



## Hospital laundry working and environment conditions: workers' perception

Francisca Pinheiro Fontoura<sup>a</sup>

Cláudia Giglio de Oliveira Gonçalves<sup>a</sup>

Vânia Muniz Nequer Soares<sup>a</sup>

*Condições e ambiente de trabalho em uma lavanderia hospitalar: percepção dos trabalhadores*

### Abstract

<sup>a</sup> Universidade Tuiuti do Paraná,  
Programa de Mestrado e Doutorado em  
Distúrbios da Comunicação. Curitiba,  
PR, Brazil.

#### Contact:

Francisca Pinheiro Fontoura

E-mail:

ffontoura0@gmail.com

This article was based on Francisca Pinheiro Fontoura's masters dissertation named "Trabalho, ruído e saúde dos profissionais de uma lavanderia hospitalar" defended in 2011 in the Universidade Tuiuti do Paraná, Programa de Mestrado e Doutorado em Distúrbios da Comunicação.

The study was not presented in any scientific meetings.

The authors declare no conflict of interest and that the study received no subsidies.

*Introduction:* hospital laundry workers are widely exposed to different occupational hazards due to the peculiar characteristics of their work environment. *Objective:* to identify workers' experiences and perceptions of their working conditions. *Method:* qualitative research conducted with workers from the laundry of a large public hospital. The research data were collected and analyzed through focus group technique and content analysis. *Results:* the perceived hazards were identified and analyzed into three categories: 1. Daily work hazards, with the subcategories Ergonomic hazards (work intensification; excessive work hours; demand for production; and absence of breaks), Physical hazards (noise; heat), Biological hazards (handling of biological material), and Puncture or laceration accidents; 2. Work organization; 3. Workers' suggestions to improve working conditions. *Conclusion:* the several occupational hazards encountered in the hospital laundry were directly related to the environmental and organizational conditions. Implementing collective control measures and strategies to change work organization is necessary to prevent accidents and diseases and promote hospital laundry workers' health.

**Keywords:** occupational hazards; worker's health; occupational health; hospital laundry service.

Received: 05/20/2014

Revised: 11/03/2015

Approved: 11/06/2015

## Introduction

Although not very noticeable<sup>1</sup>, hospital laundries are important to prevent hospital-acquired infections<sup>2</sup>. On the other hand, they are considered critical areas as they are hazardous to their workers<sup>3</sup>.

Laundries are in charge of distributing disinfected clothes throughout the hospital several units – a very important activity in a health care institution.

Lack of or delayed distribution of hospital clothes affects the activities of the hospital and influences the quality of health care, mainly regarding patient's safety and comfort<sup>2</sup>. Sectors such as operating rooms, inpatient units, ICU units, outpatient wards and others are strongly dependent on the proper performance of the laundry service, as the lack of or delayed distribution of hospital clothes may lead to serious problems in patients' care and even in scheduled activities, such as surgeries and hospital stays<sup>4</sup>. Although being an essential activity, some studies from the literature have raised the possibility of hospital clothes also becoming likely sources of infection for patients and workers<sup>5,6</sup>.

Despite the importance of this service for the control of hospital-acquired infections and for the hospital activities in general, there is little concern about the workers' safety and health<sup>7</sup>. Hospital laundry workers have strenuous duties, and are exposed to different occupational and environmental hazards, such as puncture and laceration caused by needles and sharp objects, infections caused by micro-organisms, productivity demands, authoritarian work relationships, besides physical and chemical hazards such as excessive heat, humidity, vibration, dust, smoke, gas, steam, and noise<sup>7</sup>.

Wounds caused by needles and puncture or laceration objects involve risk of infection by blood or other bodily fluids pathogens. There is an aggravating factor in this kind of injury, because it is often difficult to find the infection source patients<sup>8</sup>. It is important to highlight that some of these accidents happen with laundry workers as well<sup>7,9</sup>.

Psychosocial and ergonomic hazards make it hard for workers to adjust to the procedures prescribed by organizations, generating adjustments in their activities, which sometimes lead to health problems<sup>6</sup>. Laundries psychosocial and ergonomic hazards originated from work organization and management that are responsible for several factors, such as: equipment use; improper machines and furniture (leading to uncomfortable or extreme postures); adapted places with bad lighting, ventilation, and comfort conditions; shift and night work; monotony,

failures in workers' training and supervision; among others<sup>9</sup>.

Literature also reports other circumstances such as workers' dissatisfaction and the excessively long working hours standing up, without breaks, circumstances that may accentuate psychical problems and cause diseases<sup>2,6</sup>.

Occupational hazards in a hospital laundry environment has a multifactorial characteristic attributed to the diversity of risk factors workers are exposed to and the type of activity they carry out. Thus, the mentioned difficulties, among others that are produced and reproduced by the organization itself and by the working conditions, require reflections and interventions aimed to safety and health. In this sense, this study aimed to identify workers' experiences and perceptions regarding their working conditions in a hospital laundry, and to discuss the hazards and prevention measures that relate to this activity.

## Method

This is a qualitative, descriptive study conducted at the laundry of a public teaching hospital located in Curitiba, Paraná, Brazil.

We chose a qualitative approach because it allowed us to make an in-depth analysis of these workers' occupational conditions<sup>10</sup>.

The studied population comprised workers, who accepted participating in the study, from the "clean area" (centrifugation, classification of clean clothes, drying, folding, storing, and distribution of clothes) and from the "dirty area" (classification of dirty clothes, weighing, and washing of clothes).

Workers from these areas had different employment contracts/links and could be either public servants, or hospital workers, or outsourced workers. The people hired under the *Consolidação das Leis do Trabalho* (Brazilian laws governing labor) had 6, 8, or 12 hour-shifts in the following periods: from 7am to 1pm, 6 working hours; from 8am to 5pm, 8 working hours with Saturdays and Sundays off; and from 7am to 7pm or from 7pm to 7am, 12 working hours during night or day shifts.

According to the employment relationships, working hours vary as follows:

- Outsourced employees: schedules of 12 hours on duty and 36 hours off duty for day or night shifts;
- Workers hired by the hospital: schedules of 12 hours on duty and 60 hours off duty for day or

night shifts; or 8 hours a day with Saturdays and Sundays off for the day shift;

- Public servants: schedules of 12 hours on duty and 60 hours off duty for day or night shifts.

The data were collected during the second half of 2010 through focus group technique, with sessions where research subjects discussed a specific topic oriented by a script. We organized four groups with 6 to 15 members each<sup>11,12</sup>. The groups met at the workplace on days and times set by both, hospital managers and laundry workers, during a one-hour meeting per week (total of 4 groups).

Female and male workers from the “clean area” (folding and clothes centrifugation) and “dirty area” (washing machines) participated in the focal groups. The groups were formed by workers owing different employment contracts (public servants, outsourced employees, and workers hired by the hospital). Laundry management members and supervisors also took part in the meetings.

The questions that guided the focal groups were “What do you think about working in the laundry?”; “How is your work at the laundry?”; “What do you think is easy and hard about this job?”; “What do you think can be done to improve your workplace?”

At the beginning of each session, the meeting goal was presented to the group, confirming the commitment to maintain the confidentiality of their identity and not to identify the individual speeches. Before any procedure, all individuals agreed and signed informed consent forms.

Aiming only to facilitate the data analysis, at the beginning of each session, the workers’ first names were registered in the field diary, kept under the researcher’s responsibility. All meetings were recorded and subsequently transcribed, allowing to identify the research subjects’ words, but protecting their privacy. In this manuscript, to preserve the subjects’ identities, we used letters “W” (for worker) and “M” (for management staff and supervisors) followed by the number that corresponded to the order of participants in the groups.

The transcriptions were analyzed by content analysis technique using thematic analysis modality, since it allows apprehending the meaning of speeches<sup>10</sup>. The thematic units were extracted from the speeches and grouped by affinity in categories and sub-categories .

The research was approved by the Ethics Research Committee of Universidade Federal do Paraná under record no. 2208.102/2010-05.

## Results and discussion

The laundry mentioned in this study is located at the ground floor of the central building of the hospital, and its structure has a physical contamination barrier that separates the “clean area” (centrifugation, classification of clean clothes, drying, folding, storing, and distribution of clothes) from the “dirty area” ( classification of dirty clothes, weighing, and washing of clothes). Multipurpose laundry carts (distribution of clean clothes and collection of dirty clothes) are parked within these areas. There is also a corridor leading to the “clean area” and another to the “dirty area”, where restrooms and locker rooms are located.

There are also two administrative offices and a small room to store gallons of products for washing and disinfecting hospital clothes. The products are handled by only one worker, who supplies the washers through a computerized system. The clothes folding area has three tables and closets for storing clean clothes; the clean clothes classification area, drying, and centrifugation (clean area) has three centrifuges, three tables, three dryers, and four vats for separating clean clothes; the “dirty area” has three washers (with capacities for 180 and 130 kg) and a scale.

The laundry works continuously to process clothes to all inpatient units, operating room, obstetrical ward, emergency room, outpatient wards, and remaining services. Every day 4,500 kg of hospital clothes are washed. They are classified according to two dirtiness degrees: light dirtiness (such as bed sheets, pillow covers and blankets taken from beds in inpatient units) and heavy dirtiness (such as clothes containing blood from operating rooms and obstetrical wards), feces, urine, and other bodily fluids, from patients with infectious diseases).

The workers hired by the hospital and the public servants carry out their activities only in the “clean area”, in the following environments: reception; distribution; and clothes folding area. The outsourced workers carry out activities in the folding, classification of clean clothes, drying, and centrifugation areas – there are only male workers in the “dirty area” (washers area).

The characterization of the focal group participants is presented in **Table 1**. A total of 47 hospital laundry workers – accounting for 48.45% of the laundry staff – participated in the group activities, aging between 20 and 60 years, 66% were females. Most workers had finished elementary school (40%) or high school (43%); 58% had been working for less than a year at the laundry.

**Table 1** Workers' characterization of a large public hospital laundry from Curitiba, PR, Brazil, 2010 (n= 47)

<i>Variables</i>	<i>n</i>	<i>%</i>
<b>Sex</b>		
Female	30	66
Male	17	34
<b>Age range</b>		
20 to 30 years	12	25
31 to 40 years	13	28
41 to 50 years	18	38
51 to 60 years	4	9
<b>Education level</b>		
Elementary education	19	40
High school education	20	43
Unfinished high school	6	13
College education	2	4
<b>How long working at the laundry</b>		
Less than 1 year	27	58
1 to 5 years	10	21
6 to 10 years	2	4
11 to 15 years	2	4
16 to 20 years	4	9
21 to 25 years	2	4
<b>Employment relationship</b>		
Public servant	5	11
Hired by the hospital	5	11
Outsourced	37	78
<b>Task</b>		
Folder	28	60
Collector	5	11
Centrifuger	4	9
Dryer	2	4
Distributor	2	4
Washer	1	2
Secretary	1	2
Management	1	2
Officer	2	4
Supervisor	1	2

The analysis of the focal group participants' speeches allowed identifying multiple factors that, according to the workers' perception, may jeopardize their physical and mental health and show the feelings and perceptions that arose from their experiences. The descriptors were analyzed by re-reading each one of the three defined category presented next: Daily work hazards, Work organization, and Workers' suggestions for improving work conditions.

### **Category 1: Daily work hazards**

This category refers to the workers' perception regarding the hazards at work. The workers considered that the health problems in the laundry may be related to the improper conditions at their workplace, notably the ones related to workload and excessive noise. For the purposes of our analysis, the perceived hazards were organized into subcategories: ergonomic hazards (work intensification; excessive work hours; demand for production; and absence of breaks); physical hazards (noise; heat); biological hazards (contamination); and puncture or laceration accidents .

#### ***Discomfort at work: ergonomic hazards***

The workers described the posture requirements and necessary physical efforts (reported by them as painful) in their daily activities:

*W.4. It is difficult to me because of my health problems; I suffer from arthrosis, scoliosis, a lot of things; I have rhinitis, and, because of arthrosis on my fingers, it hurts a lot to fold clothes.*

*W.6. We have back pain, arm pain, it is difficult for us to carry out a healthy work [...], we receive crumpled clothes, they put too many clothes in the washer, it is very difficult to take them out; we twist our fingers; very heavy work.*

*W.24. We stand all the time, we can't sit; we just have to fold clothes all the time. If we stop, they immediately call our attention.*

Workers reported pain caused by their professional activities, and having to stand up all over their working hours. Some of them, even being sick and enduring pain, kept performing their duties confronted with demands and accepting conditions which were improper. Inadequate postures required, may possibly lead to work-related musculoskeletal disorders, and generate different degrees of functional disability (one of the most serious problems in occupational health)<sup>13</sup>.

Studies on musculoskeletal symptoms and posture analyses involving hospital laundry workers found that the main body segments affected by laundry work were back, shoulders, elbows,

fists, and legs<sup>14</sup>. Another study with workers of a university hospital in Campinas (SP) showed that the work restrictions most mentioned by medical reports were the ones resulting from ergonomic problems, and that the most affected professionals were the laundry assistants<sup>15</sup>.

Work overload is evident among these laundry workers. Thus, not only having a better work organization is essential to reduce the frantic pace, the excessive workload, the conflicting demands, the high physical effort, and the long time people stay in uncomfortable postures, but also adopting strategies that promote higher social integration and cooperation among higher hierarchical levels and workers<sup>16</sup>.

Furthermore, it is important to remember that activities that demand muscle, static, or dynamic overstraining of neck, shoulders, torso, and upper and lower limbs should have extra pauses for rest (NR-17, item 2.1)<sup>17</sup>.

#### ***Problems regarding the environment: physical risks***

In the workers' reports, physical risks such as pain and noise are the most frequent ones.

*W.1. I am already ill because of the noise, I already have bad ears.*

*W.5. The difficult thing is there is little ventilation, there is too much heat for us to stay there, it is too hot, it is not easy at all.*

*W.36. You cannot stand the noise if you turn on the fan we have there.*

*M.44. The machines are very noisy, some of them are too noisy.*

The laundry workers reported exposure to an excessively noisy and hot work environment, which, coupled with precarious working conditions, increase the chances of them becoming ill.

Studies show that workers exposed to excessive sound pressure levels experience buzzing, headaches, physiological alterations in heart rate and blood pressure, sleep, vestibular, digestive and neurological disorders, as well as diverse behavior disorders such as irritation, tiredness, decreased productivity, intolerance to noise, anguish, anxiety, depression, stress, among others<sup>18,19</sup>. Moreover, continuous exposure to high sound pressure levels may cause permanent changes in the workers' hearing threshold<sup>20</sup>. After five to seven years of such exposure hearing loss may be observed<sup>21</sup>.

It is important to emphasize that NR-7 – approved by the Ministry of Labor's Ordinance no. 3214/78<sup>22</sup>, Chart II, Annex I, sub-item 3.1 – prescribes that all workers that carry out activities in environments with sound pressure levels exceeding the ones

established in Annexes I and II of NR 15<sup>23</sup> must be submitted to audiometry tests. The regulation also provides subsidies for the adoption of programs that target the preservation of the workers' hearing health.

In regards to heat exposure, the literature highlights that, according to environmental conditions, core body temperature may rise to levels that are harmful to health<sup>24</sup>. Consequently, individuals who work in environments with high temperatures face physiological challenges that may jeopardize their performance and cause them serious thermal lesions or even expose them to death risks. Heat storage and the consequent rising of core body temperature to critical levels lead to thermal diseases, especially thermal fatigue<sup>25</sup>. In these cases, in intermittent work regimes, rest periods must be provided (NR 15)<sup>23</sup>, and measures that reduce environmental heat must be implemented<sup>2</sup>.

### **Health consequences: handling of biological material**

Biological materials were also pointed out by the workers as hazards agents, to which the "dirty" laundry area workers are especially exposed. Every day, the classifiers handle a large amount of dirty clothes, having intense and direct contact with several types of secretions, excretions, blood, and other bodily fluids, besides the unpleasant smells of dirty clothes.

*W.41. It is complicated in the dirty area, even when we are wearing masks. It is very uncomfortable for the face and we sweat a lot. It is horrible because we still smell the bad odors.*

*W.41. There is a lot of blood, we handle all kinds of nasty hospital stuff (in the dirty area), and we are not safe, there is no ventilation, there is nothing.*

The effects of these bad conditions were evidenced on the testimonials and on the scientific literature. Studies in the microbiology field revealed that a large amount of bacteria is dispersed through the air while the dirty clothes are separated, contaminating the environment, equipment, laundry workers' hands and uniforms<sup>26,27</sup>.

The workers' testimonials show it is necessary to review the way dirty clothes are separated: bio-safety is of fundamental importance for workers' safety and protection.

Regarding the environments where unpleasantly smelling dirty clothes are handled, ventilation systems or other devices are essential to minimize this problem<sup>28</sup>.

### **Stress and constant danger of accidents with puncture or laceration objects**

Besides the exposure to biological materials, laundry workers reported an association between their work high stress level and the possibility of accidents with puncture or laceration objects found in hospital clothes. According to them, it is common to find tweezers, needles, scalpels, probes, canulas, scissors, and other surgical instruments among dirty clothes.

*W.34. It is a stressful sector, we are taking risks all the time because some of the hampers contain needles and a lot of other materials, so we need to really pay attention, or we may end up hurt.*

*M.43. There are puncture or laceration objects in the dirty area, and, when you are handling clothes, it is still dangerous even if you are wearing gloves. You need to wear personal protective equipment, but even so you are exposed to these hazards everywhere in the laundry. It is worse in the dirty area, though.*

These accounts indicate the risks of accidents the laundry workers are daily exposed to. They reported that accidents with puncture or laceration objects are frequent and that in the "dirty area" all of them have already been exposed to contaminated material at least once.

Corroborating with the literature, the most probable work accidents in hospital environments are the ones that involve puncture or laceration objects (especially needles), and they have been recognized as sources of potential exposure to infection<sup>28</sup>. Around a third of the accidents in hospitals are caused by puncture or laceration objects with potentially-contaminated biological material – some of these events have service assistant workers as victims, especially when such materials are disposed at improper places or unsuitably adapted containers<sup>7,9,30</sup>, with the aggravating circumstance that, in many cases, it is not possible to identify the source-patient<sup>8</sup>.

Several studies in Brazil have shown that occupational accidents with puncture or laceration objects, especially needles, involving potentially-contaminated biological materials, are frequent even in teaching hospitals and part of these accidents happen with workers from hospital laundries<sup>30-33</sup>.

It is extremely important to implement measures for worker's health surveillance regarding accidents with puncture or laceration objects, and also to adopt pre-exposure measures integrated with educational activities and mandatory use of collective protective measures and personal protective equipment – including procedures to dispose of potentially infected materials, what demands periodical training aiming at reducing workers' exposure<sup>34</sup>.

Health care professionals must be taught to identify puncture or laceration hazard situations and to propose alternatives to protect their own health and of other professionals. Institutions, on their side, must adopt measures that will make the achievement of these goals easier<sup>35</sup>.

### **Category 2: Work organization and control over workers**

Issues regarding work organization were reported by the workers, revealing situations such as exhausting workloads due to productivity demands; constant pressure from the manager, control over workers, irregularities, and authoritarian attitudes from middle management representatives to make workers improve their productivity and achieve goals.

They also reported to feel unappreciated, despised, and clearly dissatisfied with the lack of recognition, which results in lack of energy and discontent towards work, low self-esteem, and feeling of inferiority, generating a higher likelihood of accidents and, consequently, declining the quality of life at work<sup>36</sup>.

*W.6. We feel the pressure, we are responsible for everything and everything is our fault.*

*W.24. We cannot even go to the restrooms sometimes. When we go and it takes us a little longer, they go after us. Where did so-an-so go? I think we work under pressure.*

*W.36. The boys have their meals in the changing room, inside the "dirty area"; their supervisor gives them a coffee thermos and they eat and drink inside that unhealthy sector, because they only have a 15-minute break to eat and to change their work clothes (exceeding their break).*

*W.41. So this means we break our backs all day and have no value, we are not acknowledged; they do not see our effort.*

The hard control over workers that is enforced by the managerial model adopted in public hospital laundries was equally observed in the study conducted by Godoy et al.<sup>4</sup>, who classify it as an excessive control on workers including work pace and work breaks, that may bring repercussions to worker's health and also generate psychic suffering, mental and physical diseases<sup>6</sup>.

That could be seen in one of the reports showing that workers are told not to change their personal protective clothing before going to the cafeteria because that would exceed the 15-minute meal break they have. Besides the several hazards already offered by the sundry job positions at the laundry, this negligence with hygiene during meals is one more the laundry workers are exposed to.

The excessive control on the workers may lead to physical, affective, and cognitive damage – thus it is essential that those who manage work recognize these repercussions. Managers are important in structuring and disseminating the organizational atmosphere and producing a work environment that is open or not to dialogue, to the possibility of autonomy and decision<sup>38</sup>.

Furthermore, the attitudes and behaviors of leaders have deep effect on the atmosphere and culture of an organization. They are responsible for promoting a safe and emotionally healthy working environment. For that, it is essential to alter the management practices at the hospital laundry by adopting changes in the administrative models to ensure a technical focus on people and their environment, and not only on results. Only in this way will the prevention of diseases and accidents be achieved, and so will satisfaction in this hard and underappreciated work<sup>2</sup>.

We could also observe by the testimonials that laundry workers are often more dissatisfied by the lack of recognition of their efforts than by the precarious conditions to which they are exposed. The speeches make it clear that, despite the relevance of a laundry in the work process of a hospital, managers are not committed to improving its environmental and organizational conditions nor acknowledging these professionals .

A laundry worker is seen as a person who works at a place where low schooling levels, lack of professional training, and low income prevail<sup>6</sup>. The subjectivity of laundry workers, who contribute to the quality of life of other people, is not taken into account. Hazards aspects are also not considered, like improvised working conditions or personal exhaustion in repetitive and monotonous tasks, among others<sup>39</sup>. Thus, it is essential that the health institutions where they work provide the care and attention they need. There is an important link between working conditions, work relations and the psychic suffering that may be softened by prizing these professionals<sup>40</sup>.

### **Category 3: Workers' suggestions for improving their working conditions**

Some suggestions to work environment improvement were identified in the workers' speeches, mainly concerning the high noise and temperatures levels. They realize there are ways to improve their workplace, but managers must be committed to that purpose. This may include the installation of facilities that enable ventilation in all environments; improved equipment; the decrease of machine noise level; and, notably, devoting

more attention to laundry workers, especially those restricted to the “dirty area”.

*W.27. There are plenty of things to improve, mainly in the dirty area, where there is no ventilation and is contaminated. At least, the ventilation should be a little better; someone needs to make it better somehow.*

*W.35. The machinery had to be improved, the machines had to be changed, those noisy ones, the noisiest of all; and there is really little ventilation; we need better working conditions.*

*W.36. Since it is not possible for someone to keep sitting all day folding clothes, because it is necessary to stand up to fold a sheet and so all, I think that, at least, the ventilation had to be improved.*

From our observations of the workplace and from the workers accounts, we agree that all laundry areas had little ventilation and loud noise levels. Therefore, the workers' suggestions regarding improvements in the ventilation, as well as reducing the noise of the machines, are positive and relevant. Thus, it is fundamental to recognize the workers' knowledge and to allow them to propose interventions in their work reality. Hospital laundry working conditions must be improved, so workers can produce better and with minimum stress.

The workers mentioned many problems. Managers need to be aware of these particularities and take the necessary measures to confront the mentioned problems.

They also need to understand that work overload, poor workplace conditions, and occupational hazards increase the likelihood of sickened workers and, if necessary measures are not taken, the occurrence of occupational accidents and diseases will increase.

The adoption of a worker-focused public health care policy taking into account the concrete and real working conditions is necessary. Dialoguing is an important path to knowledge and to achieve possible solutions for issues related to safety and health at work. The measures and proposals adopted by the workers' organized movement are born in collective discussions<sup>41</sup>.

Hence, improved work conditions in the laundry may be achieved through a closer relationship between workers and managers, when corporate knowledge starts recognizing the workers' creative potential and granting them the power of taking part in decisions that directly affect their health in their working conditions.

In this sense, it is essential to implement collective control measures. The irregularities the workers pointed out reveal the little attention that is devoted to the law provisions, such as the basic

measures for comfort and safety conditions. A common reference in this matter are the Brazilians work regulating norms (as examples, we can mention NRs 7<sup>22</sup>, 9<sup>42</sup>, 15<sup>23</sup>, 17<sup>17</sup>, 32<sup>27</sup>) that were defined by ordinance 3214/78 of the Ministry of Labor<sup>43</sup>, and used as base to rule working conditions and risk prevention and control.

Therefore, to further seek safety at the laundry workplace, it is fundamental to pay attention, at least, to the conditions provided by the law.

It is crucial to demonstrate ethical and responsible attitudes towards workplace safety and health to prevent it from becoming an aggressive element to workers. Only this way can measures be implemented to control the hazards that laundry workers are exposed.

## Conclusion

This study evidenced that the several occupational hazards found in the surveyed hospital laundry were directly related to the environmental and organizational conditions of this sector. The focus group allowed us identifying the laundry workers' perception of their working conditions in regards to the following hazards: physical, such as excessive noise and heat; ergonomic; biological; and accidents with puncture or laceration objects. All of them leading to stress and others problems to the workers' health.

Workers' reports allowed us to know the working conditions that keep them from fully performing their duties, as some become ill, requiring functional readjustment and/or readaptation measures. This naturally demands higher attention from health care institution managers and safety and health professionals.

It should be equally highlighted that the work organization reflected negatively in the routines of the hospital laundry workers and made the activity been seen, by them, as strenuous and unacknowledged. The observed negative signs are consequence of the management control and demand for productivity.

Finally, given the scarcity of studies on the working conditions of hospital laundry, this research may contribute with specific and relevant data. Other studies are recommended to increase knowledge on hospital laundries workers' safety and health. Qualitative studies based on these workers' experiences may contribute to this process.

## Authorship contributions

Fontoura FP designed the research and was responsible for collecting data, analyzing and interpreting the results, and for writing the article. Gonçalves CGO took part in the design and orientation of the research, in the manuscript critical revision, and in the approval of its final draft. Soares VMN contributed to the orientation of the research execution and in the revision of the final draft to be published.

## References

1. Prochet TC. Lavanderia hospitalar: condições e riscos para o trabalhador. *Nursing*. 2000;3(28):32-4.
2. Agência Nacional de Vigilância Sanitária (Brasil). Processamentos de roupas de serviços de saúde: prevenção e controle de riscos. Brasília: Anvisa; 2009.
3. Fernandes AT, Fernandes MOV, Soares MR. Lavanderia hospitalar. In: Fernandes AT, Fernandes MOV, Ribeiro Filho N, organizadores. Infecção hospitalar e suas interfaces na área de saúde. São Paulo: Atheneu; 2000. p. 1256-65.
4. Godoy SCB, Santos, EMR, Horta NC, Gontijo SM, Vilela, AF. Riscos para os trabalhadores em lavanderia hospitalar. – *REME Rev Min Enferm*. 2004;8(3):382-7.
5. Ndawlua EM, Brown L. Mattresses as reservoirs of epidemic methicillin-resistant *Staphylococcus aureus*. *Lancet*. 1991;337(8739):488.
6. Barried D. How hospital linen and laundry services are provided. *J Hosp Infect*. 1994;27(3):219-35.
7. Fontoura FP. Trabalho, ruído e saúde dos profissionais de uma lavanderia hospitalar. Curitiba. Dissertação [Mestrado em Distúrbios da Comunicação] – Universidade Tuiuti do Paraná; 2011.
8. Oliveira BAC, Kluthcovsky ACGC, Kluthcovsky FA. Estudo sobre a ocorrência de acidente de trabalho com material biológico em profissionais de enfermagem de um hospital. *Cogitare Enferm*. 2008;13(2):194-205.
9. Fontana RT, Nunes DH. Os riscos ocupacionais na concepção dos trabalhadores de uma lavanderia hospitalar. *Enferm Glob*. 2013;12(29):183-95.
10. Minayo MCS. O desafio do conhecimento. 12. ed. São Paulo: Hucitec; 2010.
11. Westphal MF, Bógus CM, Faria MM. Grupos focais: experiências precursoras em programas educacionais em saúde no Brasil. *Boletim Oficina Sanit Panam*. 1996;120(6):472-81.
12. Gonçalves CGO. O grupo focal como técnica na investigação em fonoaudiologia. In: Berberian AP, Santana AP, organizadores. Fonoaudiologia em contextos grupais: referenciais teóricos e práticos. São Paulo: Plexus; 2012. p. 203-16.
13. Couto HA, Nicoletti SJ, Lech O. Como gerenciar a questão das LER/DORT. Belo Horizonte: Ergo; 1998.
14. Montoya-Diaz MDC. Lesões osteomusculares entre trabalhadores de um hospital mexicano e a ocorrência de absenteísmo. Ribeirão Preto. Tese [Doutorado em Enfermagem Fundamental] – Escola de Enfermagem Ribeirão Preto, Universidade de São Paulo; 2008.
15. Gurgueira GP, Alexandre NMC. Laudos médicos recomendando restrições de trabalho em um hospital universitário do Brasil. *Rev Latinoam Enferm*. 2006;14(4):510-6.
16. Ferreira DKS, Bonfin C, Augusto LGS. Condições de trabalho e morbidade referida de policiais militares, Recife-PE, Brasil. *Saúde Soc*. 2012;21(4):989-1000.
17. Brasil. Ministério do Trabalho e Emprego. Norma Regulamentadora nº. 17 – Ergonomia. Aprovada pela Portaria nº. 3.214, de 8 de junho de 1978. Aprova as Normas – NR – do Capítulo V, Título II, da Consolidação das Leis do Trabalho, relativas a Segurança e Medicina do Trabalho [portaria na internet]. *Diário Oficial da União* 06 jul 1978 [citado em 15 set 2016]. Disponível em [http://acesso.mte.gov.br/data/files/FF8080812BE914E6012BEFBAD7064803/nr\\_17.pdf](http://acesso.mte.gov.br/data/files/FF8080812BE914E6012BEFBAD7064803/nr_17.pdf)
18. Dias A, Cordeiro R, Gonçalves CGO. Exposição ocupacional ao ruído e acidentes do trabalho. *Cad Saúde Pública*. 2006;22(10):2125-30.
19. Azevedo AN, et al. Perfil auditivo de trabalhadores de um entreposto de carnes. *Rev CEFAC*. 2010;12(2):223-34.
20. Ogido R, Costa EA, Machado HC. Prevalência de sintomas auditivos e vestibulares em trabalhadores expostos a ruído ocupacional. *Rev Saúde Pública*. 2009;43(2):377-80.
21. Lopes AC, Santos CC, Alvarenga KF, Feniman MR, Caldana ML, Oliveira AN, et al. Alterações auditivas em trabalhadores de indústrias madeireiras do interior de Rondônia. *Rev Bras Saúde Ocup*. 2009;34(119):88-92.
22. Brasil. Ministério do Trabalho e Emprego. Norma Regulamentadora n. 07 – Programa de Controle Médico de Saúde Ocupacional. Aprovada pela Portaria n. 3.214, de 8 de junho de 1978.

- Aprova as Normas Regulamentadoras – NR – do Capítulo V, Título II, da Consolidação das Leis do Trabalho, relativas a Segurança e Medicina do Trabalho [portaria na internet]. Diário Oficial da União 06 jul 1978 [acesso 15 set 2016]. Disponível em [http://acesso.mte.gov.br/data/files/FF8080812BE914E6012BEFBAD7064803/nr\\_17.pdf](http://acesso.mte.gov.br/data/files/FF8080812BE914E6012BEFBAD7064803/nr_17.pdf)
23. Brasil. Ministério do Trabalho e Emprego. Norma Regulamentadora n. 15 – Atividades e operações Insalubres. Aprovada pela Portaria n. 3.214, de 8 de junho de 1978. Aprova as Normas Regulamentadoras – NR – do Capítulo V, Título II, da Consolidação das Leis do Trabalho, relativas a Segurança e Medicina do Trabalho. Diário Oficial da União 06 jul 1978 [acesso 15 set 2016]. Disponível em [http://acesso.mte.gov.br/data/files/FF8080812BE914E6012BEFBAD7064803/nr\\_17.pdf](http://acesso.mte.gov.br/data/files/FF8080812BE914E6012BEFBAD7064803/nr_17.pdf)
  24. Kroemer KHE, Grandjean E. Manual de ergonomia: adaptando o trabalho ao homem. 5. ed. São Paulo: Bookman; 2005.
  25. Gambrell RC. Doenças térmicas e exercício. In: Lillegard WA, Butcher JD, Rucker KS, organizadores. Manual de medicina desportiva: uma abordagem orientada aos sistemas. São Paulo: Manole; 2002. p. 457-64.
  26. Mesiano ERAB, Santos AAM. A lavanderia e o controle de infecções hospitalares 2005. [online] Disponível em: <<http://www.anvisa.gov.br/divulga/sentinelas/lavanderia.doc>>. Acesso em: 01 jun. 2011.
  27. Konkewicz LR. Prevenção e controle de infecções relacionado ao processamento das roupas hospitalares [online]. [citado em 30 ago 2016]. Disponível em: <http://www.bvsde.ops-oms.org/bvsacd/cd49/lavanderiahospitalar.pdf>
  28. Brasil. Ministério do Trabalho e Emprego. Norma Regulamentadora n. 32 – Segurança e Saúde no Trabalho em Estabelecimentos de Assistência à Saúde. Aprovada pela Portaria n. 485, de 11 de Novembro de 2005. Diário Oficial da União 06 jul 1978 [citado em 15 set 2016]. Disponível em [http://acesso.mte.gov.br/data/files/FF8080812BE914E6012BEFBAD7064803/nr\\_17.pdf](http://acesso.mte.gov.br/data/files/FF8080812BE914E6012BEFBAD7064803/nr_17.pdf)
  29. Balsamo AC, Barrientos DS, Rossi JCB. Estudo retrospectivo dos acidentes de trabalho com exposição a líquidos corporais humanos ocorridos nos funcionários de um hospital Universitário. Rev Med Hosp Univ. 2000;10(1):39-45.
  30. Silva CER. O processo de trabalho da limpeza e coleta interna do lixo hospitalar na emergência do hospital Municipal Paulino Werneck. Rio de Janeiro. Dissertação [Mestrado em Ciências] – Centro de Estudos do Trabalhador e Ecologia Humana, Escola nacional de Saúde Pública; 1999.
  31. Morais NO, Paniago AMM, Negri AC, Oliveira OA, Cunha RV, Oliveira SMVL. Exposição ocupacional com material potencialmente contaminado entre profissionais da área de apoio. Cogitare Enferm. 2009;14(4):709-13.
  32. Sêcco IAO, Robazzi MLCC, Shimizu DS, Rúbio MMS. Acidentes de trabalho típicos envolvendo trabalhadores de hospital universitário da região Sul do Brasil: epidemiologia e prevenção. Rev Latinoam Enferm. 2008;16(5):824-31.
  33. Balsamo AC, Felli VEA. Estudos sobre os acidentes de trabalho com exposição aos líquidos corporais humanos em trabalhadores da saúde de um hospital universitário. Rev Latinoam Enferm. 2006;14(3):346-53.
  34. Canini SRMS, Gir E, Hayashida M, Machado AA. Acidentes perfurocortantes entre trabalhadores de enfermagem de um hospital universitário do interior paulista. Rev Latinoam Enferm. 2002;10(2):172-8.
  35. Silva AID, Machado JMH, Santos EGOBS, Marziale MHP. Acidentes com material biológicos relacionados ao trabalho: análise de uma abordagem institucional. Revista Brasileira de Saúde Ocupacional, São Paulo, v. 36, n. 124, p. 265-273, jul./dez. 2011.
  36. Machado MRM, Machado FA. Acidentes com material biológico em trabalhadores de enfermagem do hospital Geral de Palmas (TO). Rev Bras Saúde Ocup. 2011;36(124):274-81.
  37. Zobole JA, Mafra SCT, Loreto MDS, Bartolomeu TA. A (Re)organização da Economia Familiar de Funcionários de uma Lavanderia Hospitalar em face da Ocorrência de Acidentes em seu Ambiente de Trabalho. In: Mafra SCT, Silva VE, organizadores. Lavanderia: do ambiente aos indivíduos. São Paulo: UFV; 2010. p. 108-39.
  38. Guimarães MC. Controle no trabalho: uma reflexão sobre antigas e novas formas de controle e suas consequências sobre os trabalhadores. REGE – Revista de Gestão. 2006;13(1):1-10.
  39. Abdalla GF, Assis A, Cosme RO, Junqueira WBC. O invisível de quem cuida: a humanização das unidades de apoio em ambientes de saúde – uma experiência em Juiz de Fora. Anais do 1º Congresso Nacional da ABDEH; 2004 27-32; Juiz de Fora, MG. Brasília: BVMS, 2004.
  40. Rosa AJ, Bonfati AL, Carvalho CS. O sofrimento psíquico de Agentes Comunitários de Saúde e suas relações com o trabalho. Saúde Soc. 2012;21(1):141-52.
  41. Guida HFS, Souza KR, Santos MBM, Silva SMCL, Silva VP. As relações entre Saúde e Trabalho dos Agentes de Combate às endemias da Funasa: a perspectiva dos trabalhadores. Saúde Soc. 2012;21(4):858-70.
  42. Brasil. Ministério do Trabalho e Emprego. Norma Regulamentadora n. 09 – Programa de Prevenção de Riscos Ambientais. Aprovada pela Portaria n. 3.214, de 8 de junho de 1978. Aprova as Normas Regulamentadoras – NR – do Capítulo V, Título II, da Consolidação das Leis do Trabalho, relativas a Segurança e Medicina do Trabalho. Diário Oficial da União 06 jul 1978 [citado 15 set 2016].

Disponível em [http://acesso.mte.gov.br/data/files/FF8080812BE914E6012BEFBAD7064803/nr\\_17.pdf](http://acesso.mte.gov.br/data/files/FF8080812BE914E6012BEFBAD7064803/nr_17.pdf)

43. Brasil. Ministério do Trabalho e Emprego. Portaria n. 3.214, de 8 de junho de 1978. Aprova as Normas Regulamentadoras – NR – do Capítulo V, Título II,

da Consolidação das Leis do Trabalho, relativas a Segurança e Medicina do Trabalho. Diário Oficial da União 06 jul 1978 [citado 15 set 2016]. Disponível em [http://acesso.mte.gov.br/data/files/FF8080812BE914E6012BEFBAD7064803/nr\\_17.pdf](http://acesso.mte.gov.br/data/files/FF8080812BE914E6012BEFBAD7064803/nr_17.pdf)