Abstract. Healthcare workers, namely registered nurses (RN), are frequently exposed to work-related musculoskeletal disorders (WRMSDs) risk factors. Identifying the symptoms of these disorders is one of the first epidemiological steps to managing them. This study aims to identify WRMSDs prevalence symptoms in Portuguese RN. During 8 months (2010-2011) the National Public Health School and the Portuguese Registered Nurses Board made a call to all RN to answer an online WRMSDs questionnaire. Respondents (n=2140) are mostly females (77.4%) and work mainly in hospitals (n=1396) and in primary healthcare centers (n=421). Results show high symptoms prevalence (last 12 months) in the lower back (60.6%), the upper back (44.5%), and the neck (48.6%). Nurses’ activity, especially patient hygiene in bed, is a strong contributor \((p<0.05)\) to pain in the upper back \((\text{OR}=1.39 [1.09-1.80])\) and lower back \((\text{OR}=1.4 [1.08-1.84])\). Patient holdup without mechanical support has the highest relationship \((p<0.05)\) between work tasks and symptoms in the last 12 months in the upper back \((\text{OR}=1.50 [1.19-1.90])\). Prevalence rates of WRMSDs symptoms in Portuguese nurses are no different from other studies with Swedish, Italian and Greek nurses. Maybe changes in healthcare systems didn’t change the way care is delivered and we must rethink how to prevent nurses WRMSDs.

Keywords: nurses, WRMSDs symptoms, epidemiology, ergonomics

1. Introduction

Musculoskeletal disorders (MSDs) are a significant worker health related problem with a colossal social and economic impact and their symptoms are very common in working populations [1]. Work-related musculoskeletal disorders (WRMSDs) frequently affect healthcare professionals, namely nurses [2-4].

WRMSDs encompass a variety of conditions and nevertheless their etiology is still not consensual and the symptom complex is very similar [5]. WRMSDs have been frequently linked with work and workplace risk factors and they were described as one of the main occupational problems among healthcare workers [6].

Nursing work is one of the most dangerous occupations and has a particular risk of back injury during patient lifting or patient transfer [7]. Nevertheless the health care system changes, the loss of nurses and the cost resulting from WRMSDs warrant preventive intervention [8].

Identifying workers (and their jobs) with symptoms can aid prevention. Recognizing this, early symptoms detection may be used to identify the prevalence of WRMSDs and to allow successful interventions [9].

Worker self-completed musculoskeletal questionnaires were used in healthcare epidemiological surveys as an approach to seeking information about WRMSDs prevalence symptoms [2, 10-12].
They are commonly used in Occupational Health and Safety surveillance programs since they are considered as simple and valid tools for gathering information about workers, work tasks, and symptoms [13], and for the assessment of risk factors [14].

This study aims at identifying WRMSDs symptoms in Portuguese registered nurses.

2. Population and methods

This study was a national cross-sectional survey and includes all the registered nurses (RN) on the Portuguese Nurses Board (n=62,566). All Portuguese nurses (males and females) were invited to participate in this national musculoskeletal disorders survey from a call on the Board web site.

Responders had to accept the invitation writing their own e-mail at the “surveymonkey platform questionnaire” webpage. After that, they received a link to answer online.

The call for this study was pending for 8 months until February 2011.

The used questionnaire is an adaptation of the Nordic musculoskeletal questionnaire (NMQ) that was frequently used in Portugal [3, 13, 15-17]. WRMSDs symptoms (ache, discomfort and pain) in a detailed body map (last 12 months, and last 7 days in dichotomous yes/no response) and the frequency and severity (scale with four degrees) at nine anatomical body regions are the main dependent variables. There was also a socio-demographic and health status characterization. Symptoms were analyzed with the nurses tasks (strenuous back postures, high demands with arms, and manual material/patient handling), by odds-ratio (OR), and 95% confidence intervals (CI), calculated to estimate the relative risk.

3. Results

Respondents (n=2140) were all Portuguese registered nurses. The mean age and BMI were 37.8 (±9.5) years and 24.62 (±7.9), respectively. Female nurses were 77.4% of the sample. Respondents worked mainly in hospitals (n=1396), and in primary healthcare centers (n=421). The main symptoms prevalence in different anatomical body regions were (Table 1):

Diagnosis criteria by means of symptoms that were present in the last 12 months and in the last 7 days show at lower back (n=632) and neck (n=553) high WRMSDs prevalence.

Daily demands in the nurses’ work were strong contributors to pain and the highest was manual material/patient handling (80.9%). Work demands were analysed from infrequent and frequent demands (<=5 and >=6 per/day) as a predictor for back pain (Table 2):

<table>
<thead>
<tr>
<th>Anatomical region</th>
<th>Symptoms prevalence (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lower back</td>
<td>60.6 29.5</td>
</tr>
<tr>
<td>Neck</td>
<td>48.6 23.8</td>
</tr>
<tr>
<td>Upper back</td>
<td>44.5 21.1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Work task</th>
<th>Neck pain</th>
<th>Upper back pain</th>
<th>Lower back pain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient hygiene-bed</td>
<td>1.09 [0.85-1.40]</td>
<td>1.39 [1.09-1.80]</td>
<td>1.40 [1.08-1.84]</td>
</tr>
<tr>
<td>Patient positioning in bed</td>
<td>1.03 [0.85-1.26]</td>
<td>1.36 [1.11-1.66]</td>
<td>1.16 [0.94-1.43]</td>
</tr>
<tr>
<td>Patient holdup</td>
<td>1.13 [0.90-1.42]</td>
<td>1.42 [1.13-1.79]</td>
<td>1.24 [0.97-1.58]</td>
</tr>
<tr>
<td>Drug administration</td>
<td>0.96 [0.80-1.16]</td>
<td>1.18 [0.98-1.43]</td>
<td>1.37 [1.13-1.66]</td>
</tr>
<tr>
<td>Domiciliary support</td>
<td>1.45 [0.99-2.11]</td>
<td>1.35 [0.93-1.96]</td>
<td>1.78 [1.18-2.66]</td>
</tr>
<tr>
<td>Standing / walking</td>
<td>1.36 [1.11-1.67]</td>
<td>1.83 [1.49-2.26]</td>
<td>2.31 [1.87-2.86]</td>
</tr>
</tbody>
</table>

* Significant (p<0.05).

4. Discussion and conclusions

Our sample was obtained from a national survey (3.42% of all Portuguese registered nurses). Results denote a high WRMSDs symptoms prevalence in Portuguese nurses. Although, these results were no different from some other studies [3, 4, 11, 18-21] and they all indicate that nurses are at risk to develop WRMSDs (Table 3):
nurses aids should minimize the risk of back injury

lifting policy. That means, whenever possible, RN and

need of occupational changes such as a hospital no-

back which can be strong evidence to promote the

used in surveys as pain predictors.

pain. Questions about work tasks/activities should be

daily activities (work tasks) were related with back

during such lifting, transferring and positioning oper-

ations with the use of mechanical aids as sliding

boards, lifting belts or lifting hoists, for instances.

References

Results show (again) that some frequent nurses’
daily activities (work tasks) were related with back
pain. Questions about work tasks/activities should be
used in surveys as pain predictors.

Symptoms are common in the lower and upper
back which can be strong evidence to promote the
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Table 3

<table>
<thead>
<tr>
<th>Study</th>
<th>WRMSDs symptoms prevalence (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ando et al. (2000)</td>
<td>Low back: 54.7 Upper back: - Neck: 31.3 Shoulder: 42.8</td>
</tr>
<tr>
<td>Trinkoff et al. (2002)</td>
<td>Low back: 47 Upper back: - Neck: 45.8 Shoulder: 35.1</td>
</tr>
<tr>
<td>This study (2011)</td>
<td>Low back: 60.6 Upper back: 44.5 Neck: 48.6 Shoulder: 36.7</td>
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