

Work-related prevalence of musculoskeletal symptoms among Greek forest workers

Christos Gallis*

Forest Research Institute, 57 006, Vasilika, Thessaloniki, Greece

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Abstract

The primary aims of the present study were to (a) identify and describe the prevalence of musculoskeletal symptoms among forest workers in Greece using the Nordic Standardized questionnaire and (b) to recommend preventive practical actions. Seventy-eight forest workers were interviewed individually. Out of every 10 forest workers, in the last 12 months, eight reported complaints in the lower back area, seven in the hands/wrists, six in the knees, five in the neck, five in the shoulders and three in the elbows, hips/thighs, ankles/feet, and upper back, respectively. At least once in their working lives 17.9% of the subjects were hospitalized because of lower back problems. About 42.3%, 24.3% and 16.6% of the subjects went to a doctor in the last 12 months because of problems in the lower back, neck, and shoulder, respectively. The highest rate for subjects being prevented from doing their normal work was for hand/wrist problems, with 64.1%, following by lower back and neck, each 50%. Preventive measures such as vocational training, new work techniques, and new work organization with job rotation and active rest breaks were recommended.

Relevance to industry

Forest workers are an important part of the forest-wood industry chain. Forest managers and the forest industry care for the health and work-related complaints of forest workers. This study provides information for the prevalence of musculoskeletal disorders among forest operators in Greece. The results propose interventions with preventive measures.

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1. Introduction

Work-related musculoskeletal disorders of the neck, shoulder, lower back, upper limbs, and locomotive organs continue to be of the interest to workers, researchers and organizations. This is due to the significant temporary or permanent disability of workers, symptoms such as pain, numbness and tingling, time lost from work, reduced productivity, increasing worker's compensable cost, and the increasing number of associated cases coming before the courts (Webster and Snook, 1994; Barker, 1995; Stock et al., 1996; Bernard, 1997; Lewis et al., 2002; Lei et al., 2005).

Occupations with maintained postures and repetitive work tasks have been related to neck and shoulder complaints (Veiersted and Westgaard, 1993), while lower back trouble is commonly associated with heavy physical work, lifting, and motor vehicle driving (Riihimäki, 1991).

Motor-manual timber cutting-harvesting operations (cutting, limbing, bucking, and bunching of trees with a chain saw, and forwarding logs to roadside with a vehicle or animal), which is still the main harvesting system in Greece, are one of the hardest and heaviest types of physical work (Astrand and Rodahl, 1988; Hagen, 1996; Gallis, 2001). In Sweden, a total of 3600 chain-saw operators was studied for musculoskeletal problems (Pontén, 1988). Out of every 10 workers, five had complaints in the lower back area, two shoulder complaints, two knee complaints, and two hip. Complaints

*Tel.: +30 231 0461 172 ext. 216; fax: +30 231 0461 341.

E-mail address: cgallis@fri.gr.

were common regardless of age. The results of another study (Axelsson and Pontén, 1990) indicate that 50% of the forest machine operators in Sweden reported neck/shoulder complaints. Several Scandinavian studies among logging workers have confirmed both that lower back trouble is a major health problem and that there is clearly a high frequency of pains in the neck, shoulders, and arms (Harstela, 1990; Pontén, 1988; Sairanen et al., 1981). In Finland, about 34% of disability pensions of forest workers granted in 1982 were due to problems of the musculoskeletal system (Riihimäki, 1986).

Standardized questionnaires have proved to be the most obvious means and method of collecting, estimating, recording, and analysing musculoskeletal disorders. They provide useful and reliable information on musculoskeletal symptoms. The standardized Nordic questionnaire for the analysis of musculoskeletal symptoms (Kuorinka et al., 1987) has been used in several studies (Glover et al., 2005; Lei et al., 2005; Piedtahita et al., 2004; Newell and Kumar, 2004; Johansson, 1994).

Currently, there are no studies or records in Greece concerning forest workers' musculoskeletal problems and symptoms. The objectives of this study were (1) to investigate the prevalence of musculoskeletal symptoms and disorders among forest workers in Greece using the Nordic standardized questionnaire and (2) to evaluate and recommend preventive practical actions.

2. Materials and methods

2.1. Subjects

The study was carried out at Elatia Forest District of Drama Prefecture in the northern part of Greece. The study sample included 78 male, randomly selected, professional forest workers from several villages of the area. They were self-employed as subcontractors in timber cutting-harvesting, a strenuous job in steep mountain forest terrain. Their tasks include the use of chain saw to harvest trees, cut into logs, and to load and forward logs from the forest site to roadside by using farm tractors, special vehicles or mules. Their work is characterized by long working hours per day, limited number of breaks and no regular rotation of tasks. Forest workers with at least 12 months in work were eligible to participate in the study because the Nordic questionnaire has a 12-month recall period. The level of their education was at the elementary school without any vocational training. The age range was from 21 to 70 years (mean 41.03 ± 10.93). Their working hours per week on average were 38.49 ± 22.66 .

2.2. Procedure

A version of the standardized Nordic questionnaire (Kuorinka et al., 1987) translated into Greek by the author was used in this study. Each subject was interviewed individually in a private one-on-one interview. Subjects

were informed about the scientific aim of the study and were assured that the individual information from the interview was confidential. To complete the interview, subjects were given a diagram of the body with the different regions under question shaded and defined to aid them in distinguishing which category to report on. Then the questionnaire was read to the subject and filled out by the interviewer in order to prevent comprehension difficulties and to provide a reliable answering procedure. Each interview for each body region started with the question, for example, "have you ever had neck trouble (pain, ache or discomfort)?" If the question was answered "yes", then the interview continued to the other questions relating to this region of the body. If the question was answered "no", then the interview moved to the next body region (shoulder, lower back) to start again with the same question.

The questionnaire included demographic items such as age, gender, hand dominance, weight, height, and hours of work per week. The term musculoskeletal symptom was used to address incidence of any troubles (ache, pain, discomfort) of neck, shoulder, lower back, as well as for upper back, elbow, hands/wrists, hips/thighs, knees, and ankles/feet during the lifespan, 12 months prior to being interviewed, and the last 7 days. The questionnaire interview also addressed any occurrence of accidents, change of job or duties, reduction or prevention of work and leisure activities, need of professional treatment, and hospitalization due to musculoskeletal problems.

2.3. Statistical analysis

All statistical analyses and calculations were performed using the Statistical Packages for the Social Sciences (SPSS) software for Windows (version 12.0). Mean and standard deviation were used to describe the demographic items. All answers in all categories of the questionnaire and of every subject were entered into an Excel database and encoded with numerical values. The frequencies of all answers were tabulated and charts were plotted for all reported symptoms.

3. Results

Anthropometric and demographic characteristics of forest workers are summarized in Table 1. The questionnaire results are presented in Table 2 and 3. From the 78 interviewed forest workers 52.6%, 51.3%, and 87.2% reported that they had had at some time trouble (ache, pain, or discomfort) in the neck, shoulder, and lower back, respectively. Of them 53.5%, 49.7%, and 84.4% had troubles in the last 12 months in the neck, shoulder and lower back, respectively. High prevalence last musculoskeletal symptoms was reported in the last 12 months for the hands/wrists and knees, 74.3% and 61.5%, respectively.

Forest workers also had a high prevalence of musculoskeletal symptoms that prevented them from doing their

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