



Acta Paulista de Enfermagem

ISSN: 0103-2100

ape@unifesp.br

Escola Paulista de Enfermagem

Brasil

Martins, Júlia Trevisan; Ribeiro, Renata Perfeito; Bobroff, Maria Cristina Cescatto; Marziale, Maria Helena Palucci; Robazzi, Maria Lúcia do Carmo Cruz; Mendes, Aida Cruz
Significado de cargas no trabalho sob a ótica de operacionais de limpeza
Acta Paulista de Enfermagem, vol. 26, núm. 1, enero-febrero, 2013, pp. 63-70
Escola Paulista de Enfermagem
São Paulo, Brasil

Available in: <http://www.redalyc.org/articulo.oa?id=307026771012>

- How to cite
- Complete issue
- More information about this article
- Journal's homepage in redalyc.org

redalyc.org

Scientific Information System

Network of Scientific Journals from Latin America, the Caribbean, Spain and Portugal

Non-profit academic project, developed under the open access initiative

Meaning of workload on the view of cleaning professionals

Significado de cargas no trabalho sob a ótica de operacionais de limpeza

Júlia Trevisan Martins¹

Renata Perfeito Ribeiro¹

Maria Cristina Cescatto Bobroff¹

Maria Helena Palucci Marziale²

Maria Lúcia do Carmo Cruz Robazzi²

Aida Cruz Mendes³

Keywords

Occupational health nursing;
Nursing; Nursing service, hospital;
Housekeeping, hospital; Workload

Descritores

Enfermagem do trabalho, Enfermagem;
Serviço hospitalar de enfermagem;
Serviço hospitalar de limpeza; Carga de
Trabalho

Submitted

April 23, 2012

Accepted

February 21, 2013

Abstract

Objective: To analyze the meaning of workload for cleaning professionals working in an emergency unit and identify strategies to protect themselves against workloads.

Methods: This is an exploratory and descriptive study of a qualitative approach that included 12 cleaning professionals. We conducted data collection using semistructured interviews and speeches that we analyzed in the following steps: reading, definition of recording and meaning units, codification and classification, management, and interpretation of results.

Results: Three categories that appeared were loads experienced in the work related to internal materiality, load experienced in the work related to external materiality, and strategies used to lighten and/or prevent workload.

Conclusion: Professionals recognized partial loads that they were exposed. In addition, they faced all loads separately.

Resumo

Objetivo: Analisar o significado das cargas de trabalho para operacionais de limpeza de uma unidade de Emergência/Pronto Socorro e identificar as estratégias que eles utilizam como proteção as essas cargas.

Métodos: Estudo descritivo, exploratório qualitativo, com a participação de 12 operacionais de limpeza. A coleta de dados foi realizada por meio de entrevistas semiestruturadas e as falas submetidas à análise de conteúdo em suas etapas: leitura, determinação das unidades de registro e significações, codificação e classificação; tratamento e interpretação dos resultados obtidos.

Resultados: Emergiram três categorias: carga vivenciada no trabalho relacionada com a materialidade interna, carga vivenciada no trabalho relacionada com a materialidade externa e estratégias de enfrentamento utilizadas para amenizar e/ou prevenir as cargas no trabalho.

Conclusão: Os profissionais conhecem parcialmente as cargas as quais estão expostos e enfrentam-nas individualmente.

Corresponding authors

Renata Perfeito Ribeiro

Robert Koch avenue, 66, Vila Operaria,
Londrina, PR, Brazil. Zip Code: 86038-
440

perfeito@sercomtel.com.br

¹ Universidade Estadual de Londrina, Londrina, PR, Brazil.

² Escola de Enfermagem de Ribeirão Preto, Universidade de São Paulo, Ribeirão Preto, SP, Brazil.

³ Escola Superior de Enfermagem de Coimbra, Coimbra, Portugal.

Conflicts of interest: the authors have no relevant conflicts of interest to disclose.

Introduction

Working constitutes a vital activity for human beings. It is performed within a social context influenced by several factors and is also related to continuous actions between workers and ways of production. Therefore, inside this mutual change it is possible to consider working as the source for self-achievement from a professional standpoint, the way to build a wealth and acquire material goods besides the feeling of making a difference for society as a whole, among others. However, working can cause physical, mental, and social distress; injury to one's health; or even death.

In the 1980s, a load concept different from the concept of risk was instituted and enabled "[...] a analysis of the working process that extracted and synthesized elements which determined the importance of working community biopsychosocial nexus and gives them a specific historical way of going forward in life."⁽¹⁾

Workloads interact at the same time, and to analyze work actions in the context in which they occur is necessary, and also consequences from this context.^(1,2)

The load concept of work seeks to reveal all factors that determine the work process such as technological resources, organization and sharing of activities, interpersonal relationships, relationship with the environment and physical structure, among other factors that could overload the professionals, his/her work, ability and may destroy their vital energy.^(1,3)

Workload could be grouped according to its nature and basic characteristics. They are subdivided into those with external materiality, that is, modified after interaction with a body – physical, chemical, biological, and mechanical, and those with internal materiality that interact in own body being internally expressed by the individual, such as psychological and psychics.^(1,4,5) Therefore, a coexistence of different ways as a model to social determination of disease that represent a retaken of social epidemiological approaches.^(1,4)

Workloads are classified in specific types that also comprise specific risks. However, it does not

mean that it is simply the sum of risks because they acquire meaning from the global dynamic of work process.⁽⁴⁾

Physical loads are related, for example, to noise that acts on ear the cells and central nervous system, heat that activates a thermoregulation mechanism and enables changes in the physiological process. This category includes humidity, ventilation, vibration, and lighting. Chemical loads originate mainly from dust, smoke, fibers, vapor, liquids, and radiation. Biological loads could be caused by any vegetable or animal organism and are referent microorganisms.^(1,4)

Mechanical loads involve technology, installation conditions, and a maintenance process of production object of the work itself. Hence, work accidents occur mainly by mechanical loads (contusions, wounds, fractures) and are more visible.^(1,4,5)

Concerning physiological loads, there are several ways to perform a work activity, such as physical and visual efforts (increased caloric consumption, blood redistribution, energetic waste), performance of the task in a physically uncomfortable position, and shift changes (rupture of basic physiological rhythms as circadian cycle).^(4,5)

Psychic loads that are directly related to management of journey, work dangerously, frequency of emergent situations, degree of responsibility in solving problems, rhythm of work, possibility to speak with the work team, taking actions and making decisions, tasks receptivity. These situations constitute elements of the work process that might damage workers' health.

Workloads beyond each work own characteristics are also the result of interaction between tasks requirements, circumstances in which interactions occur, workers' skills, abilities, behaviors, and perceptions of their own and others expectations.⁽⁵⁾ Therefore, when studying these loads, an important assessment is to determine how work is perceived by professionals.

In this context, to understand better work processes of hospital cleaning professionals is critical for occupational nurses to define prevention strategies.

In daily loads, workers who clean hospital institutions have contact with secretions, fluids, chemi-

cal substances, and high-risk patients. This environment needs specific competencies to perform activities and also requires a constant concern with safety to avoid accidents and damage to the mental and physical health of the worker.⁽⁶⁾ Considering these facts, the following questions are raised:

How do cleaning professionals working in emergency units understand the workload?

What loads are identified in this type of work?

What measures are taken to protect professionals against these loads?

Answers to these questions are relevant to workers understanding their workloads and, as a result, the strategies that could be adopted to prevent disease and damage to their health.

This study aimed to analyze the meaning of workload for cleaning professionals working in the emergency unit of a hospital and identify strategies to protect against workload.

Methods

This is an exploratory and descriptive study of a qualitative approach that included 12 cleaning professionals working in the emergency unit at the Hospital Público de Londrina, Paraná, Brazil. Cleaning professionals in the institution where the study was conducted report to the nursing director and are coordinated by responsible nurses of units.

We decided to conduct the study in an emergency unit because the emergency unit is the first place where most patients are admitted and constitutes an environment full of unexpected events and intense and dynamic activities involving all professionals who work there, therefore requiring competence and agility. The unit has 18 cleaning professionals. In the study, 12 cleaning professionals were selected because they met inclusion criteria, which were employment in the unit for at least 1 year and agreement with participation.

Exclusion criteria were workers who were on vacation. This study was a qualitative research study,⁽⁷⁾ and the number of participants was not based on criteria or number of representatives.

Interviews were performed until the moment that occurred convergence in speech related to phenomenon studied.

We collected data using interviews that were performed in a private environment at the professionals' workplace from December 2010 to April 2011. To assure data reliability, we recorded interviews, which lasted on average for 45 minutes, with the participants' approval. To preserve confidentiality, we identified participants according to letter A, B, C, and so on. A semistructured form was used in the interviews. To reveal the objective of this study, we used the following questions:

How do you understand workloads?

What workloads do you perceive in your work?

What strategies and measures do you use to deal with loads?

For analysis of results, the content analysis technique⁽⁷⁾ was used in thematic modality in which the following steps were used: reading, definition of recording and meaning units, codification and classification, management, and interpretation of results. After skimming reading, we could perform marks in recorded units and organize them by themes. Categories were built using approximation and distance.

Using these techniques, the elements that build workload for participants originated in the theme categories of internal and external materiality and strategies of confrontation. Loads of internal materiality are not dependent on worker body; therefore, they could be revealed and even be measured without involvement. Internal materiality is linked to an intrabody process and acquires materiality through corporality.^(1,3,4) Strategy categories of confrontation revealed subjective and nonsubjective actions.

This study followed the national and international ethical and legal aspects of human subject research.

Results

Participants had the following personal and occupational characteristics: they worked in a shift scheme. Eight (66.65%) were women, and

four (33.4%) were men; age range was 30 to 58 years old. Half of the workers were between 30 and 40 years old, two (16.6%) were 40 to 50 years old, and four were 50 to 58 years old. Concerning the duration of service in the unit, five (41.6%) of the workers had more than 20 years of service, four (33.4%) had less than two years, and three (25%) had between three and four years of service. All participants had completed high school.

Workers on the day shift worked six hours daily with a weekly duty of 12 hours, those working on the night shift worked on 12/36 duty hours. Basically, their duties were to clean the floors, beds, and furniture, among others. During activities, professionals used hospital cleaning products and wore the recommended protective equipment such as gloves, masks, goggles, boots, and uniforms.⁽⁸⁾ Testimonial analysis included the following categories:

1. Load experienced in the workplace related to internal materiality

Participants reported their physiological loads:

[...] my greatest load is back pain (J).

I feel back pain, and my bursitis appears (I).

Respondents reported psychological loads caused by suffering for other people and lack of job recognition:

I feel emotionally affected by seeing sick people or other patients dying and suffering (B).

[...] here I suffer humiliations coming from everyone, my work is not recognized, we suffer humiliations by doctors and employees because we are cleaning the floor (E).

Another problem found is psychological load described by participants regarding interpersonal relationships:

[...] some employees do not accomplish their service for lack of interest, and we become overloaded [...], we must work as a team (A).

2. Load experienced in the workplace related to external materiality

Among these loads participants detected to be exposed to biological agents:

[...] our work is not easy; many times there are secretions and risk of infection (D).

[...] we have contact with blood, feces, urine – all of these can transmit diseases (L).

3. Strategies of confrontation to make workloads tolerable

Testimonials highlighted the need for teamwork as a strategy to make work more pleasant: [...] Teamwork, one thinking to benefit another, is pleasant and good. It also makes things easier and makes us stronger; dealing with things alone is more difficult (H).

Other ways of confrontation used by cleaning professionals are exercises and leisure activities:

I practice swimming to relieve my workload (D).

I take walks for exercise, to improve my humor, and decrease stress (J).

Religiosity also constituted a strategy to confront workloads according to respondents:

My faith and God help me to face job problems (B).

In addition, some professionals used personal protective equipment (PPE) as a strategy of confrontation or prevention:

I use gloves and boots to [protect] myself against contamination (F).

When I'm cleaning, I wear boots and rubber gloves to avoid infection from patients, secretions, bathrooms, and other things that could cause impairment (J).

Discussion

In many hospitals in Brazil, cleaning services are coordinated by the nursing service,⁽⁹⁾ which is responsible for the management of this service. Therefore, this topic is interesting for the nursing arena and for other health professionals, particularly for the small number of studies approaching this theme.

These study results showed that cleaning professionals have similar characteristics to nursing professionals' population concerning shift work schedule adopted and the predominant number of women. However, important

data constitute how long participants have been working in the emergency unit, because approximately half of the workers have been employed for more than 20 years inside an emergency unit, which is considered by several health professionals as a stressful environment.⁽¹⁰⁾

Studies of workers in hospital cleaning services resemble our findings concerning the predominant number of women who perform these services. A study conducted in a hospital in Belo Horizonte (MG) identified that 99.18% of cleaning professionals were women,⁽⁶⁾ another study in the academic hospital in Maringá (PR) reported that 100% of cleaning professionals were women,⁽⁹⁾ and 65.1% of workers of a cleaning service were women in a public hospital in Campinas (SP).⁽¹¹⁾

From testimonials, it was possible to identify the loads that are meaningful to workers: loads of a physiological nature, mainly back pain; those of a psychoemotional nature because of an environment surrounded by suffering and unexpected situations; and those of a psychological nature because of lack of recognition of work accomplished by other professionals; besides issues concerning interpersonal relationship and teamwork. Load from a biological nature was also identified by cleaning professionals.

Regarding low back pain mentioned by cleaning professionals, we believe that they are related to the types of activities performed, which include frequently carrying objects and heavy materials. Studies on hospital cleaning staff showed that these people often report low back pain.⁽¹¹⁾

Working in an emergency unit requires specific training for professionals to deal with suffering situations, such as the pain of patients and their families.⁽¹²⁾ In general, these professionals have to deal with feeling as impotence and suffering. These two feelings were identified in participants' testimonials in this study, who were directly exposed to effects from this daily experience with patients and other users.⁽⁹⁾

Cleaning professionals felt a lack of recognition for their work by other professionals and also reported the feeling of prejudice in society as

whole. This finding was identified as a psychological load in the sample.

Studies conducted on nursing professionals in the Intensive Care Unit (ICU) of Hospital de Base do Distrito Federal identified a feeling of lack of recognition by professionals in their work on levels considered critical, because these feelings constituted risks for physical and mental health problems, leading to the development of diseases.⁽¹³⁾ A study carried out in a public hospital in south of Brazil showed that cleaning professionals' distress was related to the feeling of invisibility because of relationship problems with other professionals in the organization in which they felt to be in a position of disadvantage.⁽¹²⁾ In another study, caretakers in a public hospital in Paraná perceived their lack of recognition and reported indignation because of lack of recognition by other professionals in the institution.⁽⁹⁾

In a hierarchy division of work, there are those who care and those who provide support to tasks. In our study, cleaning professionals are involved in a team that works in the emergency unit, especially for their daily experience in this environment. Cleaning services require less professional qualification and could be considered a professionalization of housekeeping, but with lower salaries.⁽⁹⁾

To be professionally recognized for the work is important, for such recognition promotes motivation and improves quality of life. To recognize and be recognized by the team is a complementary and positive aspect of the work; therefore, it contributes to the maintenance of self-esteem and the psychoemotional balance of workers.⁽⁹⁾

Teamwork was identified by the cleaning workers as a loan due to lack of collaboration between work partners and also as a defense. Cooperation between workers must be motivated to seek quality, which is vital to achieve pleasure in the work.⁽¹³⁾

A study carried out in a public hospital in Brazil that involved professionals from a cleaning service and hospital hygiene identified a small integration among employees. Such a fact is related to how that work is organized and imposes a more solitary service. In this aspect, teamwork sometimes is not perceived as a union, causing a

weakening of professional relationships and a decrease of cooperation among coworkers.⁽¹⁴⁾ When contributions of all occur in a specific activity or function, it is of high importance to develop cooperating activities to provide the opportunity to build solidarity. It is important for integrants to have a subjective experience with implication to the group because everyone could contribute to improve life and work conditions.⁽¹³⁾

To work in a hospital means to experience an unhealthy environment because of the features of the activities performed; closeness with patients with different diseases; and, sometimes, an unclear diagnosis that exposes workers to situations of vulnerability in front of workloads.

Cleaning professionals must take strategies to deal with workload and create defense mechanisms against exposure to others' suffering mainly in the hospital environment with precepts and teamwork.⁽¹⁵⁾

Although cleaning professionals seem invisible, for some people, their service is indispensable for the hospital operating structure. Cleaning services promote safety and prevention of accidents for patients, families, and health professionals, help greatly to avoid contamination and nosocomial infection, and provide adequate management of hospital residues among other benefits.⁽¹⁶⁾ Cleaning services are needed for the success of performing medical procedures. Nurses with cleaning services and inadequate disinfection are local facilitators for survival of microorganisms that increase the probability of occurrences of nosocomial infections.⁽⁶⁾

Exposure to secretions and blood were identified by cleaning workers as loads of a biological nature. This knowledge is important to adopt health protection strategies.

The concern of exposing to biological load became evident in the 1980s because of the HIV epidemic when the US Centers for Disease Control and Prevention introduced the "universal precautions" (later renamed "standard precautions"), which stated the need for health professionals involved directly or indirectly with patient care to wear gloves when in contact with body fluids.

⁽¹⁷⁾ Workers who are responsible for cleaning the hospital should take protective measures such as the use of PPE. Collective security measures in the environment and during work activities must be equally considered in the planning to prevent work accidents and occupational diseases.

Among strategies used to soften confrontation or prevent workload mentioned by participants were exercises and leisure activities, religiosity, and the use of PPE; however, in testimonials, collective strategies were not identified. Religion constituted a way of defense to face work adversities.⁽¹⁵⁾

Results of a study conducted in the United States by the American College of Sports Medicine suggested physical activities in the work environment to promote health and prevent diseases.⁽¹⁸⁾

It is important to emphasize the need to prepare these professionals to prevent accidents and diseases in the work environment. A study on cleaning professionals conducted in Brazil detected that although most of the participants were considered prepared for occupational activities in the hospital, work accidents occurred because of unuse or inadequate use of PPE.⁽¹⁷⁾

Although workloads from a chemical nature were not identified by participants in our study, the medical literature shows that these loads are presented in cleaning professionals. A study conducted in France showed a significant association of women with asthma exposed to several cleaning projects in the hospital environment.⁽¹⁹⁾ Similar results were found in research conducted in Spain in which a significant association was observed between cleaning products and symptoms of asthma in cleaning professionals.⁽²⁰⁾

Another investigation of hospital cleaning professionals conducted in Canada identified that understanding the beliefs and behaviors of these professionals is fundamental in planning strategies for training people in these position, envisaging benefits for all professionals involved.⁽²¹⁾

Hence, to prevent the health of workers in health institutions according to what is stated in regulation NR-32, it is the employers' duty to provide enough PPE for professionals, guarantee the quality of the equipment, and train profes-

sionals on how to use the equipment.⁽⁸⁾ In this context, nurses who supervise the cleaning service must know deeply the activities performed by professionals in order to preserve supervise, and promote good health among employees.⁽²²⁾

Findings in our study suggest that collective strategies must be adopted to widen information of cleaning professionals concerning workload and exposure to activities in the occupational environment. Actions to place value on the work and enable participation in teamwork must be taken.

A limitation of our study was that the participants were composed only of cleaning professionals. If extrapolated to other groups, the results would be more substantial; however, our findings support and stimulate those of other researchers.

This study contributed to advance knowledge because of new information about the meaning of workload for a specific group of professionals who generally lack information and sometimes are forgotten in the planning of actions and strategies to prevent and control occupational risks. Contributions of this study entail actions that nurse supervisors should take to guarantee conditions that would decrease employees' exposition to workload of internal and external materiality as well as to promote educational and collective actions to promote an adequate occupational environment and better practices.

Conclusion

We concluded that cleaning professionals working in the emergency unit identified the workloads that they were exposed from a biological, physiological and psychological nature. However, they were unable to identify chemical, physical and mechanical workloads presented in their work environment. Professionals recognized the loads partially, and they dealt with them separately; the strategies used by them to confront loads were exercises, recreational activities, practice of religion, and the use of PPE.

Collaborations

Martins JT contributed to the design of the project and with all stages up to the final drafting of

the manuscript. Ribeiro RP and Bobroff MCC performed data collection, analysis, interpretation, and discussion of data; they also helped in drafting of the article. Marziale MHP, Robazzi MLCC, and Mendes AC contributed to the analysis, interpretation, and discussion of data and also helped in critical drafting of the manuscript.

References

1. Laurell AC, Noriega M. Processo de produção e saúde: trabalho e desgaste operário. São Paulo: Hucitec; 1989.
2. Facchini LA, Weiderpass E, Tomasi E. [The "worker model" and perception of environmental and occupational risks; the optimal use of a descriptive study]. *Rev Saúde Pública*. 1991; 25(5):394-400. Portuguese.
3. Laurell AC. A saúde-doença como processo social. In: Nunes ED, organizador. *Medicina social: aspectos históricos e teóricos*. São Paulo: Global; 1983. p.133-58.
4. Facchini LA. Uma contribuição da epidemiologia: o modelo da determinação social aplicado à saúde do trabalhador. In: Rocha LE, Rigotto RM, Buschinelli JT, organizadores. *Isto é trabalho de gente: vida, doença e trabalho no Brasil*. Petrópolis: Vozes; 1994. p.178-86.
5. Facchini L. Por que a doença? A interferência causal e os marcos teóricos de análise. In: Rocha LE, Rigotto RM, Buschinelli JT, organizadores. *Isto é trabalho de gente: vida, doença e trabalho no Brasil*. Petrópolis: Vozes; 1994. p.33-5.
6. Acosta JM. Avaliação do sistema de gestão de riscos de acidentes com instrumentos perfuro-cortantes na atividade de limpeza de hospitais públicos através da análise ergonômica do trabalho [dissertação]. Belo Horizonte: Universidade Federal de Minas Gerais, Escola de Engenharia de Produção; 2004.
7. Bardin L. *Análise de conteúdo*. Lisboa: Edições 70; 2010.
8. Robazzi ML, Marziale MH. [Regulatory standard 32 and its implications for nursing workers]. *Rev Latinoam Enferm*. 2004;12(5):834-6. Portuguese.
9. Gonzales BB, Carvalho MD. Saúde mental de trabalhadoras do serviço de limpeza de um hospital universitário. *Acta Sci Health Sci*. 2003; 25(1):55-62.
10. Ribeiro RP. Prevalência da síndrome metabólica entre trabalhadores das equipes médica e de enfermagem de um hospital do Paraná e sua associação com estresse ocupacional, ansiedade e depressão [dissertação]. Ribeirão Preto. Universidade de São Paulo, Escola de Enfermagem de Ribeirão Preto; 2012.
11. Martarello NA, Benatti MC. Quality of life and musculoskeletal symptoms in hospital housekeeping workers. *Rev Esc Enferm USP*. 2009;43(2):419-25.
12. Bianchessi DL, Tittoni J. [Work, health and subjectivity in the viewpoint of administrative and operational workers in a public general university hospital]. *Physis (Rio J)*. 2009;19(4):969-88. Portuguese.
13. Shimizu HE, Couto DT, Merchan-Hamann E. Pleasure and suffering in intensive care unit nursing staff. *Rev Latinoam Enferm*. 2011;

- 19(3):565-72.
14. Sznclwar LI, Lancman S, Wu MJ, Alvarinho E, Santos M. Análise do trabalho e serviço de limpeza hospitalar: contribuições da ergonomia e da psicodinâmica do trabalho. *Rev Prod.* 2004;14(3):45-57.
15. Martins JT, Robazzi ML. [Defensive strategies used by intensive care unit nurses: reflexion based on the dejourian view]. *Ciênc Cuid Saúde.* 2012;11(Supl.):39-46. Portuguese.
16. Valente GS, Falcão PM, Barbosa SQ, Rosa SG, Santos WA, Barbosa VQ. The nurse in health education to the employee cleaning in hospitals. *Rev Pesqui Cuid Fundam.* 2011;3(1):1702-10. Portuguese.
17. U.S. Public Health Service. Updatet U.S. Public Health Service Guidelines for the Management of Occupational Exposures to HBV, HCV, and HIV and Recommendations for Postexposure Prophylaxis. *MMWR Recomm Rep.* 2001;50(RR-11):1- 52.
18. Burns KJ. A new recommendation for physical activity as a means of health promotion. *Nurse Pract.* 1996; 21(9):18,21-2,26-8.
19. Dumas O, Donnay C, Heederik DJ, Héry M, Choudat D, Kauffmann F, Le Moual N. Occupational exposure to cleaning products and asthma in hospital workers, *Occup Environ Med.* 2012; 69(12): 883-9.
20. Vizcaya D, Mirabelli MC, Antó JM, Orriols R, Burgos F, Arjona L, et al. A workforce-based study of occupational exposures and asthma symptoms in cleaning workers. *Occup Environ Med.* 2011; 68(12): 914-9.
21. Matlow, A.G., Wray, R., Richardson, S.E. Attitudes and beliefs, not just knowledge, influence the effectiveness of environmental cleaning by environmental service workers. *American Journal of Infection Control*, Volume 40, Issue 3, April 2012, Pages 260-262.
22. Marziale MH. Contributions of nurses to the field of labor in promoting workers' health [editorial]. *Acta Paul Enferm.* 2010;23(2):vii-viii.