ARTIGO ORIGINAL

Symptoms of musculoskeletal disorders among police officers

Distúrbios osteomusculares em policiais militares

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Abstract

Introduction: The activity of police officers is stressful due to frequent exposure to violence, and it involves tasks, which are considered sedentary, intercalating with occasional events that require maximum effort and may cause occupational diseases. **Objective:** The aim of the present study is to determine the prevalence of musculoskeletal disorders (MSD) symptoms among police officers. **Patients and Methods:** The study sample included 262 police officers with a mean age of 37 ± 7.1 years that had been enrolled in the study. They were asked to respond to the Nordic questionnaire. **Results:** From the study sample, 198 subjects (75%) reported MSD symptoms over the past 12 months and 135 (51.5%) of them reported the same symptoms over the last seven days, with the lower back being the body part most affected. **Conclusion:** These results indicate a high prevalence of MSD symptoms, especially over the past 12 months involving the lower back, which represents a chronic problem. These findings emphasize the importance of periodic evaluation and the need to implement strategies to promote health and to improve working conditions in order to minimize the prevalence of MSD symptoms.

Descriptors: Military Personnel; Pain; Lower Back Pain; Occupational Diseases; Cumulative Trauma Disorders.

Resumo

Introdução: A atividade dos policiais militares é estressante em função do convívio com a violência e envolve tarefas que são consideradas sedentárias, com ocasionais eventos de esforço máximo, podendo ocasionar doenças ocupacionais. **Objetivo:** Avaliar a prevalência de sintomas de distúrbios osteomusculares em policiais militares. **Casuística e Métodos:** Participaram do estudo 262 policiais com média de idade 37±7,1 anos. Eles responderam ao questionário Nórdico. **Resultados:** Foi observado que 198 (75%) apresentaram sintomas de distúrbios osteomusculares nos últimos 12 meses e 135 (51,5%) nos últimos sete dias, sendo a região lombar a mais acometida (25,2%). **Conclusão:** Esses resultados apontaram alta prevalência de sintomas osteomusculares, principalmente nos últimos 12 meses e com envolvimento da região lombar, mostrando este ser um problema crônico. Esses achados mostraram a importância de avaliações periódicas e a necessidade de implantação de estratégias para promovera saúde e melhorar a condição de trabalho, minimizando a prevalência dos distúrbios osteomusculares.

Descritores: Militares; Dor; Dor Lombar; Doenças Profissionais; Transtornos Traumáticos Cumulativos.

Introduction

Police officers belong to a category of workers who are exposed daily to violence, with a heavy workload and the risk of death. The police officers have rest activity and sometimes are exposure to intense physically demanding on stressful conditions[1]. This situation can lead to chronic diseases such as depression, stress and musculoskeletal disorders (MSD)[2].

The MSD symptoms in police officers may occur in different parts of the body, but with a higher prevalence for back and lower limbs[3-4]. In Brazil, MSD symptoms are the leading cause of absenteeism from work and the third cause of disability retirement[5]. In 2011, MSD symptoms ranked second in amount of benefits. The cases of disability retirement (23,485 cases) have a significant socioeconomic impact on the country[6].

The etiology of MSD symptoms is multifactorial and may be associated with fatigue, vibration, awkward postures and repetitive strain[7-8]. Others conditions like gender, physical activity level, no ergonomic conditions and psychosocial factors (stress) may be associated with MSD symptoms prevalence[9-10]. Another potential cause of MSD symptoms is a mismatch between vehicle seats and the method used for carrying appointments[11]. The objective of the present study was to assess MSD symptoms among police officers in Brazil in order to provide information

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to implement preventive programs.

Patients and Methods

This was a descriptive cross-sectional study involving a representative sample of police officers from Araçatuba region, Sao Paulo, Brazil. This region has a number of total full-time law enforcement officers around 758 police officers. The convenience sample of police officers (n = 262; 34.5%) was established with a 5% margin of error and a 95% confidence interval. Most police officers (82.4%) were males and married (70.2%), with a mean age 37 ± 7.2 years. The average length of time on the police force was 13.6 ± 2.8 years, and the mean length of time in the current function was 9.4 ± 7.2 years. Body mass index (BMIkg/m²) was calculated using weight and height values measured using a digital scale and a stadiometer (WISO - W 721®). The mean body mass index was 27.6 ± 3.7 kg/m².

The Nordic Musculoskeletal Questionnaire (NMQ) was applied to assess MSD symptoms. The NMQ has nine questions about body regions to which the participant replies "yes" or "no" regarding MSD symptoms over the past 12 months and over the last seven days[12]. The questionnaire was developed in Nordic countries[13] and was validated for Brazil in 2002[12]. Police officers completed a brief questionnaire about absenteeism and its causes and disorders.

Data were tabulated in Microsoft Office Excel 2010 to obtain the mean, standard deviation, and percentage. The Ethics Committee on Human Research of the University of Franca approved the study (CAAE: 08660112.6.0000.5495138.676).

Results

Table 1 shows that 63 policemen (24%) were absent from work for different reasons and diseases. Lower back pain was the main disorder (50%) for both operating occupation and administrative occupation.

Table 1. Distribution of the police officers and absenteeism according to the function performed

	Administrative		Operational	
Causes	**N**	**%**	**N**	**%**
MSD symptoms	6	35.3	12	23.5
Viruses	1	5.9	5	9.8
Renal disease	1	5.9	6	11.8
Surgery	4	23.5	5	9.8
Psychological disease	2	11.8	1	2.0
Cardiopulmonary disease	0	0	6	11.8
Maternity	0	0	2	3.9
Conjunctivitis	0	0	4	7.8
Accidents	0	0	1	2.0
Other	3	17.6	9	17.6
All cases	17	24.3	46	25.3

The seven-day and 12-month prevalence of MSD symptoms among the police officers was 51.1% and 75%, respectively. In the last seven days, the body regions with the highest prevalence of MSD symptoms were lower back, back, and knee. Over the past 12 months, higher prevalence of the MSD symptoms was observed in the lower back, back, and neck (Table 2).

Table 2. Distribution of the MSD symptoms among police officers

Body Region	**Last seven days**		**Last 12 months**	
	N	**%**	**N**	**%**
Neck	38	14.5	95	36.3
Shoulder	38	14.5	85	32.4
Back	43	16.4	118	45.0
Elbow	14	5.3	21	8.0
Forearm	13	5.0	30	11.5
Low Back	66	25.2	135	51.5
Wrists/hands/fingers	25	9.5	61	23.3
Hips and thighs	26	9.9	48	18.3
Knee	39	14.9	90	34.3
Ankle/foot	34	13.0	74	28.2

Discussion

MSD symptoms were more prevalent among police officers over the past 12 months than over the last seven days. It shows that chronic symptoms are more prevalent among these subjects. However, more than half of the police officers reported an acute problem over the last seven days. MSD symptoms may be associated with the natural aging process, or it may be triggered by job overloading, exposure to vibration, inadequate working conditions, ergonomic factors, muscle overload, awkward postures, physical inactivity, and overweight[14-16]. Another important point is the use of a bulletproof vest and personal protective equipment, which may be associated with some MSD symptoms when worn on a daily basis. Thus, in order to reduce chronic health problems it is necessary to design lighter equipment and more flexible and less hot bulletproof vests[17].

The lower back was the body part with the highest prevalence of pain among police officers. In agreement with our findings, previous studies have also observed a high prevalence of pain in the lower back region followed by the neck and dorsal region among military soldiers[18] and police personnel[15]. The lower back is a common site of MSD symptoms, a condition that can lead to a high level of disability[19]. Some factors, such as sex, age, tobacco use, educational level, and physical inactivity may influence the incidence of lower back pain in the military police[20]. Repetitive movements, improper workplace/workload, and psychological factors may contribute to the prevalence of low back pain[21]. We found that 25.2% and 51.5% of police officers had acute and chronic MSD symptoms, respectively, in the lower back. Similar results were observed in nurses, who showed a high prevalence of chronic (49%) and acute (25%) symptoms[22], and an even higher prevalence (90%) was detected in brick field workers in India[23]. This situation leads affected persons to adopt passive strategies such as decreased interest in

daily activities, affecting the general health and quality of life[24]. We found a high prevalence of MSD symptoms in the knees, with acute (14.9%) and chronic (34.3%) symptoms. A similar result was reported for police officers (46%) from the Northeast region of Brazil[25]. These findings can be explained by the functions of police officers, which vary from sedentary activities such as staying in a sitting position for most of the time to activities making an extreme physical demand, such as catching burglars. It is also known that age, sex, race, and the role of police officers may be associated with the incidence of knee injury. Military personnel submitted to knee surgery could return to their job function with appropriate physiotherapy, although only 54% of these cases did return to active duty[20].

The MSD symptoms reported by workers in Nordic questionnaire are important indicators of the onset of work-related musculoskeletal disorders (WMSDs) and represent a significant public health problem[26]. WMSDs are among the leading causes of morbidity, absenteeism, and disability that provoke significant economic and social impact in military service[27]. Thus, MSD symptoms in the present study can progress to problems even more serious, such as WMSDs, and it can influence the activity labor and the performance of police officers.

Conclusion

We observed a high prevalence of MSD symptoms over the past 12 months and over the last seven days among police officers, mainly involving the lumbar (lower back) region with strong evidence characterizing a chronic alteration. The results revealed the importance of periodic evaluation of the need to implement strategies to improve the working condition of military policemen in order to minimize the prevalence of MSD symptoms, to reduce the absenteeism and to improve the quality of life of this population.

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