

# Evaluation of lumbar overload in hotel maids

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**Abstract.** Background: Work-related musculoskeletal disorders are responsible for important amount of declining productivity among workers. Its economic impact is considered important because, in some aspects, such as sickness absence, it can cause increase in costs for employers. This paper aimed at identifying whether the activities that the hotel maids perform during working hours may lead to the development of musculoskeletal disorders. Methods: Cross-sectional study conducted in a hotel in the city of São Paulo, Brazil. Performed an ergonomic analysis of the job application with a checklist consisting of risk assessment of low back pain. Results: The maids are responsible for the cleaning of hotel rooms, including to lean in order to clean the bathroom. The activity is associated with ergonomic risk for poor posture, manual transport of loads and use of physical force in the upper limbs. This job presents a moderate risk of low back pain according to checklist for assessing the ergonomic situation. Conclusions: Negative ergonomic aspects are associated with the development or aggravation of musculoskeletal disorders in these workers. We suggest modification in work organisation. Another possibility is decreased the weight of the carts, keeping areas of replacement material on each floor.

Keywords: low back pain, occupational health, ergonomics, absenteeism

## 1. Introduction

In Brazil, the hotel business represents an important economic sector in the service sector, with estimated sales of \$ 2 billion per year [7]. It's a great employer and responsible for generating an average of more than 550 000 jobs [5]. With the visibility gained in recent years, the Brazilian hotel industry has become more competitive by increasing the number of chains operating in the country [5].

Issues such as customer satisfaction are considered as basic parameter for evaluating the quality of service. Housekeeping, responsible for daily cleaning and organization of housing units is a critical attribute considered for this analysis. According to Branco [7], among the most important topics raised in customer satisfaction survey that affect the quality of service, cleanliness was the main item quoted.

Among the occupational hazards in this industry, the European Agency for Safety and Health at Work [1] discusses the physically demanding work, where the employee is required to spend many hours standing and staying in static postures, manual handling of loads, repetitive movements and elevations of arms

in combination with other unfavorable working conditions.

The work impacts on the natural history of orthopedic conditions and it's necessary to understand the complex relationship between sickness and occupational factors. The harmful potential of a job is the product of several factors required associated with a human body disability to perform excessive force or repetition. Conditions such as back pain, osteoarthritis, cervical and upper limb pain, tenosynovitis, and peritendinitis, in which the etiology associated with occupational activities are called "Work-related musculoskeletal disorders (WMSDs)" [9].

The WMSD, in general, is potentially reversible. It causes pain, swelling and loss of strength, drop in performance at work, sometimes progressing to disability, with consequent separation of the activities [6, 9 to 10]. Its medical, social and economic importance has attracted the attention of planners, managers and public social security.

The study of the relationship between man and his means, methods and workspaces in order to develop a better adaptation should be done to minimize negative effects on workers' health. The work-related

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diseases are preventable through improvements in ergonomic condition, the rational organization of work and health education, among others [11].

This paper aims to evaluate if ergonomic factors at work are associated with the development of musculoskeletal disorders in maids at a hotel chain.

## 2. Methods

The study was conducted in a unit of a national chain hotel in the city of São Paulo, Brasil. The sample consisted of 18 employees with maid functions who had recurrent complaints and / or medical certificates by disorders in the musculoskeletal system, between May/2009 and May/2010.

A visit was conducted in the company for the application a form about preliminary recognition of occupational hazards in order to define the flow chart of work. Analysis was performed in ergonomic workstation and consists of a structured questionnaire addressing general risk assessment: description of activity, working hours, productivity, seasonality, interaction with tools and posturing.

To evaluate the risk of low back pain, we applied the simplified checklist for evaluating published by Couto [8]. From questions on job characteristics are given simple answers (yes or no), then a sum score is set. The higher result indicates lower risk of developing low back pain interpreted as follows: 0 to 3 points - very high risk of low back pain, 4 to 5 points - high risk of low back pain, 6 to 7 points - moderate risk of low back pain, 8 to 10 points - low risk of low back pain, 11 or 13 points - very low risk of low back pain.

A structured interview was conducted with sociodemographic questions (sex, age), occupational (company time, absenteeism) and clinical (duration of complaints and orthopedic injury).

## 3. Results

### 3.1. Description of activity

The work schedule in housekeeping is six days working and a day off, daily from 7 am to 4 pm, with a 1-hour break for meals.

Each maid is responsible for the organization of a complete housing unit (bathroom and bedroom), besides hotel's corridors. The employees are distributed between the floors and have target of 16 units per

day. There is seasonality in the demand of activities performed, with a peak between the months of September and October.

Their first activity is to get the cart with cleaning supplies, bed linen and towels, to be exchanged for dirty laundry in the rooms. The maximum capacity of this cart reaches 40 kilograms that will be pushed during the workday.

This cycle lasts an average of 25 minutes per habitation. However, when there are new guests its necessary to do a thorough cleaning of the bathroom, guest room and full exchange of all linen, with an extension cycle for 45 minutes. In each 16 cycles, 02 are of this type.

### 3.2. Ergonomic evaluation

The result is that maids are supposed to stand for a long time, have a poor posture sometimes by leaning in order to clean the bathroom, dusting, and vacuuming the carpet, causing lumbar flexion requirement. Besides, they make repetitive movements forcing upper limbs in all the activities, and requiring strength in the trunk and upper limbs in lifting the mattress.

The checklist for simplified assessment of risk of low back pain showed a moderate risk to the score, with six points. This result was obtained because the maid activity often requires reaching heights below the pubis with her hands, regardless of load; involves making an effort with tool or by hand with the trunk in permanent flexion; involves the need to handle (lifting, pulling or pushing) loads that are far from the trunk; involves the need to handle loads (lifting, pulling or pushing) with the trunk in asymmetric position, involves the need to remain constantly with his/her arms in a position suspended and away from the trunk; and work involves trunk rotation.

### 3.3. Sample data

Among 18 study participants, the majority was composed by females (17). There is just one male worker. The age at interview ranged from 24 to 51 years with a median of 40 years. The working time in the company ranged from 0 to 9 years with a median of 2.5 years.

Table 01 illustrates the frequency of musculoskeletal complaints among participants. It should be noted that in some cases, there was more than one complaint per participant.

Table 01  
Distribution of musculoskeletal complaints by 18 maids  
in a hotel unit, São Paulo, 2009-2010

| Complaint              | N | %    |
|------------------------|---|------|
| Back pain              | 7 | 38,9 |
| Both upper limb pain   | 4 | 22,2 |
| Cervical pain          | 3 | 16,7 |
| Right shoulder pain    | 3 | 16,7 |
| Left shoulder pain     | 2 | 11,1 |
| Dorsal pain            | 1 | 5,6  |
| Right upper limb pain  | 1 | 5,6  |
| Right fist pain        | 1 | 5,6  |
| Lower limb paresthesia | 1 | 5,6  |
| Right hand paresthesia | 1 | 5,6  |
| No complaints          | 0 | 0    |

The time between the employee being hired and the development of orthopedic complaints ranged from 7 months to 8 years with an average of 3.25 years. Fourteen of them were in sickness absence for more than fifteen days due to the musculoskeletal disorder. Of these, two cases were considered work-related disease by the medical experts of the Brazilian Institute of Social Security (INSS).

#### 4. Conclusions

After analysing the ergonomic evaluation, it can be stated that being a maid at a hotel is associated with four negative conditions of work: displacement/lifting of load, requirement of inappropriate posture, repetitive movements and use of physical strength. Such factors may be related to the development of musculoskeletal disorders as muscle aches in parts of the spine and upper limb. These findings were consistent with those observed in the study of Gomes [2].

Organizational culture of the service sector, in which hotel business is included, the subjective quality is represented by the attitude and commitment of the staff responsible for providing customer service [3]. Therefore, of utmost importance has to be given to an organizational culture focused on health

management of workers. When it is known that a working activity is related to sickness and disability, as in cases of WMSDs, there is a mismatch in the labor relations affecting the service.

To minimize such impacts, it is suggested that arrangement of the habitations could be divided between two maids. Thus decreasing the frequency of awkward postures and distributing the strength during the work. It is also recommended adoption of instruments of labor to minimize dorsiflexion, such as adjustable cables of vacuum cleaners and cleaning material.

The reorganization of the layout in rooms is important to minimize the strength used to make beds. The musculoskeletal strength to push carts with materials can be minimized if the replacement is performed periodically rather than be taken at once.

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