related musculoskeletal disorders (WMSDs). When not prevented or treated, it may lead to musculoskeletal disorders that may affect worker's functioning and productive capacity (RENNER, 2005).

According to Limongi-França (2003), quality of life programs bring productivity gains to companies. Better satisfied people produce more and are more creative, have fewer absences and, therefore, fewer health problems and a greater sense of commitment to organizations. Companies realize, therefore, that greater engagement, commitment and productivity are natural consequences of investments in their employees' well being.

Work conditions and workers' quality of life should be improved. Therefore, this study evaluated the prevalence of discomfort and pain and the level of physical activity of workers aged 18 to 59 years in offices of public and private companies in Porto Alegre, Brazil.

MATERIAL AND METHODS

This descriptive cross-sectional study enrolled 50 workers aged 18 to 59 years. Participants, selected through a convenience sample, worked in offices of municipal public departments and private accounting companies in Porto Alegre, Brazil. Of the 50 participants, 23 (12 men) worked in private companies, and 27 (13 men), in municipal public departments.

Data were collect using the Corlett and Bishop body chart (CORLETT; BISHOP, 1976) to evaluate subjective feelings of discomfort and pain. Scores were classified according to severity of discomfort and pain, as described by Iida (2002): 0 to 3 = mild pain; 3 to 6 = moderate pain; and 6 to 9 = severe pain. Physical activity was assessed using the short version of the International Physical Activity Questionnaire (IPAQ) (MATSUDO et al., 2002)

Descriptive statistics were used to analyze data. To evaluate the existence of significant differences in sex distribution between groups, the Student t test and the nonparametric Mann-Whitney test were used. The level of significance was set at 5%.

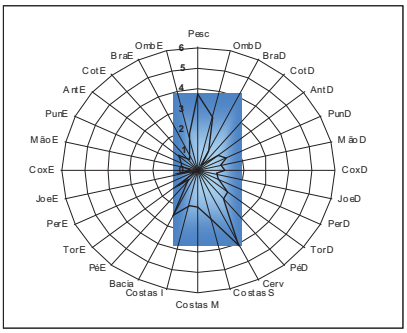
RESULTS AND DISCUSSION

The 23 employees in the private accounting companies worked about 8 hours a day, most of the time sitting and using a computer. In the public company, the 27 employees interviewed worked in a sitting position for 9 hours a day, but some also helped the public.

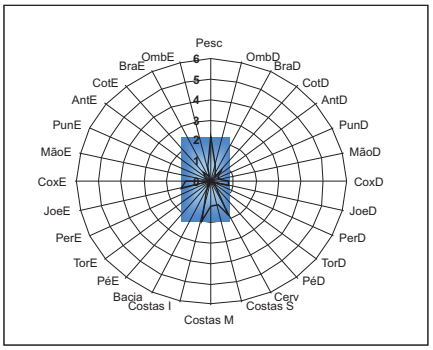
The answers to the Corlett and Bishop questionnaire (CORLETT; BISHOP, 1976), which evaluates subjective feelings of discomfort and pain, and the Iida classification (IIDA, 2002) revealed that mean scores in the group of 25 women were 3.70 for the neck and 4.03 for the cervical region (Table 1), which indicates a moderate level of pain and discomfort.

Mild levels were found for the other body segments according to the instruments used by the authors. The analysis of data for the group of 25 men revealed that discomfort and pain in this group was mild in all body segments. Graphs 1 and 2 show mean discomfort and pain scores and the segments with a greater prevalence of discomfort in each group.

The individual analysis of results in Table 1 reveals that the group of women had moderate discomfort and pain in the neck and cervical region (Graph 1). In other body segments, women had mild levels of discomfort and pain, mostly in the right side of the body. When compared with the group of men (Table 1), women had a significant difference ($p<0.05$) in the cervical region and segments of the right shoulder, leg and foot and right and left ankles, which is a sign that they had more discomfort and pain than men in these body segments. The differences found between sexes (Table 1) indicate that women are more likely to feel mild discomfort and pain than men in the body segments under analysis, although the differences were not statistically significant.



Graph 1 – Pain and discomfort in the group of women (n=25)



Graph 2 – Pain and discomfort in the group of men (n=25)

Table 2 shows that 8% of the participants were very active. Of all participants, 12% of the very active individuals were women, and 4%, men. In the total study sample, 34% of the individuals, corresponding to 40% of the women and 28% of the men, were moderately active. The percentage of individuals insufficiently active was 48% of the women and 68% of the men, which totaled 58% of the study sample.

In addition to evaluating the level of physical activity of participants, this study measured the time that they remained in a sitting position per day. Table 3 summarizes the questionnaire answers and shows the time that the study participants remained in that position per day.

The very active individuals sitting time position mean was 420 minutes (7 hours) per day; the moderately active individuals, 469.4 minutes (about 7,82 hours), and the insufficiently active individuals, 515.2 minutes (about 8,58 hours). Results showed that the more active individuals, who practiced physical activities, remained in a sitting position for a shorter time, whereas less active individuals remained in this position for a longer time of the day.

Grandjean (1998) evaluated the effects of sitting for long periods of time and found that discomfort and pain due to sitting reported by workers in industry were mostly in the back, knees, feet, neck, shoulders and thighs. Discomfort, according to that author, may be caused by posture because the employees remained sitting and performing repetitive movements for long periods of time. The height of the table, the support to place the feet and intervals to change postures should be planned to reduce discomfort.

Table 1 – Distribution of mean, standard deviation and p values for the individuals in the study according to workplace, pain intensity and sex (n=50)

Body region Body	Segment	Male			Female			p
		Mean	Standard deviation	Classification	Mean	Standard deviation	Classification	
Left	Shoulder	0.79	2.01	Mild	1.82	3.07	Mild	0.26
	Arm	0.28	1.11	Mild	0.89	2.07	Mild	0.22
	Elbow	0.57	1.42	Mild	0.62	1.94	Mild	0.74
	Forearm	0.34	1.15	Mild	1.14	2.55	Mild	0.36
	Wrist	0.27	0.99	Mild	0.76	1.87	Mild	0.23
	Hand	0.18	0.90	Mild	0.74	1.93	Mild	0.17
	Thigh	1.18	2.74	Mild	0.32	1.25	Mild	0.22
	Knee	1.40	2.56	Mild	0.79	1.68	Mild	0.33
	Leg	0.08	0.40	Mild	0.19	0.67	Mild	0.54
	Ankle	0.24	1.20	Mild	1.10	2.28	Mild	0.05*
	Foot	0.00	0.46	Mild	0.68	1.85	Mild	0.15
Right	Shoulder	0.83	1.93	Mild	2.64	3.56	Mild	0.05*
	Arm	0.34	1.28	Mild	1.06	2.27	Mild	0.14
	Elbow	0.64	1.92	Mild	0.29	1.07	Mild	0.40
	Forearm	0.37	1.13	Mild	1.12	2.65	Mild	0.39
	Wrist	0.38	1.17	Mild	1.40	2.41	Mild	0.08
	Hand	0.46	1.61	Mild	0.97	2.09	Mild	0.25
	Thigh	0.76	2.05	Mild	1.13	2.48	Mild	0.67
	Knee	0.78	2.12	Mild	0.83	1.74	Mild	0.75
	Leg	0.10	0.50	Mild	0.97	1.82	Mild	0.02*
	Ankle	0.12	0.60	Mild	1.62	3.02	Mild	0.02*
	Foot	0.20	0.69	Mild	1.76	2.99	Mild	0.03*
Trunk	Neck	2.17	3.52	Mild	3.70	3.66	Moderate.	0.14
	Cervical region	1.83	2.96	Mild	4.03	3.87	Moderate.	0.03*
	Upper back	1.14	2.60	Mild	2.48	3.36	Mild	0.12
	Middle back	1.23	2.68	Mild	1.82	2.95	Mild	0.42

Table 2 – Distribution of absolute and relative frequencies of the level of physical activity (LPA) according to sex (n=50)

Sex / LPA	Women		Men		Total	
	F	%	f	%	f	%
Very active	3	12	1	4	4	8
Sufficiently active	10	40	7	28	17	34
Insufficiently active	12	48	17	68	29	58
TOTAL	25	100	25	100	50	100

Table 3 – Distribution of minimum, maximum and mean and standard deviation values of time sitting in minutes according to level of physical activity (n=50)

Variable	IPAQ Classification	N	Minimum	Maximum	Mean	Standard deviation
Time sitting (min)	Very active	4	390	480	420.0	42.4
	Sufficiently active	17	180	660	469.4	132.9
	Insufficiently active	29	120	780	515,2	197,9

CONCLUSION

Male employees had mild levels of discomfort and pain, whereas women had moderate discomfort in the neck and cervical region. The comparison of results for men and women revealed a significant difference in discomfort and pain in the cervical region and in the shoulders, right leg and foot and right and left ankles. The comparison of level of physical activity revealed unsatisfactory results for 48% of the men and 68% of the women in the study.

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PREVALENCE OF SUBJECTIVE SENSATIONS OF DISCOMFORT AND PAIN AND THE LEVEL OF PHYSICAL ACTIVITY OF ADMINISTRATIVE WORKERS FROM PUBLIC AND PRIVATE COMPANIES LOCATED IN PORTO ALEGRE, RS

ABSTRACT

This descriptive cross sectional study had the purpose to assess the subjective sensations of discomfort and pain and the level of physical activity of 18-59 year old administrative workers from public and private companies located in Porto Alegre, RS. The data were collected through the Corlett and Bishop's diagram and IPAQ short version. The sample was composed of 50 workers, aged between 18 and 47 years old (23 from private companies and 27 from public ones). The data were analyzed through descriptive Statistics, “t”test, and Mann-Whitney non parametric test(α = 0,05). The sample presented low level of physical activity. Female workers´ discomfort and pain were located at the right side of the body, the shoulder, wrist, forearm, leg, feet and ankles segments, neck and also cervical regions (p<0,05).

KEYWORDS: Discomfort and pain. Physical activity. Quality of life in work.

PRÉVALENCE DE LA DOULEUR ET DE L'INCONFORT ET NIVEAU D'ACTIVITÉ PHYSIQUE D'EMPLOYÉS DU SECTEUR ADMINISTRATIF D'ENTREPRISES PUBLIQUES ET PRIVÉES DE PORTO ALEGRE, RIO GRANDE DO SUL, BRÉSIL.

RÉSUMÉ

Cette étude descriptive transversale analyse la prévalence de l'inconfort et de la douleur en lien avec le niveau d'activité physique d'employés âgés de 18 à 59 ans du secteur administratif d'entreprises publiques et privées de Porto Alegre, Rio Grande do Sul. Les données ont été recueillies à partir de l'échelle de Corlett et Bishop et de la version abrégée de l'IPAQ. L'échantillon était composé de 50 employés de 18 à 59 ans (23 appartenant à des entreprises privées et 27 à des entreprises publiques). Les données ont été analysées à travers la statistique descriptive, le test « t » de Student et le test non paramétrique de Mann-Whitney (α = 0,05). Les résultats montrent une prédominance de la catégorie « insuffisamment actif » (58 %). Les femmes présentent des indices plus significatifs que les hommes en termes d'inconfort et de douleur du côté droit et au niveau des segments de l'épaule, du poignet, de l'avant-bras, de la jambe, du pied et des chevilles, du cou et de la région cervicale (p<0,05).

MOTS-CLÉS : Inconfort et douleur. Activité physique. Qualité de vie. Travail.

PREVALENCIA DE DOLOR E INCÓMODO Y NIVEL DE ACTIVIDAD FÍSICA DE TRABAJADORES DEL SECTOR ADMINISTRATIVO DE EMPRESAS PÚBLICAS Y PRIVADAS DE PORTO ALEGRE, RS, BRASIL.

RESUMEN

Este estudio de naturaleza descriptiva, de corte transversal, que verificó la prevalencia de incómodo y dolor y el nivel de actividad física de trabajadores en la franja de edad de los 18 a los 59 años del sector administrativo de empresas públicas y privadas de Porto Alegre, RS, Brasil. Se utilizaron el diagrama de Corlett y Bishop y el IPAQ versión corta en la recolección de datos. La muestra fue compuesta por 50 trabajadores de 18 a 59 años (23 empresas privadas y 27 de empresas públicas). Los datos fueron analizados mediante la estadística descriptiva, prueba "t" de Student y la prueba no paramétrica de Mann-Whitney ($\alpha = 0,05$). La muestra fue clasificada como insuficientemente activa (58%). Las mujeres presentaron índices más significativos de incómodo y dolor que los hombres en el lado derecho y en los segmentos del hombro, puño, antebrazo, pierna, pie y tobillos, cuello y región cervical ($p<0,05$).

PALABRAS CLAVE: Incómodo y dolor. Actividad física. Calidad de Vida. Trabajo.

PREVALÊNCIA DE DOR E DESCONFORTO E NÍVEL DE ATIVIDADE FÍSICA DE TRABALHADORES DO SETOR ADMINISTRATIVO DE EMPRESAS PÚBLICAS E PRIVADAS DE PORTO ALEGRE, RS.

RESUMO

Este estudo de natureza descritiva, de corte transversal, que verificou a prevalência de desconforto e dor e o nível de atividade física de trabalhadores na faixa etária de 18 a 59 anos do setor administrativo de empresas públicas e privadas de Porto Alegre, RS. Foram utilizados o diagrama de Corlett e Bishop e o IPAQ versão curta na coleta dos dados. A amostra foi composta por 50 trabalhadores de 18 a 59 anos (23 de empresas privadas e 27, de empresas públicas). Os dados foram analisados através da estatística descritiva, teste "t" de Student e o teste não-paramétrico de Mann-Whitney ($\alpha = 0,05$). A amostra classificou-se insuficientemente ativa(58%). As mulheres apresentaram índices mais significativos de desconforto e dor do que os homens no lado direito e nos segmentos do ombro, punho, antebraço, perna, pé e tornozelos, pescoço e região cervical ($p<0,05$).

PALAVRAS-CHAVE: Desconforto e dor. Atividade física. Qualidade de Vida no Trabalho.