Occupational risks prevention and their relationships to workers' gender

Prevención de riesgos laborales y su relación con el género de los trabajadores

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Resumen

Objetivo: el objetivo de este estudio consistió en analizar si existen diferencias en la gestión preventiva llevada a cabo en varias empresas que presentaron enfermedades profesionales en función del género de los trabajadores. Métodos: se analizó una muestra de 302 trabajadores, siendo el 31,1% mujeres, de empresas donde se había declarado enfermedad profesional en la provincia de Valencia (España). Los datos se recogieron mediante un cuestionario con 40 preguntas. Resultados: los resultados indicaron que en estas empresas se realizaba una gestión preventiva en la que el plan de prevención y la participación de los trabajadores eran las actividades que con menor frecuencia se aplicaban, y en el caso de las mujeres la gestión preventiva llevada a cabo resultaba significativamente peor que para los hombres. Conclusiones: se concluye que con referencia a la prevención de riesgos laborales el género puede ser una variable que genera una discriminación negativa hacia las mujeres trabajadoras. Además, los riesgos laborales y los problemas de salud asociados deberían ser considerados un problema de salud pública.

Palabras clave: Servicios de salud laboral; Gestión de riesgos laborales; Género; Salud laboral; Condiciones de trabajo.

Abstract

Purpose: this study analyzed the differences in preventive management performed in companies that had informed their workers about occupational diseases, and analyzed these differences according to workers' sex. Methods: the sample comprised 302 workers (31.1% were women). Data were collected via a 40-question survey administered in companies from the province of Valencia (Spain). Results: the results showed that both prevention plans and workers' participation in designing prevention of occupational risks were activities that were less frequently developed. Moreover, with regard to workers' sex, preventive management for women was significantly worse than for men. Conclusions: in the activities of risk prevention at work, gender bias can result in negative discrimination toward female workers. In addition, occupational risks and their consequences on occupational health should be considered a matter of public health.

Keywords: Occupational Health Services; Occupational Risks Management; Gender; Occupational Health; Occupational Exposure.

Introduction

With the publication of the Law of Occupational Risks Prevention (LPRL) (España, 1995) is set in Spain the regulatory framework to protect the safety and health of workers under their charge. The obligations include: integrating prevention in the production system of organizations, occupational risk elimination, decreasing risks that cannot be avoided by evaluating and planning preventive activities, providing information and appropriate and sufficient training to workers, and controlling worker health in specific situations, as well as consulting them about these issues.

Article 14 of the Spanish Constitution (España, 1978) proclaims the right to equality and non-discrimination on the grounds of gender, an aspect that was further developed with the publication of the Law of Equality between men and women (España, 2007).

The II Working Conditions Survey of Valencian Community (Fundación de la Comunidad Valenciana para la Prevención de Riesgos Laborales, 2009) highlights various worker claims, including evaluation of noise (18.2%), physical environment (11.7%), vibration (5.9%), chemical (8.7%), biological agents (3.6%), work postures and repetitive movements (17.8%), and psychosocial factors (5.9%). A total of 18.9% of workers surveyed reported having no risks. The survey reported that 23.5% of workers had not received information from the company regarding job risks, with women being less informed than men (34.7% vs. 17.6%, respectively). With respect to training, 24.9% of workers have never received it (36.8% of women vs. 19.2% of men), 72.9% of workers were offered health surveillance (59.2% of women vs. 80.2% of men). In addition, 14.9% of workers reported experiencing stress (17.6% of women vs. 13.5% of men).

It is important to note that men and women are exposed to different workplace risks: traditionally men often are more exposed to physical risks, including toxic exposures or arising from manual labor. On the contrary, women -in special working in manual labors- are more exposed to adverse psychosocial environment (Artazcoz et al., 2004).

In the VI National Survey of Work Conditions

(Instituto Nacional de Seguridad e Higiene en el Trabajo, 2007), health surveillance was offered to 64.4% of men and 54% of women. With respect to information, women are less informed (18.4%) than men (15.8%), (the difference was significant).

In addition, the I Survey of Preventive Management of Andaluzian companies (Instituto Andaluz de Prevención de Riesgos Laborales, 2009) conclude that the 70% of CEOs and the 56.8% of the middle management position are held by men. Safety risks have been evaluated in 62.8% of total cases; 57.6% of postures; 46.7% of psychosocial risks; and 35.25%, 20.5%, and 13.35% of physical, chemical, and biological agents, respectively.

On the other hand, the II Regional Survey of Work Conditions (Instituto de Seguridad y Salud Laboral de la región de Murcia, 2010) stated that in the region of Murcia, 23% of workers have reported exposure to chemicals, 8.9% to biological agents, 32.2% to noise, 22.8% to heat, 0.9% to cold, 7.5% to hand/arm vibration, 5.6% to body vibration, and 7.7% to radiation.

With respect to physical requirements, repetitive movements are more frequent for women than for men (59.2% vs. 57.3%), while other risks are more frequently experienced by men than by women: body postures (61.4% vs. 56.8%), physical strains (24.2% vs. 13.5%), manual handling of people or loads (27.5% vs. 29.9%), and awkward postures (28.6% vs. 17.8%). Also, 32% of workers experience job-related stress (31.9% of men and 32.2% of women).

The article "Diagnostic of Occupational Risks Prevention at the Rioja" (Instituto Riojano de Salud del Trabajo, 2009) published important results about preventive management: (a) 89.3% of companies have a Prevention Plan and 90.2% perform risk evaluations, (b) 56.8% had assessed accident risk when there was an accident, (c) 37.4% of cases had planned preventive measures, and (d) 50.4% and 58.9% of cases had received training and information, respectively.

Furthermore, according to the II Navarra Health Survey and Work Conditions (Instituto de Navarra de Salud del Trabajo, 2006) 67.9% of the companies had evaluated risks, 35.2% of cases had performed specific studies on occupational risks, 62.2% had provided worker health surveillance, 45.4% had emergency plans, 57.6% had trained their workers, and 60.7% had provided information The study reported that 16.6% of workers had experienced job-related stress.

Considering previous surveillance, García (2005) carried out an analysis and determined that women are mostly employed in banking activities, trade, and social services. They work mainly in standing (50%) and sitting (47%) postures. They are trained appropriately by the company in 74.8% of cases, 18% are exposed to harmful or toxic substances, and 68% report high mental workload. Considering the risks, exposure to biological risks are the highest, at 23%. With regard to inconvenient or annoying aspects of work, women mentioned illumination (5.2%), posture (13.3%), and neck (18%) and back (32%) discomfort.

This study aims to determine if there are significant differences in preventive management performed by companies in the province of Valencia with regard to employee gender. We hypothesize that there is a significant difference in the preventive management of companies with respect to gender such that preventive management is less for women than for men.

Materials and Methods

Sample

The sample studied was constituted by workers of the province of Valencia who were diagnosed with an occupational disease that caused any absence during 2008 and 2009. The sample used was composed of 302 workers, 31.1% women and 68.9% men. With respect to nationality, 95.4% were Spanish, and the other foreigners. The average age was 42 years, with 71.3% older than 35 and 14.23% over 55 years. Permanent employees accounted for 77.2% of the sample, and the remaining 22.8% was made up of temporary workers.

Instrument

To collect data on preventive management accomplished by the companies, we developed a 40-item questionnaire. It included questions on: (1) the existence of a preventive plan; (2) the preventive organization adopted by the company; (3) identification

and assessment of risks in the workplace where the occupational disease has occurred; (4) planning of preventive activity; (5) availability of training and information, (6) protection means, both collective and individual; (7) worker health surveillance; and (8) worker participation. Socio-demographical data were also included, such as gender, age, and occupational data (e.g., type of contract, activity sector, etc.).

Procedure

After case selection, a technician in occupational risks prevention visited the company and met with company representatives, personnel representant workers for prevention safety representatives, the technical service responsible for occupational risks prevention, and the worker affected by the occupational disease. We collected each of their opinions regarding the preventive management carried out by the company through a semi-structured interview. Afterward, the answers were verified using the existing documentation in the company and in the jobs where the disease occurred. Finally, the questionnaire with the summarized data was filled and transformed into an electronic format through a database.

Data analysis

The analysis was accomplished considering preventive management data; each variable was compared considering gender using contingency tables and applying Chi-squared tests to test the contrast hypothesis (χ^2). SPSS statistics software was used (version 17, Chicago, IL, USA).

Results

The following aspects of preventive management were analyzed:

1. Implementation of Prevention Plan

It was available in most companies (88.4%), but with less frequency for women than for men (78.7% vs. 92.8%, respectively) (χ^2= 4.03, p<0.05) (Table 1).

2. Preventive Organization adopted by the company

The 97% of companies did not have an appropriate preventive organization (93.6% for women and 98.6% for men), and this was significantly worse for women (χ^2= 5.47, p<0.05, (Table 1).

Table 1 - Number and percentage of workers according to their response about adequacy of preventive action, considering gender

Adequate Preventive Action	Woman	Man	Total	$\chi_{(i)}^2$
Prevention Plan	74 (78.7%)	193 (92.8%)	267 (88.4%)	4.03*
Preventive Organization	88 (93.6%)	205 (98.6%)	293 (97.0%)	5.47*

* $p < 0.05$

3. Identification and assessment of risks at jobs affected by occupational disease

In 2.6% of cases, no risk was identified. The risks dependent on Safety at the Work were identified in 96.4% of cases, followed by hygiene risks (95%), risks due to deficient ergonomic job design (93.7%), and psychosocial risks (12.5%).

According to gender, it was identified in women a higher psychosocial risk than men (19.1% vs. 9.6%, respectively) (χ^2=5.35, p<0.05), but there were no differences with respect to gender in the remaining disciplines (Table 2).

With respect to risk assessment, in 2% of cases there was no type of evaluation applied. The risks related to Safety at the Workplace were appropriately evaluated in 96.4% of cases.

Hygiene risks were fully evaluated in 66.7% of cases, ergonomics in 27.1%, and psychosocial risks were considered in 2.3% of situations. Significant differences were only obtained when the hygiene risks by gender were evaluated; they had been implemented in 59.6% of jobs held by women versus 70.2% of men (χ^2= 3.30, p<0.05) (Table 2).

4. Implementation of a plan for risk detection

In 6.3% of cases the company had not implemented a plan (9.6% for women and 4.8% for men), in 71.5% of cases the plan had been completely applied (67%

Table 2 - Analysis of identification and assessment of risks. information and training received. planning of preventive activity. and availability of collective protection (numbers and percentages according to gender)

Adequate Preventive Action		Woman	Man	Total	$\chi_{(1)}^2$
Identification of Psychosocial risks		17 (19.1%)	19 (9.6%)	36 (12.0%)	5.35*
Assessment of Hygienic risks		56 (59.6%)	146 (70.2%)	202 (66.7%)	3.30*
Planning of Preventive activity		63 (67.0%)	153 (73.6%)	216 (71.5%)	13.88**
Information	Not performed	8 (8.5%)	7 (3.4%)	15 (5.0%)	20.08**
	Correct	81 (86.2%)	198 (95.2%)	279 (92.4%)	
	Inadequate	5 (5.3%)	3 (1.4%)	8 (2.6%)	
Training	Adequate	74 (78.7%)	187 (89.9%)	261 (86.4%)	6.59**
	Inadequate	20 (21.3%)	21 (10.1%)	41 (13.6%)	
Collective Protection		42 (44.7%)	132 (63.5%)	174 (80.9%)	19.16**

* $p < 0.05$, ** $p < 0.01$

of women and 73.6% of men) (χ^2= 13.88, p<0.01) (Table 2), while in the rest of cases the plan was implemented incompletely.

5. Information and training available for workers

The 5% of workers were not informed, 92.4% were informed appropriately (95.2% of men and 86.2% of women), and 2.6% were informed incompletely (χ^2=20.08, p< 0.01) (Table 2). With respect to training, it was provided adequately, both general and specific in occupational risks prevention, in 86.4% of participants of the study (78.7% of women vs. 89.9% of men) (χ^2=6.59, p<0.01) (Table 2).

6. Adoption of collective and individual protection at affected workplaces

6.1. Collective protection. In 28.8% of cases, collective protection was not needed (35.1% for women and 26% for men). In cases where it was necessary to use it, 80.9% of analyzed jobs adopted it (44.7% for women and 63.5% for men) (χ^2=19.6, p<0.01) (Table 2), but it was inadequate in 19.1% of cases (18.1% for women vs. 7.7% for men).

6.2. Equipment for individual protection. It was necessary to implement it in 94.4% of cases, and it was used in 97.7%. Significant differences were not detected with regard to gender (χ^2=0.03, p>0.05).

7. Implementation of health surveillance and adaptation to damage

In 5.3% of cases, no form of health surveillance was implemented. Health surveillance was performed before recruitment in 10.3% of cases, during the initial hiring period in 47.7%, periodically in 93% of cases, and after a prolonged absence for health reasons in 9.3% of cases (Table 3).

According to gender, there was no significant difference with regard to previous medical examination (χ^2 = 1.88, p > 0.05), initial (P^2 = 0.04; p > 0.05) or for returning to work after a prolonged absence for health reasons (χ^2 = 0.96; p > 0.05) (Table 3). In the case of periodic health surveillance, there was a significant difference between genders; it was performed with more frequency for men (96.2%) than for women (86.2%) (χ^2 = 9.97; p < 0.01), and the differences were also significant for performing health surveillance (97.6% of men vs. 88.3% of women) (χ^2 =11.16, p < 0.01) (Table 3).

With regard to whether the health surveillance carried out was appropriate to the risk, we determine that 89.4% carried out health surveillance for the risk that generated the disease (women for 81.9% vs. 92.8% for men) (χ^2 = 9.25; p < 0.01) (Table 4).

8. Worker participation

We found that 59.1% of companies provided the participation required by the Law of Occupational Risks Prevention, while workers representativerepresent workers figure was the alternative least used by the companies (31%), followed by the companies that should have a Represent Workers for PreventionSafety Representative (58.6%).Finally, 90.8% of cases had a Health and Safety Committee. There was no significant difference for gender for company-provided participation (Table 5).

Table 3 - Worker's opinion (numbers and percentages) about health surveillance analysis performed with workers

Type	Performed	Woman	Man	Total	$\chi_{(1)}^2$
Previous	Yes	13 (13.8%)	18 (8.7%)	31 (10.3%)	1.88
	No	81 (86.2%)	190 (91.3%)	271 (89.7%)	
Initial	Yes	44 (46.8%)	100 (48.1%)	144 (47.7%)	0.04
	No	50 (53.2%)	108 (46.8%)	158 (52.3%)	
Periodic	Yes	81 (86.2%)	200 (96.2%)	281 (93.0%)	9.97**
	No	13 (13.8%)	8 (3.8%)	21 (7.0%)	
After prolonged absence for health reasons	Yes	11 (11.7%)	17 (8.2%)	28 (9.3%)	0.96
	No	83 (88.3%)	191 (91.8%)	274 (90.7%)	
Any type	Not performed	11 (11.7%)	5 (2.4%)	16 (5.3%)	11.16**
	Performed	83 (88.3%)	203 (97.6%)	286 (94.7%)	

** $p < 0.01$

Table 4 - Worker's opinion (number and percentage) about analysis of adequacy of health surveillance to risk according to gender of participants

	Adequate	Inadequate	$\chi_{(1)}^2$
Woman	77 (81.9%)	17 (18.1%)	
Man	193 (92.8%)	15 (7.2%)	9.25**
Total	270 (89.4%)	32 (10.6%)	

** $p < 0.01$

Table 5 - Number and proportion (%) of workers according to opinion about figure and gender

Figure		Woman	Man	Total	$\chi_{(1)}^2$
Staff Representative	Yes	10 (25.6%)	34 (33.0%)	44 (31.0%)	0.72
	No	29 (74.4%)	69 (67.0%)	98 (69.0%)	
Prevention Representative	Yes	3 (33.3%)	14 (70.0%)	17 (58.6%)	3.44
	No	6 (66.7%)	6 (30%)	12 (41.4%)	
Health and Safety Committee	Yes	39 (84.8%)	80 (94.1%)	119 (90.8%)	3.14
	No	7 (15.2%)	5 (5.9%)	12 (9.2%)	

Discussion

In response to the question of whether there are gender-related differences for preventative management of the worker population of the province of Valencia, the study revealed that most companies provided a Prevention Plan. This result is similar to that of a survey conducted in the Region of Rioja (Instituto Riojano de Salud Laboral, 2009). However, these plans are often incomplete, making adequate prevention difficult and less frequently applied to female workers. These results are similar to those obtained in an assessment of preventive management in companies from Andaluzia (Instituto Andaluz de Prevención de Riesgos Laborales, 2009).

Women were employed in jobs with less responsibility, a fact that was identified in previous studies (Artazcoz et al., 2004; García, 2005; Instituto Navarro de Salud Laboral, 2006). Several surveys (Instituto Nacional de Seguridad e Higiene en el Trabajo, 2007; Fundación de la Comunidad Valenciana para la Prevención de Riesgos Laborales, 2009) described differences in preventive management. Specifically, the preventive organization is less applied for women than for men.

Risks are appropriately identified in a high percentage of companies, except for cases of psychosocial risk that are identified in an extremely low percentage. This aspect is of interest because two surveys concluded that 27.9% (Instituto Nacional de Seguridad e Higiene en el Trabajo, 2007) or 16.6% (Instituto Navarro de Salud Laboral, 2006) of workers experience job-related stress. Similar to our findings, these surveys also reported that this situation is more frequent for women than for men. Considering that the present sample was comprised of workers with a diagnosis of occupational disease, these risks should be eliminated, but this was not the case. Also, they have not been adequately evaluated, in the case of hygienic, ergonomic, and psychosocial risks. In the case of hygiene risks, we found significant differences according the gender, with a worse evaluation in the case of female workers.

With respect to preventive activity planning, it is completely performed in a high percentage of cases. However, health surveillance is the most performed, followed by training, information, and finally, participation.

We found that there were statistically significant differences related to gender for preventive management in performance, information, training, health surveillance, periodic health surveillance, adequacy of health surveillance carried out, and collective protection. For all of these cases, women were the disadvantaged group. Participation is poorly implemented, especially in small companies, but there is no difference between genders for this aspect.

The results of this study confirm the hypothesis that preventive management performed by companies after the diagnosis of occupational disease is worse for the female workers.

Some limitations of the study should be noted. The fact that it is based on a sample already diagnosed with occupational disease can be considered a bias because the company, suspecting that an investigation could take place, could carry out some preventative activities that could alter the external validity of the results.

In conclusion, this study indicates that the LPRL is not appropriately implemented because it is not integrated in preventive organization. There are two fundamental aspects of this failure (Plan of Prevention and planning), showing that implementation is bureaucratic and that occupational diseases and workplace accidents are perceived as personal problems that should be solved by the workers. The problem with this lack in implementation with regard to psychosocial risks is especially relevant considering that exposure to such risks and the diseases that occur as a result can be problematic for public health (Gil-Monte, 2009).

Another important conclusion is that working female seems to be discriminated and disadvantaged relative to men in terms of prevention, which can lead to having to perform their work in conditions of greater exposure to occupational risk. Other studies have also pointed out this problem (Rohlfs et al., 2000).

The problem is relevant when we consider that working female comprise approximately 45% of the active Spanish working population (España, 2013).

With regard to health policy recommendations from this study, we consider that it is necessary to increase awareness of the need to apply rules to prevent occupational risks and develop interventions for female workers.

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