

Work-related shoulder musculoskeletal disorders among workers in a dairy factory

A. Raposo^a, J. Torres da Costa^b, J. Santos Baptista^c

^{a, c} PROA/LABIOMEPE Faculty of Engineering, University of Porto, Porto, Portugal;

^b PROA/LABIOMEPE Faculty of Medicine, University of Porto, Porto, Portugal;

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INTRODUCTION

About 23% of the European workers consider that their work causes them a risk of shoulder or neck pain, and the rate is the highest in agriculture, construction and health and social work (EUROSTAT, 2003). Shoulder disorders entail several costs because they lead to sick leave from work, rehabilitation costs among others. Studies found a sick leave rate of 42 days/person/year, which represents a reduction in productivity of about 20% (Ekberg, 1995; Hansson et al., 2000). Even so, the shoulder musculoskeletal disorders aren't recognized as occupational diseases in the majority of the member states (EODS, 2000). Most shoulder problems are grouped in four major categories: Tendon inflammation (tendinitis or bursitis) or tendon tear; Instability; Arthritis and Fracture. The most commonly affected tendons in the shoulder are the four rotator cuff tendons. (AAOS, 2010). In terms of gender women more often had problems with the neck, shoulders, arms or hands than men (EUROSTAT, 2010). There is evidence of the epidemiological relationship between risk factors posture and repetitive tasks and the development of shoulder WRSMD (Bernard, 1997). The aim of the present study is investigate the prevalence and incidence and of work-related shoulder musculoskeletal disorders in a factory dairy products and analyze the suggestive shoulder disease indicators based on the upper limb radiology and ultrasonography.

MATERIAL AND METHODS

This study was developed in a food factory specialized in dairy products and its derivatives, in a specific production sector: cheese sector, which start activity in 2008. The company has a total of 620 employees and the study was carried out between 2010 and 2014 among all the 166 cheese sector workers. Two evaluations were done, one in 2011/2012 and another in 2013/2014 and the study is limited to a total of 134 workers who were evaluated in both. Data was collected from the application of the Nordic Questionnaire (Serranheira et al., 2003), from the clinical orthopedic examination and from imaging of the upper limb by radiology and ultrasonography. Statistics were performed using SPSS version 22.

RESULTS

From the 134 participants of the study, 41 (30.6%) were male while 93 (69.4%) were female, aging from 20 to 61 years old. Respect to working profile, 80% of the participants worked less than 8 years in the factory, and 94% of workers are right-handed. Demographic characteristics of participants are summarized in Table 1.

Table 1. Demographic characteristics of participants.

Variable	Mean ± Standard Deviation
Age	32.42 ± 7.6 years old
Height	1.65 ± 0.09 m
Weight	67.63 ± 13.5 Kg
BMI*	25.99 ± 7.63 kg/m ²

In the first participants evaluation the total symptoms prevalence of shoulder WRMSD was of 18.7%

and the point prevalence in the second evaluation was 17.1%. The incidence value achieved from the first to the second evaluation was 8.2% in shoulder. In order to analyze the possible presence of a shoulder WRMSD disorder, we used suggestive shoulder disease indicators, based on the clinical examination, upper limb radiology and ultrasonography (for first evaluation). Therefore, we considered four evaluation methods and four groups. The evaluation methods were: symptoms; clinical examination; upper limb radiology and upper limb ultrasonography. And the four groups A, B, C and D, which represents positive response to shoulder disease in one, two, three or in the four methods, respectively. The Table 2 resume the results.

Table 2. Group's percentage representing positive response of shoulder disease

Groups	
A: Signs of disease in one of the methods	41.0
B: Signs of disease in two of the methods	14.9
C: Signs of disease in three of the methods	6.7
D: Signs of disease in the four methods	0.7

The relationship between groups and participant's gender, age, years of service in the company and years of service in the cheese sector was assessed by Chi-square test, and the only significant association was with the years of service in the cheese sector ($p=0,008$).

DISCUSSION AND CONCLUSIONS

Shoulder prevalence rates agree with some studies in manufactures with repetitive task workstations like the study of (Girish et al. 2012) that reported a prevalence of 10 - 20% (Girish, 2012). However, other studies in many different occupational groups and working situations reported prevalences between 2% and 45 %. It may be due to confounding factors that affect a valid assessment of the incidence and prevalence such as: pain discrimination; multiple names for shoulder diseases; cultural differences; company policies; adaptation to the workstation (Fagarasanu, 2003). Physical examination findings and imaging enable to link the information obtained from questionnaire to make the precise diagnosis, and helps to design an effective treatment plan and optimum rehabilitation prescription, as well prevention strategies in the workplace. Nonetheless, more research is required, particularly around the cost-effectiveness of the different strategies whether at the prevention or treatment field (Linaker, 2015).

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