

Job factors related to musculoskeletal symptoms among nursing personnel – a review

Marina Zambon Orpinelli Coluci^{a,*} and Neusa Maria Costa Alexandre^a

^a*Department of Nursing, Faculty of Medical Sciences, PO Box 6111, University of Campinas – UNICAMP, Zip Code 13083-970, Campinas, SP, Brazil*

Abstract. The study aimed to conduct a literature review as a step of the development of a new questionnaire about the nursing workers' perception of job factors that may lead to musculoskeletal symptoms. An information synthesis was achieved by collecting data from studies that fitted the search criteria. The results showed that despite the existence of several job factors related to musculoskeletal symptoms, no specific questionnaire that evaluates this relationship was found. Therefore, this literature review presents important topics for developing the first questionnaire to analyze work activities that may contribute to pain and discomfort among nursing personnel.

Keywords: work-related musculoskeletal disorders, job factors, nursing

1. Introduction

Health care workers are considered as a risk group to job-related musculoskeletal disorders, especially back pain [9,13,44,45]. Recent literature has demonstrated a high occurrence of musculoskeletal symptoms among nursing personnel [1,16,21,26,36]. Risk factors related to nursing work include biomechanical (risk movements and postures), environmental (workplace), organizational (lack of colleagues and inadequate equipments), and psychosocial factors (time pressure, low autonomy and competitiveness).

Nursing personnel perform various tasks that may cause musculoskeletal symptoms such as weight lifting, back stress, static postures, and awkward postures during specific procedures. Consequently, they classify their work as physically stressful, especially when carried out in ergonomically unfavorable workplaces and under time pressure [22].

With the growth of the incidence of musculoskeletal symptoms related to work among nursing personnel, questionnaires that evaluate the risk factors

that can lead to these symptoms may provide important data during ergonomic interventions.

The present study aimed to conduct a literature review about problematic work factors that may contribute to job-related pain and discomfort among nursing personnel. This review can be used as the first step for developing the questionnaire for nursing personnel.

2. Methods

The literature review was held in databases of Health Sciences as the Cochrane Library, SCIELO (Scientific Electronic Library Online), LILACS (Latin American and Caribbean Health Sciences Literature), MEDLINE (National Library of Medicine, USA), the International Nursing Index (INI), and the Cumulative Index to Nursing and Allied Health Literature (CINAHL).

The search was carried out for studies regarding musculoskeletal symptoms and related work activities among nursing personnel and for measuring instruments used in nursing.

* Corresponding author. E-mail: marinazo@fcm.unicamp.br.

The keywords “work-related musculoskeletal disorders”, “job factors”, “nursing”, “ergonomics”, and “questionnaire” were used for this literature review and were chosen in the National Library of Medicine’s Medical Subject Headings (MeSH = Medical Subject Heading Terms).

Since this review was one of the steps to develop a new questionnaire, an information synthesis was conducted.

3. Results

The literature review showed various studies regarding risk activities among nursing workers that can lead to musculoskeletal symptoms (Table 1).

Table 1

Studies regarding work factors that may contribute to job-related pain and discomfort among nursing personnel

Authors	Job-factors related to musculoskeletal symptoms
Engels et al., 1996; Ando et al., 2000; Alexopoulos et al., 2006; Yeung et al., 2005	Weight lifting
Smith et al., 2006; Menzel et al., 2004; Smedley et al., 2003; Lorusso et al., 2007; Feng et al., 2007	Manual handling of patients
Smith et al., 2006; Bos et al., 2007; Feng et al., 2007	Force exertion
Engels et al., 1996; Freitag et al., 2007; Alexopoulos et al., 2006; Yeung et al., 2005; Lorusso et al., 2007	Awkward postures
Ando et al., 2000; Bos et al., 2007	Static work
Bos et al., 2007	Repetitive work
Engels et al., 1996; Ando et al., 2000	Bending the back
Smith et al., 2006	Bending/twisting the back
Ando et al., 2000; Freitag et al., 2007; Fochsen et al., 2006; Nelson et al., 2006	Transferring patients
Fochsen et al., 2006	Lack of equipments for transferring patients
Alexopoulos et al., 2006	Stressfull movements of upper limbs
Ando et al., 2000	Moving stretchers
Menzel et al., 2004	Performing risk tasks
Ando et al., 2000	Helping patients during the bath
Ando et al., 2000	Treating emergential patients
Engels et al., 1996; Lorusso et al., 2007	Working under time pressure
Engels et al., 1996; Violante et al., 2004	Very tiring work
Smith et al., 2006	Mental stress
Engels et al., 1996; Smedley et al., 2003; Alexopoulos et al., 2006; Bos et al., 2007; Violante et al., 2004; Lorusso et al., 2007	High demand of work
Ando et al., 2000	Difficulty on reducing work demand
Lipscomb et al., 2002; Trinkoff et al., 2006	Long workday
Sveinsdottir, 2006; Trinkoff et al., 2006	Work shift (night, rotative, weekend)
Trinkoff et al., 2006	Working over shift
Violante et al., 2004	Working time in career
Engels et al., 1996	Insufficient breaks/pauses
Ando et al., 2000	Unplanned work
Smedley et al., 2003; Alexopoulos et al., 2006; Bos et al., 2007; Lorusso et al., 2007	Low job control
Ando et al., 2000	Extra work due to poor physical condition of colleagues
Kjellberg et al., 2003	Poor job technique
Kjellberg et al., 2003	Lack of regular training
Engels et al., 1996; Bos et al., 2007	Poor ergonomic layouts
Smedley et al., 2003; Lorusso et al., 2007	Work dissatisfaction
Smedley et al., 2003	Low support at work
Lorusso et al., 2007	Job insecurity
Lorusso et al., 2007	Low professional recognition
Lorusso et al., 2007	Work environment
Feng et al., 2007	Psychological demand

Among biomechanical factors, the main risk activities are related to force exertion [6,10,11], manual handling of patients [1,6,10,21,29], awkward postures [1,12,22,36,41], transferring of patients [3,17,34,36], lifting heavy equipments [12,22,34,41], working in static positions [11,34], and bending/twisting the back [10,22,34].

Some studies associated environmental aspects such as poor ergonomic layouts [11,22] and lack of equipments [17] to the development of musculoskeletal symptoms.

Researchers also found out organizational problems in nursing workday, such as repetitive tasks [11], long workday [4,23], work shifts [4,20], insufficient pauses [22], and lack of training [26].

Risk factors related to psychosocial aspects were found by researchers concerned with nursing personnel, such as high perceived workload [1,11,12,16,21,22], time pressure [1,10,22], low job control [1,11,12,21], and low job satisfaction [1,21].

Regarding the literature review about other measuring instruments, it was found the use of generic questionnaires for evaluation of several disorders among nursing personnel. Depression, emotional fatigue, musculoskeletal symptoms, burnout, sleep quality are some of the problems evaluated using generic questionnaires [2,5-8,11,14,15,19,28,30-32,37-40,42,43].

It was also found that some psychosocial aspects in nursing have been assessed by specific questionnaires [18,25,33,35].

In contrast, it was found a lack of measurement tools for analysis of job factors that can lead to musculoskeletal symptoms specially developed for nursing personnel.

4. Discussion and conclusions

There is no unique cause for developing musculoskeletal disorders but many job factors that can contribute to them [27]. The results of this literature review showed that nursing personnel are exposed to many types of job factors, such as biomechanical, environmental, organizational, and psychosocial factors.

It is important to study the relationship between the occurrence of musculoskeletal symptoms and job factors [24]. A questionnaire developed specially for nursing personnel can assist the ergonomic analysis of their workplaces to prevent musculoskeletal disorders and the periodic evaluation of their activities.

The results of the present study showed that many aspects have to be considered to developing a new questionnaire. Analyzing and selecting the main job factors related to musculoskeletal symptoms is, therefore, the first step to elaborate the specific instrument for nursing personnel.

Additional steps are necessary to elaborate the new questionnaire. During the development of the domains and selection of items of the questionnaire, the results of the literature review is combined with interviews with a sample of the nursing team. Then, a content validity is performed by experts in the field and a pretest must be applied in a sample of subjects. After all changes made during these steps, the questionnaire is applied to a large number of nursing personnel to verify its reliability and validity.

In conclusion, the development of a specific questionnaire for evaluating the job factors that may contribute to musculoskeletal symptoms in nursing personnel is unprecedented, and this literature review points out some important risk activities that may be considered during the development of this questionnaire.

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