

Gender inequalities in occupational health: A systematic literature review and the influence of the welfare state regime and the occupational social class throughout the Spanish and the European Working Conditions Surveys

Javier Campos-Serna

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DIRECTORS DE LA TESI

Prof. MD. PhD. Fernando G. Benavides, (Centre for Research in Occupational Health, Departament de Ciències Experimentals i de la Salut, Universitat Pompeu Fabra, Barcelona, Spain)

MD. PhD. Elena Ronda-Pérez (Centre for Research in Occupational Health, Preventive Medicine and Public Health Area, University of Alicante, Alicante, Spain)

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To my lovely wife Cocó and our daughters Mar and Estela,
without the strength of their hands, the brightness of their smiles and the tenderness of
their gazes, this thesis had not reached fruition

To my parents and grandparents,
who taught me the values of freedom, equality, fraternity and dignity

Nanas de la cebolla

La cebolla es escarcha
cerrada y pobre.
Escarcha de tus días
y de mis noches.
Hambre y cebolla,
hielo negro y escarcha
grande y redonda.

En la cuna del hambre
mi niño estaba.
Con sangre de cebolla
se amamantaba.
Pero es tu sangre,
escarchada de azúcar
cebolla y hambre.

Una mujer morena
resuelta en lunas
se derrama hilo a hilo
sobre la cuna.
Ríete niño
que te traigo la luna
cuando es preciso.

(...)

Vuela niño en la doble
luna del pecho:
él, triste de cebolla,
tú satisfecho.
No te derrumbes.
No sepas lo que pasa
ni lo que ocurre.

Miguel Hernández
Poeta del pueblo
Orihuela 1910 – Alicante 1942 (Muere encarcelado)

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RESUMEN

Antecedentes: Las desigualdades de género en salud en el trabajo han sido escasamente estudiadas, a pesar de su gran interés para la salud pública.

Objetivos: Los tres objetivos principales de esta tesis fueron: a) identificar y resumir las condiciones laborales y de empleo descritas como determinantes de las desigualdades de género en salud en el trabajo en los estudios relacionados con la salud laboral publicados entre el año 1999 y el 2010; b) analizar las desigualdades de género en las condiciones de empleo y de trabajo, en la conciliación de la vida laboral y familiar y en los problemas de salud relacionados con el trabajo en una muestra de la población ocupada en España en el año 2007, teniendo en cuenta la clase social y el sector económico de la empresa; y por último c) analizar si las desigualdades de género en la exposición a los riesgos psicosociales relacionados con el trabajo difieren en función del régimen de estado de bienestar a nivel Europeo en el año 2005, y, además, comprobar si los patrones de género son diferentes según la clase social ocupacional.

Métodos: Para el primer objetivo se realizó una revisión sistemática de la literatura de los estudios observacionales disponibles en MEDLINE, EMBASE, Sociological Abstracts, LILACS, CINAHL y EconLit entre 1999 y 2010. Los estudios fueron seleccionados mediante la aplicación de un conjunto de criterios de inclusión y exclusión aplicados al título, resumen y al texto completo. También se evaluó la calidad de los estudios. Los treinta estudios seleccionados fueron analizados cualitativamente, llevando a cabo una recopilación de todas las diferencias entre mujeres y hombres en la prevalencia de exposición a los riesgos derivados de las condiciones de trabajo y de empleo, así como de los problemas de salud relacionados con el trabajo.

Para el segundo objetivo, se utilizó una muestra de trabajadores entrevistados en la sexta edición de la Encuesta Nacional de Condiciones de Trabajo, 2007. Esta muestra consta de 11.054 trabajadores de los que 4.583 eran mujeres. Las desigualdades de género relacionadas con el trabajo se analizaron mediante 25 indicadores agrupados en las dimensiones: de condiciones de empleo, condiciones de trabajo, la conciliación de la

vida laboral y la vida familiar, y los problemas de salud relacionados con el trabajo. Se utilizaron modelos de regresión logística multivariada para calcular las odds ratio (OR) de las mujeres comparadas con los hombres (grupo de referencia) en la exposición a estos 25 indicadores con los intervalos de confianza del 95% (IC95%). Se calcularon las odds ratio crudas (cOR) y las ajustadas por edad (aOR) y finalmente, estratificaron por clase social ocupacional (manual y no manual) y luego por la actividad económica de la empresa: agricultura, industria, construcción y servicios.

Para el tercer objetivo, se utilizó una muestra de trabajadores entrevistados en la cuarta Encuesta Europea de Condiciones de Trabajo, 2005. Esta muestra estaba compuesta por 27.465 trabajadores, de los cuales 12.402 eran mujeres, procedentes de 28 países europeos. Los riesgos psicosociales relacionados con el trabajo que se analizaron como variables dependientes fueron: alta tensión, iso-tensión y el desequilibrio esfuerzo-recompensa. La variable independiente analizada fue el sexo, siendo los hombres el grupo de referencia. Agrupamos los 28 países Europeos en cinco regímenes de bienestar: Escandinava, Anglo-Saxon, Continental, Sur y los regimenes del Este. Se calculó la prevalencia en hombres y mujeres, y la razón de prevalencia ajustada por edad (aRP) de las mujeres frente a los hombres en relación a la exposición a los riesgos psicosociales relacionados con el trabajo antes mencionados mediante modelos de regresión logística multivariante. Todos los cálculos se realizaron por separado para: Europa en su conjunto, cada régimen de estado de bienestar, y cada clase social ocupacional (directivos / profesionales, empleados / trabajadores de servicio / tienda y trabajadores manuales). Se utilizaron cuatro modelos diferentes de ajuste para tratar de explicar las desigualdades de género observadas: M1, estado civil; M2, el tiempo invertido en el cuidado de familiares y M3, la actividad económica de la empresa.

Resultados: En relación con el primer objetivo, la mayoría de los 30 estudios incluidos se realizaron en Europa (n=19) y tuvieron un diseño transversal (n=24). El tema más comumente analizado se relaciona con la exposición a los riesgos psicosociales relacionados con el trabajo (n=8). Las mujeres empleadas tienen más inseguridad laboral, inferior control sobre la demanda de trabajo, peores condiciones laborales contractuales y una percepción más pobre de su salud física y mental que los hombres.

Por el contrario, los hombres mostraron un mayor grado de trabajo con altas exigencias físicas, inferior apoyo social, los niveles más altos de desequilibrio esfuerzo - recompensa, un posición laboral superior, estaban más expuestos a ruido y trabajaban más horas que las mujeres.

Después de analizar la sexta Encuesta Nacional de Condiciones de Trabajo de 2007, encontramos que más mujeres que hombres trabajan sin contrato (ORa = 1,83 , IC 95% : 1,51 a 2,21) y en condiciones alto esfuerzo y baja recompensa (1.14:1.05 - 1,25). Las mujeres también experimentaron mayor acoso sexual (2.85:1.75-4.62), discriminación (1.60:1.26-2.03) y problemas musculoesquelético (1.38:1.19-1.59). Por otro lado, más hombres que mujeres realizan el trabajo por turnos (0.86:0.79-0.94), trabajan con altos niveles de ruido (0.34:0.30-0.40), y demandas físicas elevadas (0.58:0.54-0.63). Los hombres también sufren más lesiones por accidentes de trabajo (0.67:0.59-0.76). Por el contrario, las trabajadoras no manuales eran más propensas que sus homólogos hombres a tener un contrato temporal (1.34:1.09-1.63), estar expuestas a los riesgos psicosociales relacionados con el trabajo y la discriminación (2.47:1.49 - 4,09) y a tener una enfermedad profesionales (1.91:1.28-2.83). En general, las desigualdades de género analizadas eran mucho más altas en el sector de la industria.

Después de analizar la cuarta edición de la Encuesta Europea de Condiciones de Trabajo de 2005, se observó que más mujeres que hombres entre los directivos / profesionales, informó: alta tensión, iso-tensión y el desequilibrio esfuerzo-recompensa en Escandinavia (aPR = 2,26 , IC del 95 % : 1,87-2,75; 2.12:1.72-2.61; 1.41:1.15-1.74, respectivamente) y en el régimen Continental (1.43:1.23-1.54; 1.51:1.23-1.84; 1.40:1.17-1.67). Igualmente se observe que más mujeres que hombres mostraron una alta tensión y el iso-tensión en los regimens del bienestar Anglo-Saxon (1,92:1.40-2 .63; 1.85:1.30-2.64, respectivamente), Sur de Europa (1.43:1.14-1.79; 1.60:1.18-2.18) y los regímenes de bienestar del Este de Europa (1.56:1.35-1.81; 1.53:1.28-1.83).

Conclusiones: La revisión sistemática de la literature ha identificado un conjunto de condiciones laborales y de empleo como determinantes de las desigualdades de género en salud laboral. Estos resultados pueden ser útiles para los responsables políticos que

tratan de monitorizar y de reducir las desigualdades de género en salud en el trabajo, así como para los investigadores que deseen analizar estos determinantes con mayor profundidad.

En España, existen importantes desigualdades de género relacionadas con el trabajo en las condiciones de empleo y de trabajo, así como en los problemas de salud relacionados con el trabajo. Estas desigualdades de género se ven influenciadas por la clase social ocupacional y el sector económico de la empresa, y deben ser consideradas en el diseño de futuras políticas públicas en salud laboral en España.

Las relevantes desigualdades de género observadas en la desigual exposición entre hombres y mujeres con respecto a los riesgos psicosociales relacionados con el trabajo entre las clases sociales profesionales más favorecidas en todos los regímenes del bienestar en Europa, se deben tomar en cuenta, no sólo por los investigadores para desentrañar las vías causales de esta relación tan compleja, sino también por los responsables políticos de analizar los efectos que las políticas de equidad de género tienen sobre las desigualdades de género.

Palabras clave: identidad de género, estado de salud, trabajo, encuestas de salud, factores socioeconómicos, factores psicosociales derivados del trabajo, el estado del bienestar social.

SUMMARY

Background: Gender inequalities in occupational health have been scarcely study, in spite of its great public health interest.

Objectives: The three main objectives of this thesis were: a) to identify and summarize the working and employment conditions described as determinants of gender inequalities in occupational health in studies related to occupational health published between 1999 and 2010; b) to analyze gender inequalities in employment and working conditions, in balancing job and family life, and work-related health problems in a sample of the employed population in Spain in 2007, taking into account social class and the economic sector of the company; and finally c) to examine whether gender inequalities in the exposure to work-related psychosocial hazards differ by the welfare state regime at the European level in 2005, and additionally to test whether gender patterns are different by occupational social class.

Methods: For the first objective, a systematic literature review was undertaken of observational studies available in MEDLINE, EMBASE, Sociological Abstracts, LILACS, EconLit and CINAHL between 1999 and 2010. Studies were selected by applying a set of inclusion and exclusion criteria to the title, abstract, and complete text. The quality of the studies was also assessed. The thirty selected studies were qualitatively analysed, resulting in a compilation of all differences between women and men in the prevalence of exposure to working and employment conditions and work-related health problems as outcomes at each study.

For the second objective, we used the sample of workers interviewed at the sixth Spanish National Working Condition Survey, 2007. This sample consists of 11,054 workers from which 4,583 were women. Work-related gender inequalities were analysed using 25 indicators grouped in the dimensions: employment and working conditions, balancing job and family life, and work-related health problems. Multivariate logistic regression models were used to calculate odds ratio comparing women to men (reference group) in the exposure to these 25 indicators at the confidence

intervals of 95% (95% CIs). Crude odds ratio (c OR) were adjusted by age (a OR) and stratified by occupational social class (manual and non-manual) and then by the economic activity: agriculture, industry, construction and services.

For the third objective, we used a sample of workers interviewed at the fourth European Working Condition Survey, 2005. This sample consists of 27,465 workers, from which 12,402 were women, coming from 28 European countries. Work-related psychosocial hazards analysed as dependent variable were: high strain, iso-strain and effort-reward imbalance. The independent variable was sex, being men the reference group. We grouped these 28 European countries into five welfare state regimes: Scandinavian, Anglo-Saxon, Continental, Southern and Eastern regimes. We calculated the prevalence in men and women and the prevalence ratio adjusted by age (aPR) of women compared to men of being exposure to the work-related psychosocial hazards mentioned above using multivariate logistic regression models. All calculations were made separately for: Europe as a whole, each welfare state regime and each occupational social class (managers/professionals, clerks/service/shop workers and manual workers). Four different models of adjusted variables were used attempting to explain gender inequalities observed: M1, marital status; M2, time invested in caring for relatives and M3, economic activity of the company.

Results: Related to the first objective, most of the 30 studies included were conducted in Europe (n=19) and had a cross-sectional design (n=24). The most common topic analyzed was related to the exposure to work-related psychosocial hazards (n=8). Employed women had more job insecurity, lower control, worse contractual working conditions and poorer self-perceived physical and mental health than men did. Conversely, employed men had a higher degree of physically demanding work, lower support, higher levels of effort-reward imbalance, higher job status, were more exposed to noise and worked longer hours than women did.

After analysing the sixth Spanish National Working Conditions Survey, 2007 we found that more women than men worked without a contract (aOR = 1.83; 95% CI: 1.51-2.21) and under high-effort/low-reward conditions (1.14:1.05-1.25). Women also experienced

more sexual harassment (2.85:1.75-4.62), discrimination (1.60:1.26-2.03) and musculoskeletal pain (1.38:1.19-1.59). On the other hand, more men than women carried out shift work (0.86:0.79-0.94), worked with high noise levels (0.34:0.30-0.40), and high physical demands (0.58:0.54-0.63). Men also suffered more injuries due to occupational accidents (0.67:0.59-0.76). By contrast, non-manual women workers were more likely than their men counterparts to have a temporary contract (1.34:1.09-1.63), be exposed to work-related psychosocial hazards and discrimination (2.47:1.49- 4.09) and had occupational diseases (1.91:1.28-2.83). In general, gender inequalities analysed were much higher in the industry sector.

After analysing the fourth European Working Conditions Survey, 2005 we observed that more women than men among managers/professionals, reported: high strain, iso-strain and effort-reward imbalance in Scandinavian (aPR =2.26; 95% CI: 1.87-2.75; 2.12:1.72-2.61; 1.41:1.15-1.74; respectively) and Continental regimes (1.43:1.23-1.54; 1.51:1.23-1.84; 1.40:1.17-1.67); and high strain and iso-strain in Anglo-Saxon (1.92:1.40-2.63; 1.85:1.30-2.64; respectively), Southern (1.43:1.14-1.79; 1.60:1.18-2.18) and Eastern welfare regimes (1.56:1.35-1.81; 1.53:1.28-1.83).

Conclusions: From the occupational health literature, the systematic review has identified a set of working and employment conditions as determinants of gender inequalities in occupational health. These results may be useful to policy makers seeking to surveillance and to reduce gender inequalities in occupational health, and to researchers wishing to analyze these determinants in greater depth.

There are substantial work-related gender inequalities in employment and working conditions and work-related health problems in Spain. These gender inequalities are influenced by occupational social class and the economic sector of the company, and should be considered in the design of future public policies in occupational health in Spain.

The relevant gender inequalities observed in the exposure to work-related psychosocial hazards among the most advantageous occupational social classes across all welfare

state regimes in Europe, should be taken into account not only by researchers to disentangle the causal pathways, but also by policy makers to analyse the effects that gender equity policies are having on gender inequalities.

Keywords: gender identity, occupational health, work, health surveys, socioeconomic factors, psychosocial work factors, social welfare

PREFACIO

Esta tesis doctoral está basada en un proyecto original realizado por el propio autor de la misma en colaboración con sus dos directores de tesis. La idea original del proyecto nace en la Universidad de Alicante y tras unas modificaciones es aprobado por el Centro de Investigación en Salud Laboral de la Universitat Pompeu Fabra, donde el doctorando se desplaza desde la Alicante para la realización de su tesis doctoral. La idea original del proyecto surge en parte tras el análisis desde una perspectiva de género de los protocolos de prevención de riesgos laborales del Ministerio de Sanidad, un proyecto que inicialmente se realiza desde la Universidad de Alicante y que es financiado por el Instituto de la Mujer. El proyecto termina finalmente con un informe dirigido al Ministerio de Sanidad y la publicación de un artículo científico en Archivos de Prevención de Riesgos Laborales.

Para la realización de esta tesis se han analizado las bases de datos de los artículos publicados en Medline, EMBASE, Sociological Abstracts, LILACS, EncoLit y CINAHL. Igualmente, se han utilizado datos de la sexta Encuesta Nacional de Condiciones de Trabajo del año 2005, promovida por el Instituto de Seguridad e Higiene en el Trabajo del Ministerio del Trabajo y Seguridad Social, así como de la cuarta edición de la European Working Conditions Survey de 2007 de la European Foundation for the Improvement of Living and Working Conditions.

De acuerdo a la normativa de la Comisión de Dirección del Programa de Doctorado del Departament de Ciències Experimentals i de la Salut de la Universitat Pompeu Fabra, esta tesis doctoral se presenta como un compendio de tres artículos originales publicados, dos de ellos en revistas internacionales, por lo que están escritos en inglés, y uno de ellos en una revista nacional, por lo que está escrito en español. Las tres revistas en las que se encuentran publicados los artículos están indexadas en Medline y cuentan con rango del factor de impacto de 1.03 a 1.84. El primero de los artículos identifica, a partir de una revisión sistemática de la literatura, la desigual exposición entre hombres y mujeres a los riesgos laborales derivados de las condiciones de empleo y trabajo, así como la desigual distribución entre hombres y mujeres de los problemas de salud

relacionados con el trabajo. Este primer artículo, ha recibido el galardón de “Highly Accessed” por parte de la misma revista en la que ha sido publicado, debido a la alta solicitud de descargas que han recibido en sus primeros 15 días de su publicación. El segundo de los artículos, se centra en el análisis las desigualdades de género en cuanto a la exposición a los riesgos laborales derivados de las condiciones de empleo y trabajo, la conciliación de la vida laboral y familiar y los problemas de salud relacionados con el trabajo en España, teniendo en cuenta la clase social ocupacional y el sector de actividad de la empresa. Finalmente, el tercer artículo se centra en analizar la desigual exposición entre hombres y mujeres a los riesgos psicosociales derivados del trabajo en la población laboral Europea y como esta se ve influenciada por el estado del bienestar y la clase social ocupacional. Este último artículo se realizó en colaboración con el “Research Group for Occupational and Environmental Medicine del Department of Public Health and Primary Health Care” de la Universidad de Bergen de Noruega. En este grupo de investigación, el doctorando realizó una estancia de 3 meses como investigador visitante.

De forma complementaria, al final de este documento se anexan los resultados de otros artículos relacionados con la actual tesis doctoral de los que el doctorando es autor o coautor y que tratan sobre los aspectos metodológicos de las encuestas de condiciones de trabajo y la violencia de género del compañero íntimo.

Esta tesis doctoral ha sido financiada parcialmente por el Centro de Investigación en Salud Laboral de la Universitat Pompeu Fabra y el Centro de Investigación Biomédica en Red de Epidemiología y Salud Pública (CIBERESP). Además ha contado con una beca del Ministerio de Educación, Cultura y Deporte para financiar la estancia de 3 meses en la Universidad de Bergen, perteneciente al Espacio Europeo de Enseñanza Superior, con la finalidad de obtener la mención Europea al título de doctor. Igualmente ha contado con una ayuda de la School of Public Health de la University of Texas (EEUU) para presentar parte de los resultados de esta tesis en sus “Research Seminar Series”.

Finalmente, esta tesis doctoral opta a la mención europea al título de doctor siguiendo para ello la normativa de la Comisión de Dirección del Programa de Doctorado del Departament de Ciències Experimentals i de la Salut de la Universitat Pompeu Fabra.

PREFACE

This thesis is based on an original project made by the main author in collaboration with his two thesis supervisors. The original idea of the project came from the University of Alicante and after a few modifications it was approved by the Center for Research in Occupational Health at the Universitat Pompeu Fabra, where the doctoral student moves from Alicante to carry out his doctoral thesis. The original idea for the project came out, in part after the analysis from a gender perspective of risk prevention protocols work of the Ministry of Health, which was a original project from the University of Alicante and was funded by the Spanish Institute for Women. The project eventually ended up with a report to the Ministry of Health and the publication of a scientific article in the journal “Archivos de Prevención de Riesgos Laborales”.

For the realization of this thesis we have analyzed the databases for observacional articles published in Medline, EMBASE, Sociological Abstracts, LILACS, CINAHL and EncoLit. Similarly, we have used data of the sixth Spanish National Survey on Working Conditions from 2005, promoted by the Institute of Safety and Health at Work of the Ministry of Labour and Social Security, as well as the fourth edition of the European Working Conditions Survey 2007 of the European Foundation for the Improvement of Living and Working Conditions.

According to the rules of the Steering Committee of the PhD program of the “Departament de Ciències Experimentals i de la Salut” at the Universitat Pompeu Fabra, this thesis is presented as a collection of three original articles published, two of them in international journals, so they are written in English, and one of them in a national journal, so it is written in Spanish. The three journals in which the three articles are published are indexed in Medline and have an impact factor ranged from 1.03 to 1.84. The first article identifies, from a systematic review of the literature, the unequal gender exposure to occupational hazards arising from the employment and working conditions as well as the unequal distribution among women and men of work-related health problems. This first article, has received the award of "Highly Accessed" by the same journal at it was published due to the high demand for downloads they have received in

their first 15 days of its publication. The second article focuses on analyzing gender inequalities in terms of exposure to occupational hazards arising from the employment and working conditions, the balancing of work and family life and work-related health problems in the Spanish workforce, taking into account the occupational social class and sector of activity of the company. Finally, the third article focuses on analyzing the unequal gender exposure to work-related psychosocial hazards in the European workforce and how this gender inequality is influenced by the welfare state regime and the occupational social class. That article was performed in collaboration with the Research Group for Occupational and Environmental Medicine, Department of Public Health and Primary Health Care at the University of Bergen in Norway. In this research group, doctoral students conducted a 3-month stay as a visiting researcher.

In a complementary manner, at the end of this document are appended results from other articles related to current doctoral thesis from which the PhD is the author or co-author. These articles are dealing with methodological aspects of surveys of working conditions and gender violence with the intimate partner .

This thesis has been partially funded by the Center for Research in Occupational Health at the Universitat Pompeu Fabra and the “Centro de Investigación Biomédica en Red de Epidemiología y Salud Pública, (CIBERESP), Spain. He has also received a grant from the Ministry of Education, Culture and Sports to finance the stay of three months at the University of Bergen. This University belongs to the European Higher Education Area, in order to obtain European mention to his PhD degree. The doctoral student has also received a grant from the School of Public Health at the University of Texas (USA) to present some of the results of this thesis in its Research Seminar Series.

Finally, this thesis chooses to European mention to the PhD degree following the rules of the Steering Committee of the PhD program of the “Departament de Ciències Experimentals i de la Salut” at the Universitat Pompeu Fabra.

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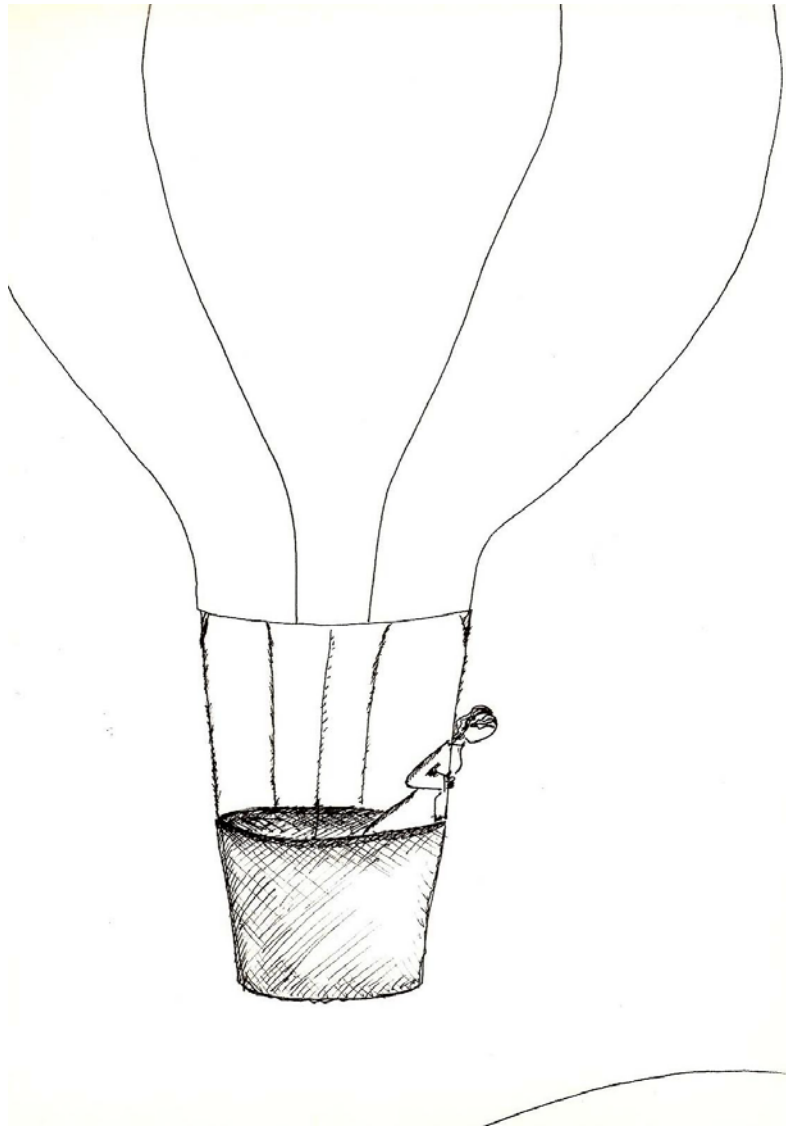
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1. INTRODUCTION



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1. INTRODUCTION

*“Social inequality among men and women
is not a consequence of the natural inequality,
otherwise, social and political inequalities are the responsible
for the theories that postulate the inferiority of the feminine nature”*

Poulain de la Barre, 1674

1. INTRODUCTION

1.1 Work-related gender inequalities in occupational health

1.1.1 The concepts: Gender and sex; inequalities and differences

1.2 Determinant factors of work-related gender inequalities

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1.3 Buffering factors of work-related gender inequalities

1.3.1 Welfare state regime

1.3.2 Occupational social class

1. INTRODUCTION

In order to discuss work-related gender inequalities in occupational health and how are influenced by the welfare state regime and the occupational social class certain concepts related to this five spheres: gender, work, inequalities, welfare state regime and occupational social class and its internal pathways of interplay must be previously outlined.

1.1 Work-related gender inequalities in occupational health

1.1.1 The concepts: Gender and sex; inequalities and differences

Gender and sex are two terms that have been constantly constructed, deconstructed and reformulated depending on the historical and social contexts. Both terms represent a very old and well-known debate that has been held between sociologist and biologist trying to draw the line division between which is related to culture and to nature. However, this clear dichotomy has been questioned by new theories that postulate that the complex socio-political relation contexts are acting as determinants of health inequalities and illness processes[1]. In public health perspective, sex might be thought to determine genetically-based sensitivity to health determinants and gender to express some social-political forces that could influence exposure and responses to health determinants[2].

While gender refers to a social construct regarding culture-bound conventions, roles, and behaviours for, as well as relations between and among, women and men and boys and girls; sex is a biological construct premised upon biological characteristics enabling sexual reproduction. Biological sex is variously assigned in relation to secondary sex-characteristics, gonads, or sex chromosomes; sexual categories include male, female, intersexual (persons born with both male and female sexual characteristics), and transsexual (persons who undergo surgical and/or hormonal interventions to reassign their sex). Thus sex links biological and invariable characteristics a long time and a cross societies. Instead, gender roles vary across a continuum and both gender relations and biologic expressions of gender vary within and across societies, typically in relation

to social divisions premised on power and authority (e.g., occupational social class, race/ethnicity, nationality and religion)[3-5].

Sex differences and gender inequalities in health in general, and in occupational health in particular, are two concepts which are very close but not identical or interchangeable. While sex differences are related to those differences in health determined by sex-linked biological characteristics in women and men, gender inequalities in health are related to those disparities in health among women and men, which are determined by their gender roles and the interplay between them. In other words, sex differences in occupational health are linked to the biological concept of sex and are permanent and unavoidable, while gender inequalities in occupational health are linked to the socio-cultural construct of gender roles and are systematic, unnecessary, unfair, unjust and avoidable [5-7]. Much of the differential between women and men in occupational health cannot be accounted only on biological reasons; instead, other socio-economic and cultural factors and socio-political contexts are implicated. The crucial test of whether the resulting differential impacts on employed women and men's health status or the unequal exposure to work-related hazards among employed women and men, are considered unfair and unjust seems to depend to a great extent on whether people chose the situation which caused the ill health or the exposure or whether it was mainly out of their direct control as a consequence of the socio-cultural and political context[4, 6]. On the other hand, gender equality in the labour market implies that the interests, needs and priorities of both women and men are taken into consideration, recognizing the diversity of different groups of women and men. Moreover, gender equality is not just a "women's issue" but should concern and fully engage men as well as women. Equality between women and men is seen both as a human rights issue and as a precondition for, and indicator of, sustainable people-centred development[5]. Gender equality is the preferred terminology within the United Nations, rather than gender equity, which was definitely agreed in the Beijing conference in 1995. Gender equity is defined as the fairness of treatment for women and men, according to their respective needs. This may include equal treatment that is different but which is considered equivalent in terms of rights, benefits, obligations and opportunities[5].

Undoubtedly, work plays an important part in determining women's and men's relative wealth, power, prestige and position in society. This fact generates gender inequalities in the distribution resources, benefits and responsibilities in the workplace and at home[2, 8]. Thus, the workplace can be a setting where gender inequalities are generated, manifested and sustained, with their consequent impact on health. In other words, working tasks are different distributed among women and men, because of the gender roles, even though among women and men who works under the same job title[9]. Therefore, women and men are exposed to different work-related hazards and subsequently their physical and mental health is affected in different ways[2, 9]. In general, the problems associated with men's work are better known than women's, since men do visibly heavy and dangerous work and tasks such as mining, cutting trees, fishing and building from which men suffer more injuries caused by occupational accidents[2, 8]. More women than men are exposed to low control[10, 11], while more men than women are exposed to high demands[11, 12] and low support[10, 12]. More men than women are exposed to effort-reward imbalance[11, 13]. Also more men than women are exposed to noise[14, 15] and high physical demanding works[16]. Otherwise, more women than men have musculoskeletal symptoms[17] or mental health disorders[18, 19]. Employment conditions also differed quite a lot among women and men, being women under more precarious employment conditions than men[8]. For example, more women than men are occupied in the informal sector, work part-time or with temporary contracts[8, 20]. In addition, more women than men work with lack of security, limited possibilities for training and career advancement and inadequate social security coverage in terms of old-age pensions[21].

Work-related gender inequality refers to the lack of ability to enjoy equal rights, opportunities and treatment by employed women and men in the labour market and in the workplace[4]. Therefore, work-related gender inequality implies those differences in the exposure to work-related hazards or work-related physical or mental health problems between employed women and men, which are unfair, unjust, avoidable and systematically affecting a higher proportion of women than men or vice-versa[6].

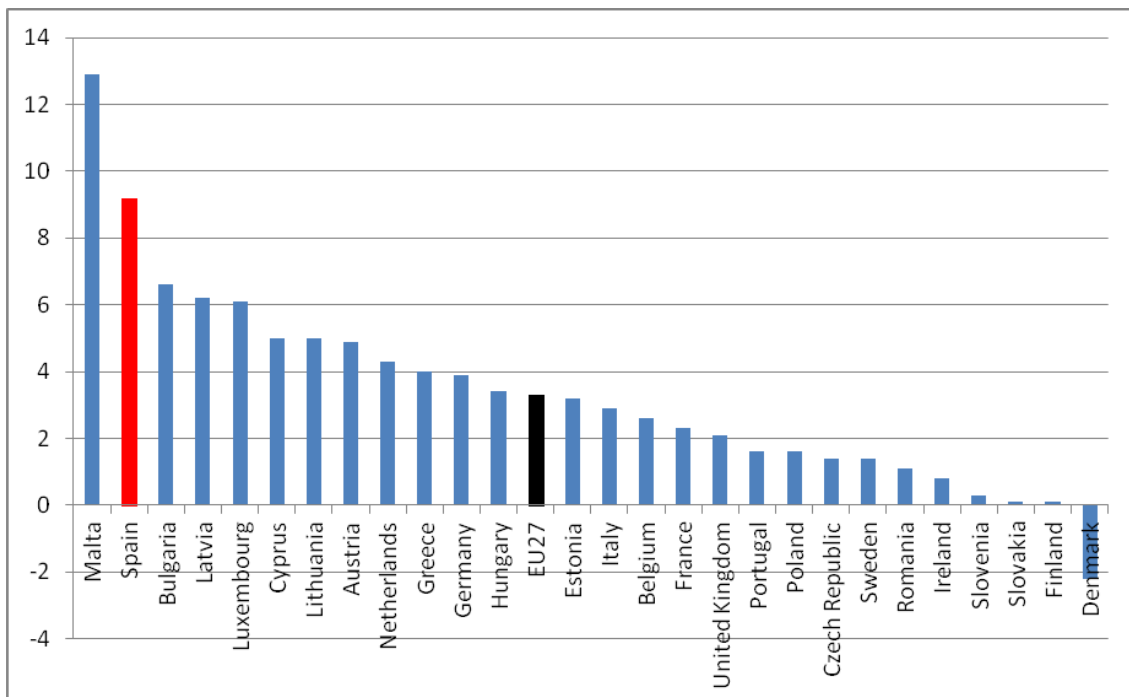
Consequently, work-related gender equality asserts that people's rights, responsibilities, social status and access to resources do not depend more on whether they are born female or male than in their personal interests, capabilities and abilities in the labour market and in their workplace positions. Work-related gender equality does not mean, however, that men and women are the same or must become the same, or that all labour market measures must arrive at the same results. Work-related gender equality implies that all women and men are free to develop their personal abilities and interests, and make jobs and life choices without the limitations set by stereotypes or prejudices about gender roles or the sexual characteristics of women and men. Work-related gender equality embraces equality of opportunity and treatment, equality of remuneration and access to safe and healthy working environments, equality in association and collective bargaining, equality in obtaining meaningful career development, maternity or paternity protection, and a balance between work and home life that is fair to both women and men. Work-related gender equality is understood worldwide as a matter of human rights, social justice and sustainable development[4, 5].

1.2 Determinant factors of work-related gender inequalities

1.2.1 Sexual division of the labour market, horizontal and vertical segregation

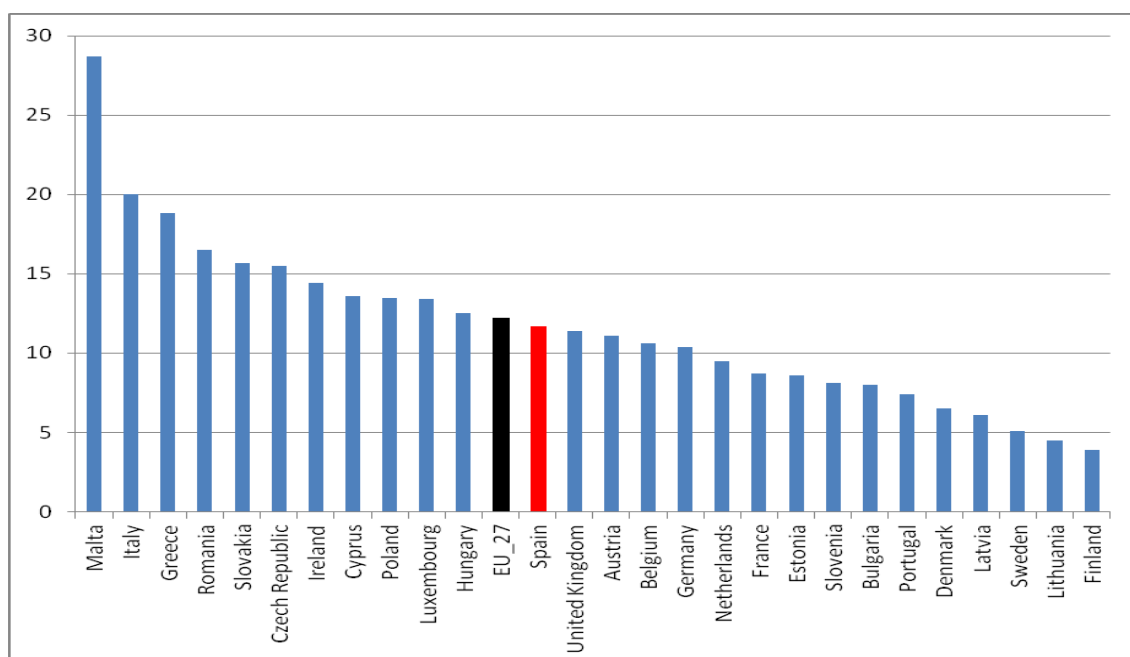
The increase in women's participation in the labour market has been one of the most important social phenomena of the second half of the twentieth century. For example, from the 3.0 billion people employed around the world in 2008, 1.2 billion were women (40.4%). That fact represents an increase of nearly 200 million women employed in the last 10 years. However, the gender gap in terms of activity, temporary employment and unemployment rates between women and men has remained stable worldwide.[22] For instance, although the women activity rate in the 27 countries of European Union (EU-27) has increased in 3.3 per cent points from 2005 to 2012 (Figure 1), the gap between women and men in the activity rates remains stable along this period, being in 2012 of 12.2% (Figure 2)[23].

Figure1 Difference in women activity rate between 2005 and 2012 in the 27 Members States of the European Union (EU-27) from 15 to 64 years old.



Source: Eurostat, European Labour Force Survey, 2005 and 2012[23]

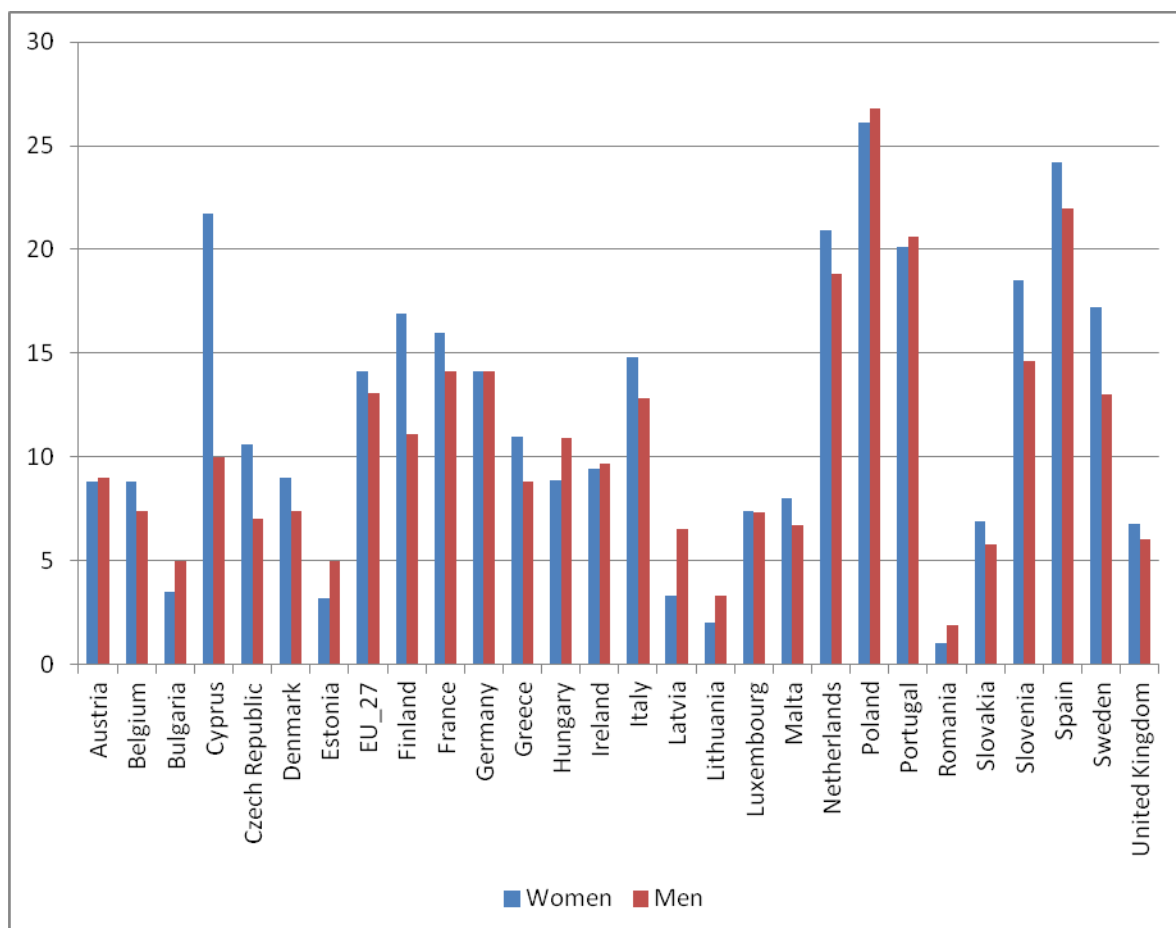
Figure 2 Differences between women and men in the activity rate in 2012 in the EU-27 from 15 to 64 years old.



Source: Eurostat, European Labour Force Survey, 2012[23]

In addition, in 2012 from the total women working population in the EU-27 14.1% was working in temporary employments vs 13.1% of men (Figure 3) [23].

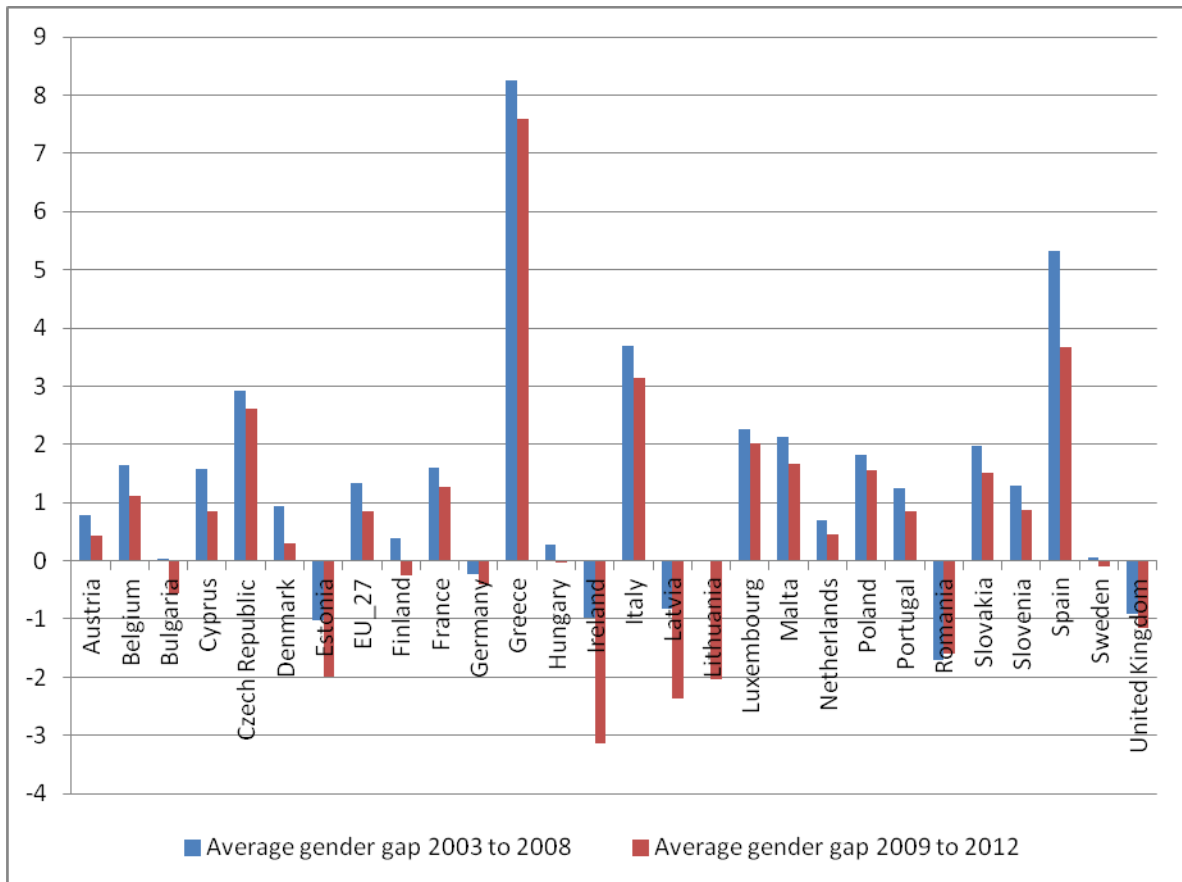
Figure 3 Differences between women and men who are temporary employed as a percentage of the total number of employed population by sex from 15 to 64 years old in the EU-27 in 2012.



Source: Eurostat, European Labour Force Survey, 2012[23]

Finally, the gender gap in the unemployment rate has been traditionally high in the EU-27, being the average gender gap in 1.33 per cent points from 2003 to 2008. Nevertheless, this average gender gap has been reduced until 0.86 points per cent from 2009 to 2012 due to the economic global crisis, probably because it has mainly affected the construction sector, a masculinized sector in the EU-27 (Figure 4) [23].

Figure 4 Average in percentage of two periods of the differences between women and men in the unemployment rate for all ages in the EU-27.

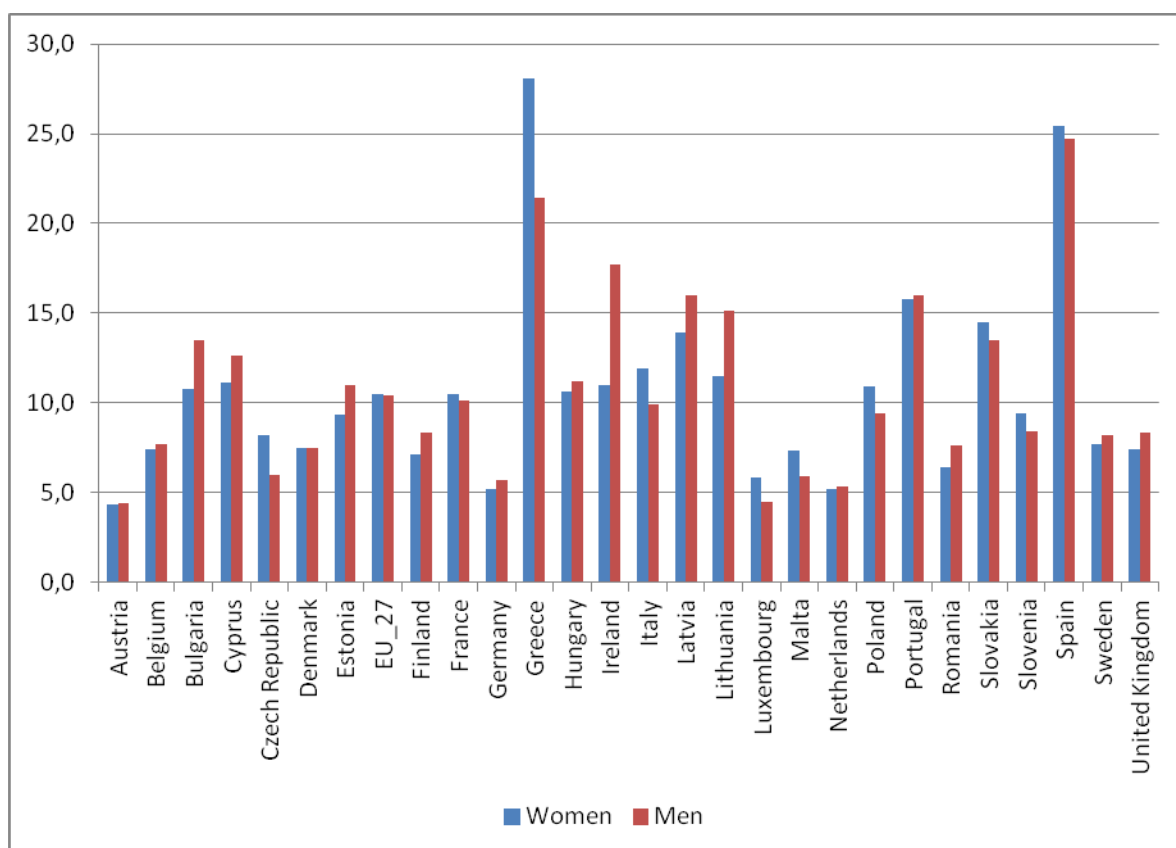


Source: Eurostat, European Labour Force Survey, from 2005 to 2012[23]

Something similar has happened in the Spanish labour market, where the women incorporation to the labour market has occurred in unfavoured conditions regarding men[22]. In this context, although our country is one of the 27 Member States of the European Union (EU27) which was the largest increase in the women participation rate (9.2%) between 2005 and 2012 (Figure 1), also represents one of the countries in the European Union where greater is the distance that separates it from the activity rate for men in 2012 (11.7%) (Figure 2). Spain is also one of the countries of the EU27 with a higher rate of temporal contracts (being for female, 24.2% vs 14.1% of the EU27 average and for male, 22.0% vs 13.1% of the EU27 average in 2012) (Figure 3) and unemployment rates (being for females , 25.4% vs 10.5% of the EU27 average; and for males, 24.7% vs 10.4% of the EU27 average in 2012) (Figure 5). It was the current economic crisis in Spain has mainly affected the construction sector (mainly men),

largely responsible for shortening the gap between women and men in temporary employment and unemployment rates, which have passed of 3.7 and 3.0 points in 2008 to 2.2 and to 0.7 in 2012 respectively and have traditionally been high[23]. Furthermore, of the 550 million people considered poor workers in the world (workers who are unable to earn themselves and their families more than a 1 US dollar a day) 330 million (60%) are women.[22]

Figure 5 Women and men unemployment rate in 2012 in the EU-27.



Source: Eurostat, European Labour Force Survey, 2012[23]

One explanation for the origin of all these gender inequalities is structural, as the labour market has been organised on the pillars of a prevailing patriarchy and androcentrism since the industrial revolution. Beginning with the Industrial Revolution, a division of labour based on sex became the base on which gender inequalities were consolidated, confining women to domestic work and a family care-giver role (unpaid work and with very poor prestige in society) and men to paid work (more prestigious and well-valuable in society)[24]. Women’s incorporation into paid work has not exempted them from

unpaid work. Then, they remain trapped in the family sphere, partly because they are bound by emotional ties to those for whose care they are responsible (“sticky floor”), as well as by an unequal distribution of domestic and family duties between partners[25]. Women and men entering the labour market also encounter feminised and masculinised sectors of activity, due to the horizontal segregation, where women occupy the lowest positions on the decision-making scale due to the vertical segregation of the labour market. In addition, professional promotion is unequally balanced between women and men because by the invisible barriers of masculine power (“glass ceiling”)[25, 26] and by language differences in speech styles between women and men (“wall of words”)[27]. All these conditions place women in a more precarious position than men in the labour market [20, 28]. For example, horizontal segregation produces a dense concentration of women in certain sectors of activity and in certain professions where the levels of remuneration are lower. Vertical segregation reinforces the effects of horizontal segregation, and also accounts for women’s lower wages and lower power in the workplace [9, 29]. In addition, women and men with the same job title usually perform different tasks, giving rise to an unequal distribution of working conditions and work-related hazards between the two sexes, with a differential impact on their health, being women in a more disadvantageous position [1, 2]. For example, the job title of butcher is applied to women who work behind a delicatessen counter and interact with the public, and also to men who work behind a meat counter cutting large pieces of meat[30].

We can find also a reliable example of these differences in the distribution of work-related hazards between women and men in the specific dimension of working conditions, where there seems to be significant differences in the prevalence of exposure to work-related psychosocial hazards. Some studies indicate that employed women experience worse psychosocial working conditions than employed men in general, and that a higher health burden might result from these exposures[16, 31-33]. Previous research has found that men experience higher job demands, effort, and overcommitment, and lower social support at work; whereas women exhibit lower job control and lower reward [34-36]. On the other hand, some studies have found that women experience higher emotional job demands [10] and higher job reward [11]. In

addition, in the European Union, women's jobs are characterized by a greater level of monotony, with lower participation in planning, higher demands, more psychological and sexual harassment, higher exposure to the public, lower salaries, less prospects for promotion, and more precariousness than those of men[37]. Furthermore, it has been suggested that these inequalities put women at a higher risk of physical[38] and mental disorders[39], sickness absence[40], disability[41], and mortality[42] from work-related psychosocial hazards.

The consideration of a gender-based division of labour in occupational health studies not only implies separate analyses based on sex, but must also take into account the potential different meanings of a given role for men and women in different socio-cultural contexts. Moreover, research on work-related gender inequalities should tend to explain the complex pathways in which the social relations of gender may affect on the unequal exposure to work-related hazards among employed women and men and hence the particular work-related health problems in employed women and men. Therefore, consideration of both sex differences and gender inequalities is required to incorporate appropriately the gender perspective into occupational health studies[43, 44]. That means, to explore thoroughly the unequal exposure to work-related hazards among women and men, which implies not only pay attention to biological, but also social mechanisms[2].

1.2.2 Differences in expectancies between women and men in the labour market

Those families who share a more liberal gender-role ideology believe that domestic work (home task and caring for children) and workplace responsibilities should be equally shared between women and men. In contrast, in those couples with more traditional gender-roles, women believe that they are duty-bound to be home full time caring their children rather than being in the workplace and men believe that they have to assume the traditional bread-winning model. Thus, in families with more traditional gender-roles men become the principal provider of family goods expending long hours in the workplace and not assuming any responsibility in domestic work[45]. Those families with more liberal gender-roles women and men will tend to occupy full-time

jobs and will try to manage with domestic task sharing equally the demands, because of that they will be benefit more in terms of physical and mental health for this multi-role model, combing work and family roles, than those families with more traditional gender-roles[45]. In addition, in those families with more traditional gender-roles women will enter mainly the labour market in case of a family financial stress in order to increase the household income, or as secondary activity with less relevance than men's ones[45]. This fact, among others, will determine that those women assumed more part-time jobs than men in order to better balance work and family demands[46]. Part-time jobs are segregated into a narrower range of occupations than full-time jobs and are typically lower-paid, lower status, more monotonous, with fewer opportunities for advancement and are more related to job insecurity[47]. Moreover, part-timers usually earn less per hour than full-timers, even after controlling for education, experience and other relevant issues[48].

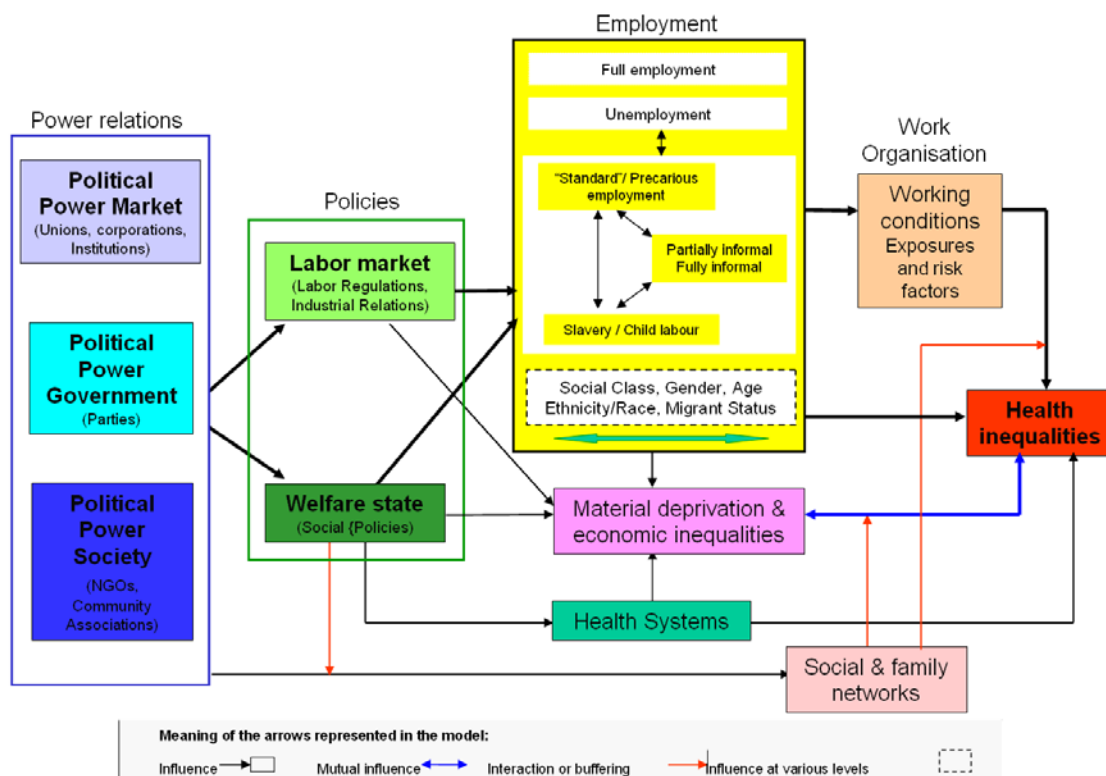
Employers have the opportunity to offer precarious working and employment conditions to those women and men who are entering the labour market from a more traditional gender-role ideology than to those who come from more liberal gender-role ideology. Then, employers could force women to be less paid for the same work done by men, have less employment social benefits, work with a temporary contracts or even though with no contracts and could also force men to more work long hours than those women and men who come from a more liberal gender-role ideology. This fact of the different expectancies that women and men have, when they are entering the labour market, becomes other sources of the current gender inequalities in the labour market[49, 50].

1.3 Buffering factors of work-related gender inequalities

1.3.1 Welfare state regimes

Work-related gender inequalities in occupational health needs to be put into its larger socio-political context, which is determined by power relations, labour market and social policies according to their level of social protection policies (Figure 6) [51].

Figure 6 Macro-theoretical framework of employment relations and health inequalities[51]

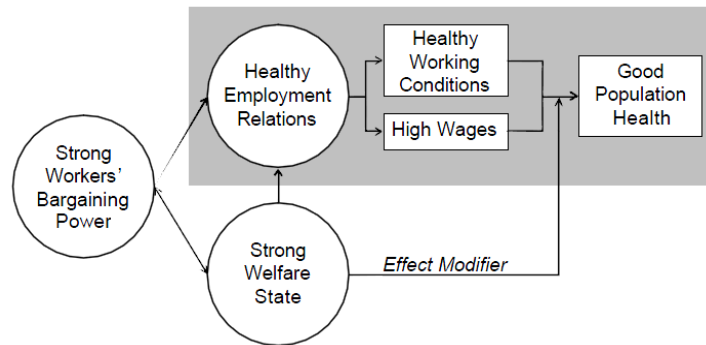


Power relations is related to the interaction of government and civil society from which results labour market characteristics such as: labour regulations, collective bargaining and the power of trade unions, as well as to the level of development of the welfare state, that is the extent to which state exerts its distributive power through the implementation of social policies [51]. Labour market regulations and social protection policies promoted by the welfare state modify social stratifications and therefore acts as buffering gender inequalities in occupational health. The labour market and the welfare state are two institutions which are deeply inter-connected and it is not possible to understand the labour market without considering the welfare state that surround [52].

In 1990, Esping-Andersen proposed three theoretical welfare state regimes (Liberal, Conservative and Social Democratic) based upon three principles of the labour market: decommodification (the extent to which an individual's welfare is reliant upon the market, mainly by unemployment or sickness benefits and pensions), social stratification (the role of welfare states in maintaining or breaking down social stratification), and the private–public mix (the relative roles of the state, the family, the voluntary sector, and the market in welfare provision)[52]. In Liberal welfare states (i.e. United Kingdom) modest universal transfers or social protection policies exist. Conservative (i.e. Germany) was one regime where the welfare state provides welfare services, but at the same time maintains social status differences so that the resulting redistributive impact is minimal. The role of churches and families as social service providers are considerable. Social Democracy (i.e. Scandinavia countries) is the regime in which the universalism and de-commodification of social rights are extended to the whole citizens. This regime also takes over much of the social role of the family and offers full employment as part of its welfare state commitment[52]. Welfare state regime could act as a buffer to protect against the unequal gender distribution of work-related hazards mentioned above (Figure 7)[51, 53].

However, Esping-Andersen's proposed classification system has been widely revised [54]. The principal criticisms have focused on the range of countries and regimes used to construct his typology, primarily the misclassification of the Southern European welfare states as immature Conservative ones[55]. As a result of this criticism and subsequent empirical testing[56], a range of modified and alternative typologies were proposed[55-57]. A standard classification was recently proposed by Eikemo[58] and Bambra[59] which, among other aspects, extends the classification to a wider range of countries and includes considerations of gender and the role of public services[58, 59]. These authors introduced the “Eastern” welfare state typology, which has been widely used in a number of studies and recommended for public health research[60-62].

Figure 7 Relationship between worker’s bargaining power, welfare state, employment relations, and health[51]



The particular buffer effect of each particular welfare state regime likely relates to the feminist and trade union tradition, levels of social organization, and the number of government labour market interventions in the form of regulations and social protection policies (focusing, for example in subsidies for childcare and plans of employment for mothers with young children)[63, 64]. The level of the welfare state regime determines the level of “decomodification”, that is, the extent to which workers are able to maintain a livelihood in society without reliance in the market[52]. For example, some countries such as Germany and The Netherlands have coordinated labour markets, with a high level of collective bargaining. This arguably leads to better control of work-related psychosocial hazards. These countries are also relatively redistributive with regard to social policies reaching a relatively high level of labour market decommodification. At the same time, they are characterized by rather conservative family policies, which have an impact on the segregation of men and women in the labour market (e.g. part-time employment or retrenchment from the labour market of women with young children). On the other hand, the Swedish daycare system is organized to accommodate the needs of the working women with young children. To obtain a place in the childcare centre, either parents (or the single parent) must be working or studying at least 20 hours per week. This is an important fact to consider in determining how childcare subsidies increase the labour supply[65]. It has been shown that welfare state regimes with more comprehensive social protection policies (e.g. that enhance child care and parental leave rights) also have labour protection policies that reduce women’s exposure to work-

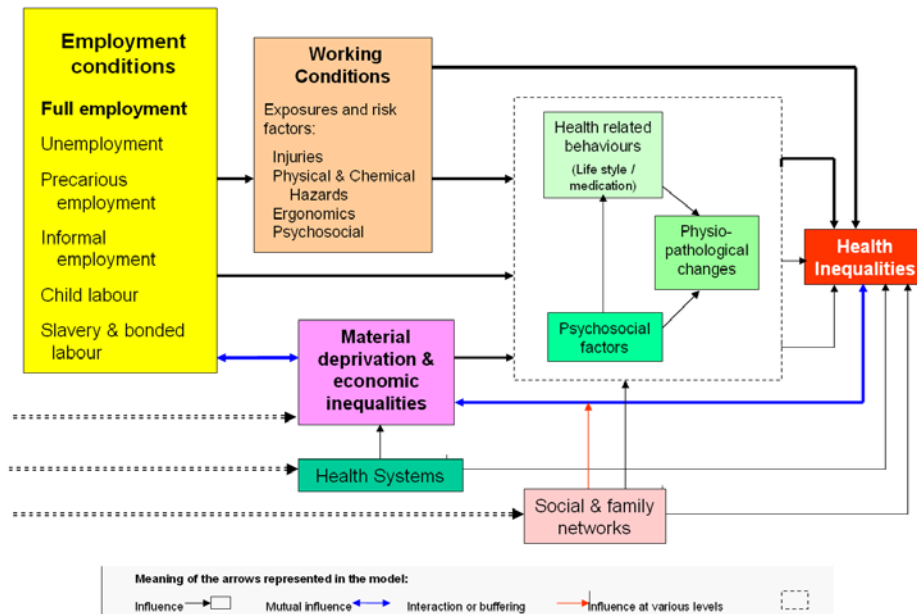
related psychosocial hazards[66, 67]. It has also been reported that welfare state regimes with the most comprehensive systems of social benefits redistribution not only improve the psychosocial work environment, but also mitigate the impact of work-related psychosocial hazards on health and health inequalities[68, 69] (e.g. by providing more resources to cope with stressful working events such as job insecurity and job loss)[70]. These arguments suggest a correlation between better social protection policies and benefits redistribution in welfare state regimes, such as occurs in the Scandinavian welfare state regime, which supposedly reduces women's exposure to work-related psychosocial hazards. In addition, the combination of all these characteristics may lead to complex and welfare state regime-specific results in buffering the phenomenon of double exposure to work-related psychosocial hazards[65]. In other words, welfare state regimes may mitigate the difference between women's and men's exposure to work-related psychosocial hazards by social and labour market protection policies and social benefits redistribution[34, 71]. For example, countries with more protective social policies, more redistributive social benefits and more regulated labour markets (e.g. the Scandinavian regime) will have a lower gap between women and men in the exposure to work-related psychosocial hazards than those countries with more conservative and liberal welfare state regimes (e.g. the Southern regime) where the state has less tradition of implementing social protection policies and policies to redistribute social benefits, as well as less influence in regulating labour markets[68, 72].

1.3.2 Occupational social class

There is a growing body of evidence showing that workers at the lower occupational social class (manual workers) are much more exposed to work-related hazards, not only physical or chemical[73-75], but also psychosocial hazards (high strain, iso-strain and effort-reward imbalance)[76, 77] (Figure 8). Thus, workers in lower occupational social class are more often exposed to high strain and iso-strain than workers in higher occupational social class[76, 77]. Occupational social class is a key relational mechanism, as gender or ethnicity/race, that explain the why workers will be exposed differently to work-related hazards. These three key specific social mechanisms which

are generating work-related health inequalities are the concepts of exploitation, domination and discrimination[51].

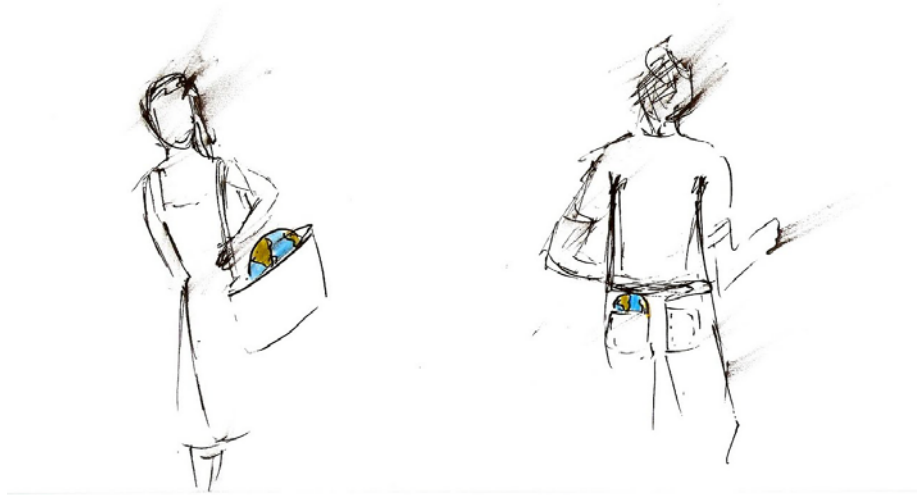
Figure 8 Micro - theoretical framework of Employment Conditions and Health Inequalities[51]



In addition, the distribution of low control and low support has been found to follow the social gradient (with higher exposure in workers in the lower occupational strata), although the same distribution was not shown for high job demands[76]. Moreover, workers in the lower occupational social class have reported being exposed to higher job strain, greater job insecurity and lower social support over time than those in the higher occupational strata[78]. For Siegrist and colleagues, the asymmetry between effort and reward may have adverse health effects that tend to disproportionately affect persons in the lowest occupational social class, who lack flexibility due to their low skill level and lack of mobility[34]. The effects of high job insecurity and low social support have been stronger for increasing depression, distress and declaring poor self-rated health in the lower occupational social class compared with the higher occupational social class[78]. A study carried out in a British cohort[79], found that employed women showed a consistent trend for better social support than employed men in both

the highest and the lowest occupational strata. Furthermore, a study using data from the Whitehall II Study[80], a longitudinal study of British civil servants, showed that employed women in the lowest or middle occupational social class who reported low control were at most risk for depression and anxiety.

2. JUSTIFICATION



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2. JUSTIFICATION

“Feminist inquiry joins other ‘underclass’ approaches in insisting on the importance of ‘studying up,’ instead of ‘studying down.’ While employers have often commissioned studies of how to make workers happy with less power and pay, workers have rarely been in a position to undertake or commission studies of anything at all, let alone how to make employers happy with less power and profit. Similarly, psychiatrists have endlessly studied what they regard as women’s peculiar mental and behavioural characteristics, but women have only recently begun to study the bizarre mental and behavioural characteristics of psychiatrists”

*Sandra G. Harding, *Feminism and Methodology: Social Science Issues*, 1987*

2. JUSTIFICATION

Several studies have shown that employed women experience worse employment and working conditions than men do, and that a higher health burden might result from these exposures [31, 33]. This different exposure to work-related hazards ends up producing a different impact on women and men's health [1, 2, 20]. In the field of occupational health, researchers have incorporated the gender perspective only in the last decade [81]. That not only implies to separate all the statistical analyses by sex, but must also take into account the potential different meanings of a given role for men and women in different social contexts, for example in the social determinants of health inequalities, as: social class, age and ethnicity/race. Moreover, the incorporation of the gender perspective to occupational health studies implies that researchers should tend to explain the complex pathways by which the social relations of gender may have a different impact on employed women and men's health[46, 82]. In spite of these facts, no study has been conducted to identify and collect all the work-related gender inequalities in occupational health[43, 44]. To figure out which is the general picture of the existing determinants of work-related gender inequalities in occupational health is of importance, not only for researchers and practitioners in occupational health, but also for policy makers, in order to optimise the efforts made by public administrations to reduce them.

Furthermore, previous studies conducted in Spain have shown that a higher proportion of women than men are exposed to work-related psychosocial hazards, while men to physical hazards and injuries related to work accidents[83, 84]. It has also been shown that this gender inequalities are influenced by the occupational social class of the workers, being even higher in those at the lowest occupational social class (manual workers)[85-88]. However, these work-related gender inequalities in occupational health have not yet been analysed in Spain in a homogeneous and representative sample of workers from neither all the different sectors of activity of the company (industrial, agriculture, construction and services) nor from all Spanish autonomous regions and even less taken into account the occupational social class[83, 89, 90], as it has been highly recommended in previous studies[85-88, 90]. In this regard, the Spanish sixth

edition of the National Working Conditions Survey, 2007 (NWCS_2007), which incorporates important methodological advances over previous editions[91], is an opportunity of great interest. Furthermore, in case that this analysis would be repeated in future editions of the NWCS, work-related gender inequalities could be followed and monitored. It would be even possible to measure the impact that public policies, promoted for gender equity in occupational health, have on closing the gender gap in the Spanish working population[92].

As it has been previously settled in the introduction section, welfare state regimes influence psychosocial work environments, mainly through shaping the labour market and social protection system[93, 94]. However, little is known about whether and how welfare state regimes influence the unequal distribution of work-related psychosocial hazards between employed women and men[68, 72]. In the same direction, occupational social class also influences the exposure to work-related psychosocial hazards among workers. Thus, workers in lower occupational social class are more often exposed to high strain and iso-strain than workers in higher occupational social class[76, 77]. Although, for Siegrist and colleagues, the asymmetry between effort and reward may have adverse health effects that tend to disproportionately affect persons in the lowest occupational social class[34], very little is known whether and how the exposure to work-related psychosocial hazards differ by gender in the different social class strata. While the welfare state regime model[60-62, 68, 95] and the occupational social class[20, 86, 96 -99] have been widely, but separately, used to analyze health inequalities in occupational health, the gender perspective has been poorly incorporated simultaneously into these analyses[46, 68, 100, 101]. Therefore, it is still not clear at all, which it is the role played by gender within the welfare state regime model and the occupational social class in determining health inequalities in occupational health. Then, to disentangle how the exposure to work-related psychosocial hazards differ among employed women and men by welfare state regime and occupational social class, will be a very relevant issue not only for policy makers, in their efforts to reduce gender inequalities in occupational health, but also for researchers and occupational health practitioners, who also must work to reduce the impact of these inequalities on workers' health.

3. HYPOTHESIS AND OBJECTIVES



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3. HYPOTHESIS AND OBJECTIVES

“There are marked differences by social class, ethnicity and age in the way gender inequalities are manifest. These persistence of gender and class inequalities pose a challenge for those who argue that the traditional social ties, relations and belief systems that used to shape people’s lives are losing their significance”

Jacqueline Scott, Gender inequalities in the 21st century, 2010

3. Hypothesis and objectives

3.1. Hypothesis

3.2. Objectives

3. HYPOTHESIS AND OBJECTIVES

Below are the hypothesis and objectives for each of the three papers that constitute the core of this dissertation.

3.1. Hypothesis

3.1.1. Paper 1

- Important gender inequalities related to the unequal distribution of working and employment conditions exist in occupational health.

3.1.2. Paper 2

- In Spain, women are exposed to worse working and employment conditions, balance of job and family life and have poorer work-related health than men have. These gender inequalities would be worse in women than men would in the lowest occupational social class and in masculinised sectors of economic activity of the company as the construction and industrial sectors.

3.1.3. Paper 3

- There is a correlation between better social protection policies and benefits redistribution in welfare state regimes, which supposedly reduces working women's exposure to work-related psychosocial hazards compared to working men. Thus, those welfare state regimes within greater levels of social protection policies and standards of benefits redistribution (e.g. Scandinavian regime) will have less gender inequalities in the exposure to work-related psychosocial hazards, independently of the occupational social class of the worker. In other words, welfare state regimes may mitigate the difference between working women's and men's prevalence of exposure to work-related psychosocial hazards depending on their protection policies and benefits redistribution.

3.2. Objectives

3.2.1. Paper 1

- The first objective was to identify and summarize the working and employment conditions described as determinants of gender inequalities in occupational health in studies related to occupational health published between 1999 and 2010.

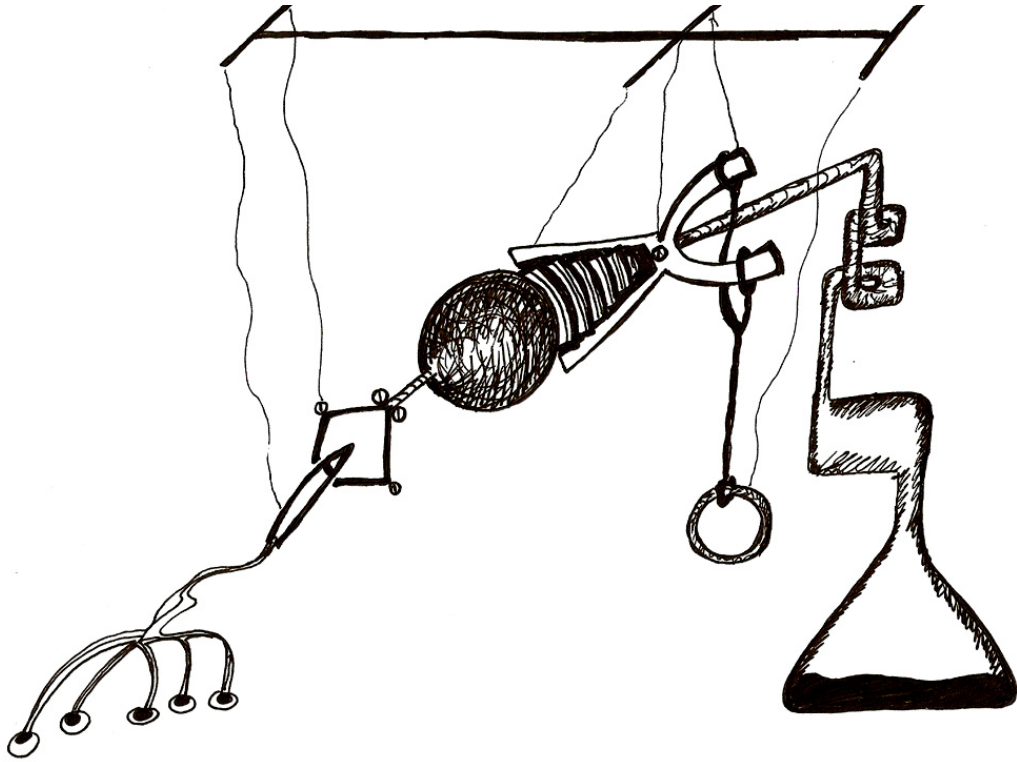
3.2.2. Paper 2

- The second objective was to analyze gender inequalities in working and employment conditions, balancing job and family life as well as work-related health problems in a representative sample of the working Spanish population, taking into account the occupational social class and the sector of activity of the company.

3.2.3. Paper 3

- The third objective was to examine whether gender inequalities in the exposure to work-related psychosocial hazards differ by welfare state regimes, and to test whether gender patterns differ by occupational social class across five different welfare state regimes in Europe.

4. METHODS



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4. METHODS

“(...)Resolved lo que queráis, pero afrontando la responsabilidad de dar entrada a esa mitad de género humano en política, para que la política sea cosa de dos, porque solo hay una cosa que hace un sexo solo: alumbrar; las demás las hacemos todos en común, y no podéis venir aquí vosotros a legislar , a votar impuestos, a dictar deberes, a legislar sobre la raza humana, sobre la mujer y sobre el hijo, aislados, fuera de nosotras”

Clara de Campoamor, El voto femenino y yo: mi pecado mortal, 1935

4. Methods

4.1. Paper 1

4.2. Paper 2

4.3. Paper 3

4. METHODS

This section summarizes the epidemiological design, data sources, the variables analyzed and statistical analyzes used in each of the three articles of this dissertation.

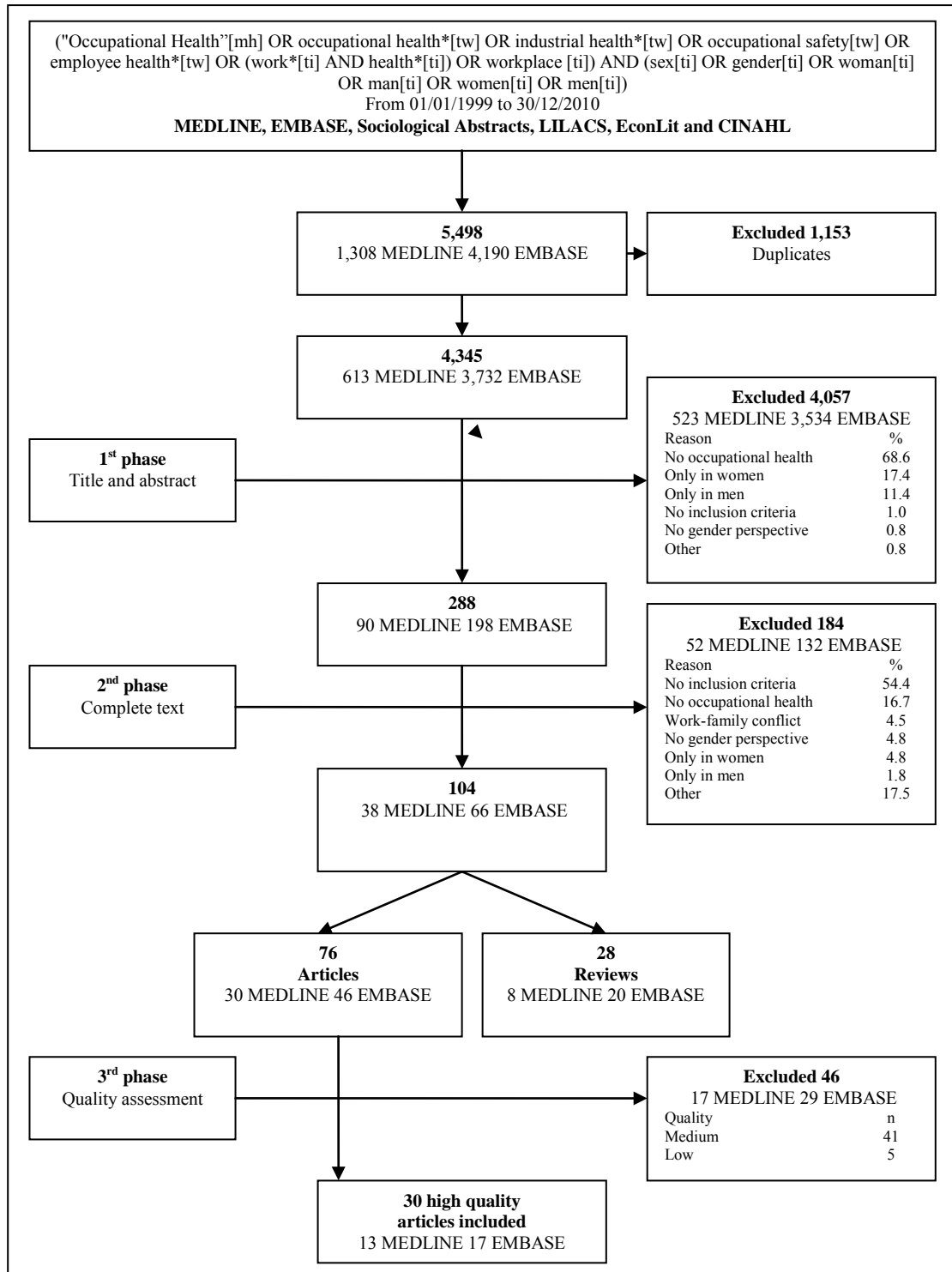
4.1. Paper 1

This first paper was based on a systematic review of observational studies.

Search strategy

Electronic databases searched included MEDLINE (through PUBMED) EMBASE, Sociological Abstracts, LILACS, EconLit and CINAHL. The search was limited to publication dates from 01/01/1999 to 31/12/2010. This period was selected because it was during this time that the gender perspective was largely incorporated in the occupational health literature[81]. Keywords used were different terms reflecting gender and occupational health. The terms reflecting gender included: sex, gender, women, men, woman and man; the terms reflecting occupational health included: occupational health, industrial health, occupational safety, employee health, work, health, and workplace. The terms reflecting inequality (inequity, inequality and difference), were not used because otherwise they reduced significantly the results of the search conducted. The Boolean operators AND and OR were combined in a common search strategy in order to achieve the most sensitive, but not the most specific results in the search (Figure 9). Although the language of the publications did not limit the search strategy, only articles in English or Spanish were selected, due to the researchers' fluency in these languages.

Figure 9 Flowchart followed in the selection process of the studies



Studies selection process

The common search strategy identified 5,498 references, 1,308 in MEDLINE, 4,190 in EMBASE and none in the remaining databases (Figure 9). Of these, 1,153 duplicated

articles were excluded. In the first phase, after applying the inclusion and exclusion criteria to the titles and abstracts (Table 1), the principal reviewer (JC) excluded 4,057 additional articles, for the most part because they did not focus on occupational health. In the second phase, after applying the selection criteria to the complete text of the remaining 288 articles, 104 were found to match the inclusion criteria. From these 104 articles, 28 were left out because they were reviews. Finally, a quality check was conducted during the second phase of the selection process. After going through the title and abstracts, 5% of the 288 included references were randomly selected. The two principal reviewers (JC and ER) independently applied the criteria for inclusion and exclusion throughout the complete text of the articles. The Kappa statistic for agreement between them was quite acceptable ($k=0.85$). All disagreements between JC and ER were due to different interpretations of one of the exclusion criteria, which were resolved after a short discussion. When this process was finished, the selection criteria were clarified and rewritten. Thus, it was not necessary to ask any other reviewer's opinion since JC and ER reached agreement on all studies for which there was initial disagreement.

Table 1 Inclusion and exclusion criteria used in the selection process

Inclusion criteria	Exclusion criteria
Studies focusing on the differences between women and men in prevalence of exposure to hazards related to working or employment conditions as determinants of health inequalities of working populations from a gender perspective	Studies not focusing on the differences between women and men in prevalence of exposure to occupational hazards related to working or employment conditions as determinants of health inequalities of working populations from a gender perspective
Studies in Spanish and English	<p>Studies focusing only on women or men, but not both at the same time</p> <p>Studies including women and men, but without a gender perspective</p> <p>Study reviews</p> <p>Studies in occupational health focusing on specific biological differences between women and men such as pregnancy, birth, and breastfeeding</p> <p>Studies focusing on the unequal distribution between women and men of domestic and family tasks and their effects on health inequalities of working populations from a gender perspective</p>

Quality appraisal

In the third phase, the remaining 76 articles were critically and independently appraised by two reviewers (JC and ER) using two different specific standardised evaluation guidelines appropriate to the type of the epidemiological design of the study[102, 103], both based on the STROBE statements[104].

The specific tool used to assess the quality of the 65 cross-sectional studies[102] comprised 27 items distributed in 8 domains with 6 categories of answer (poor, fair, good, very good, no information available, and not applicable). The domains were: a) *research question*, one item mainly evaluating whether the study is based on a clearly defined research question; b) *participants and internal validity*, five items mainly evaluating the sample adequacy and similarity to the base population and the control of selection bias; c) *comparability between groups*, four items mainly evaluating the study groups' comparability and the control of selection bias; d) *study variables*, four items mainly evaluating the adequacy of the measurements of the main variables and the control of information bias; e) *statistical analysis and control of confounders*, four items mainly evaluating the adequacy of the analysis in measuring the control of confounding variables; f) *results*, four items mainly evaluating to which extent the results are well described, useful and precise; g) *conclusions*, four items mainly evaluating whether the results can be generalized to the population and to the context in which it aims to apply; and h) *conflict of interest*, one item evaluating whether the conflict of interests do not prejudice either the results or the conclusions of the study. The total quality score was determined as high-quality, if the majority (50% or over) of the 8 domains were classified as very good or good, unless the internal validity (evaluated through domains b to e) was classified as fair or poor; medium-quality, if the internal validity was classified as fair, or if the majority of the domains were classified as fair; and low-quality, if the internal validity was classified as poor, or if the majority of the domains were classified as poor. The internal validity was classified as fair or poor, when at least two of the four domains from b to e were scored as fair or poor, respectively.

The tool[103] used to assess the quality of the five case-control studies included a checklist of 37 items distributed in 6 domains with 4 categories of answer evaluating if

the domain was optimal or not (yes, no, partially and not applicable). The domains were: a) *research question* using three items; b) *methods and internal validity*, evaluating the participants with three items, selecting case and controls with 11, the groups' comparability with two, the exposure with four, and the statistical analysis with five; c) *results* using five items; d) *conclusions*, using one; e) *conflict of interest*, using two; and f) *external validity*, using one.

The tool[103] to assess the quality of the six cohort studies used a checklist of 49 items distributed in 6 domains with 4 categories of answers evaluating if the domain was optimal or not (yes, no, partially and not applicable). The domains were: a) *research question*, using four items; b) *methods and internal validity*, mainly evaluating the participants with six items, the groups' comparability with three, the exposure with nine, the effects with four, the groups' monitoring with seven, and the statistical analysis with six; c) *results*, using six items; d) *conclusions* using one; e) *conflict of interest* using two; and f) external validity using one.

In both case-control and cohort studies, all six domains were taken equally into account to classify them as high, medium or low-quality studies. They were classified as high-quality, when five or more of any of the six domains were assessed as optimal; medium-quality, when three or four domains were assessed as optimal; and low-quality, when only one or two domains were assessed as optimal.

After this assessment, 41 medium and 5 low-quality studies were rejected, because the review team decided to limit the focus to articles with the highest standards of quality. Twenty-nine high-quality studies were finally included in our review.

Identifying working and employment conditions as determinants of gender inequalities

We obtained a set of descriptive variables to characterize each of the 30 studies included in the review: first author, year of publication, country where the study was conducted, study design, study population, main dimension assessed, sample size, main objective, main findings and the relevance for the review. We also calculated the frequency of the dimension and subject mainly examined. Finally, we conducted a qualitative analysis of the descriptive results of each of the 30 studies. We focused on the differences observed

between women and men in the prevalence of exposure to different working and employment conditions as determinants of gender inequalities in occupational health. In addition, we focused on the differences between women and men in the prevalence of work-related health problems as outcomes in each of the 30 studies. The statistical significance of each of the differences observed in the prevalence (p-value) was considered in the results and discussion section of this manuscript, but not in the selection process of the differences observed in the studies. Gender differences in the prevalence of exposure to the working and employment conditions were selected when the same gender difference appeared in two or more of the 30 studies included in the review, regardless of whether the difference in prevalence was statistically significant. We considered that a difference between women and men in the prevalence of exposure to the working and employment condition or in the work-related health problems was an inequality when it was avoidable, unfair, and systematically affected a higher proportion of women than men or vice-versa[6]. We grouped gender inequalities identified in the three dimensions analysed in this review: working conditions and employment conditions as determinants of gender inequalities in occupational health and inequalities related to work-related health problems as outcomes; including physical and mental health.

4.2. Paper 2

Participants and study sample

The study population consisted of 11,054 workers (4,583 women and 6,471 men) interviewed in the 6th Spanish National Survey of Working Conditions (6th SNWCS) conducted by the Spanish National Institute of Safety and Health at Work (SNISHW). The 6th SNWCS is a cross-sectional survey representative of the employed population in all autonomous regions in Spain. Briefly, the sample design was a multi-stage random sample including all autonomous regions and sectors of economic activity of the company in Spain. The sample process was stratified in different clusters samplings. The primary sampling cluster (municipalities) and secondary (census tracts) were selected at random, and the tertiary (employees) were selected by random routes and quotas determined by the economic activity of the company, the size of the workforce

and the different autonomous regions in Spain. The employed population, that was finally selected were interviewed between December 2006 and April 2007 at his home by trained interviewers[91]. For more details about the sample selection process and the characteristics of the sample finally selected could be tackle in Appendix I at the end of this document.

Independent variable

The main explicative variable along the whole study was sex.

Dependent variables

The research group identified 25 indicators to analyze gender inequalities (Appendix II) from the 76 questions that comprise the 6th SNWCS questionnaire[91] (Appendix I). In this process, we followed the definition of gender inequality indicator provided by the Canadian guideline for developing gender sensitive indicators[105]. This guide defines these indicators as those, which are able to show direct evidence of the status of women in relation to men and to capture gender-related changes in society over time. For this process, we conducted a systematic review (Medline, EMBASE, Sociological Abstracts, LILACS, Encolit and CINAHL, 1999-2010) epidemiological studies that examined the conditions of employment, work and reconciling work and family life as determinants of gender inequalities in occupational health from a gender perspective. The keywords used were: "sex, gender, women, men, woman, man, occupational health, industrial health, occupational safety, employee health, work, health and workplace". After applying a common strategy search 4,345 studies were located, from which were finally included 43. In this selection process, a group of inclusion and exclusion criteria (Appendix IV) were applied firstly to the title and abstract excluding 4,057 studies. Secondly, the criteria were applied to the full text of the remaining studies, excluding 171. Most of the studies were discarded because they were not focused on occupational health (42.7%), or single pregnant women (11.1%) or only in women or men's (6.6%) occupational health problems that could affect both, and finally followed by those studies without a gender perspective (2.8%). The literature reviews were also excluded

(n = 28). Similarly, in the final phase of the selection process, we assessed the quality of studies considering its specific design: cross-sectional[102], cohort and case-control[103]. We excluded medium (n = 41) and low quality studies (n=5). Finally we obtained 43 articles of the highest quality. From the analysis of these 43 studies we identified a set of exposures related to employment and working conditions and to balancing work and family life, which were constantly and differently distributed among women and men, affecting more women than men or vice-versa. In addition, we identified work-related health problems, which were also affecting differently and significantly a higher proportion of women than men or vice-versa. Based on the set of employment and working conditions, balancing job and family life and work-related health problems differently distributed among women and men; and on the 76 items of the 6th SNWCS, the research group proposed a set of 25 indicators of work-related gender inequalities, after a discussion process that took several meetings. The 25 work-related gender inequality indicators proposed were grouped into four dimensions of analysis before being applied to the 6th SNWCS: a) employment conditions, b) working conditions, c) balancing work and family life and d) work-related health problems.

a) Employment conditions

Employment conditions were measured with three indicators: 1) Work without a contract, 2) Work with temporary contracts, including contracts for work and service, casual, temporary, training, interns and temporary through a temporary employment agency and 3) Shift work, including rotating equipment working morning and afternoon or morning, afternoon and evening.

b) Working conditions

Working conditions were measured with nine indicators: 4) High noise levels, measured by a question on the perceived level of noise exposure, 5) High physical work demands, measured by the sum of six questions with five categories of response based on the level of intensity and frequency of exposure (Cronbach's alpha = 0.70). It was considered to be exposed to high physical work demands when the exposure of the worker was above

the median, 6) High demand / low control[106] considered when the worker was exposed to high psychological job demands and low job control, 7) High demand / low control / low support social[107], which incorporates the concept of social support. In both cases (6 and 7), psychological job demands were measured by the sum of 11 questions with five response categories (Cronbach's alpha=0.76); the control over the job demands with the sum over nine questions with five response categories (Cronbach's alpha=0.84) and the social support, with the sum of four questions with five response categories (Cronbach's alpha=0.80). Then, taking as cut-off the corresponding median, psychological job demands, control over job demands and social support were dichotomized into high psychological job demands above its median, and low control and low social support, below its respectively median values; 8) High effort / low reward[108]. Effort was measured by the sum of the same 11 questions with five response categories (Cronbach's alpha=0.76) as it was measured with the psychological job demands, since both are similar categories of analysis[107, 109, 110]. Reward was measured by the sum of five questions with five response categories (Cronbach's alpha=0.72). Both variables were dichotomized using as the cut-off the respectively median values, 9) Physical violence was measured from three questions with two response categories (Cronbach's alpha=0.58). We considered physical violence if workers answered yes to any of these three questions; 10) Bullying was measured by the sum of four questions with five response categories (Cronbach's alpha=0.83). Bullying was considered above the median value, 11) Sexual harassment was measured with a question with two response categories (yes or no) and 12) Discrimination was measured from seven questions with two response categories (Cronbach's alpha=0.64). Workers were considered to be discriminated if they answered yes to any of these seven questions.

c) Balancing work and family life

13) Conflict balancing work and family life and working with a full-time contract. Balancing work and family life was measured with the only available question in the 6th SNWCS and taking into account if workers were working with a full-time contract to

control the potential confusion factor that the type of contract could introduce in this analysis.

d) Work-related health problems

Work-related health problems were collected with a battery of 29 health problems. Depending on the importance that the worker gave to the work-related health problems, they were ordered from the highest (first mentioned) to the lowest importance given by the worker (eighth mentioned). The analysis of the work-related health problems were focused on the first mentioned health problem. The 29 response categories were grouped into 20 response categories following a regional and biological organic system framework. Of these 20 response categories, only 12 were included: six as indicators of physical health 14) Musculoskeletal pain at upper limb, 15) Respiratory symptoms, 16) Hearing loss, 17) High blood pressure, 18) Skin problems, 19) Venous diseases (varicose veins, thrombosis, etc.) and other four as indicators of mental health 20) Stress, 21) Depression, 22) Insomnia and 23) Chronic fatigue. We also analyzed 24) Injuries related to work accidents, collected with a question about the fact that the worker declared to have suffered injuries due to his or her tasks at workplace that required medical assistance and 25) Occupational diseases as any person who has been diagnosed or in the process of recognition of a professional disease.

Covariates

The adjustment variable for all analysis performed was the age of the worker (16-29, 30-39, 40-49, 50-65 and over 65 years). The stratification variables were the occupational social class (manual and non-manual) and the sector of activity of the company (agriculture, industry, construction and services). The occupational social class was built from the occupation classification used by the 6th edition of the SNWCS that was taken from the Census of Population and Housing in Spain in 2001[111]. The concept of occupational social class (manual and non-manual) refers to the type of work performed by the worker that means his occupation. Occupational social class is closer to a technological-cultural concept than to a social class concept. However,

occupational social class (manual, non-manual) was used in our study as a proxy of social class, because it has been highly correlated with social class and widely used in previous sociological studies[112]. We decided to stratify by the sector activity of the company because it is constituted by separate analytical categories (agriculture, industry, construction and services) and the existence of male-dominated sectors such as agriculture, industry and construction, and other feminized as services. In both stratifications variables the age remained as an adjustment variable.

Statistical analysis

Firstly, we described the sociodemographic characteristics of the sample separately in women and men. Secondly, we calculated the prevalence of exposure to each of the 25 indicators of work-related gender inequalities separately in women and men. For each of the 25 indicators of work-related gender inequalities was calculated crude odds ratio (cOR) and adjusted odds ratio (aOR) by age, with its confidence intervals of 95% (95% CIs) being men the reference category. The cOR and aOR, and their CI95% were obtained using logistic regression models. For the calculation of each of the 25 indicators we excluded workers that gave for an answer not know (a maximum of 190 men and 145 women) or did not answer the question (a maximum of 117 men and 80 women). Finally, we stratified each of the 25 aOR calculated by occupational social class (manual and non-manual) and sector of activity of the company (agriculture, industry, construction and services). To evaluate the possible interaction of each of the 25 indicators analysed with gender we used the likelihood ratio test. Logistic regression models, adjustments and stratifications were performed with SPSS v15.

4.3. Paper 3

Participants and study sample

Data were obtained from the Fourth edition of the European Working Conditions Survey (4th EWCS)[113]. Briefly, the sample design was a multi-stage random sample including 31 European countries. More details about the sample selection process and

the characteristics of the sample could be tackling in Appendix III. An employed person was defined as one who was aged 15 years or older and had any paid job during the week in which the interview was held or who had a job but was temporarily absent[114]. Trained interviewers at workers' homes between September and November 2005 conducted 29,680 interviews (16,558 in men) and 13,122 in women. The same questionnaire (Appendix III), translated into 27 different languages and 15 language variants, was used in all countries covered. The final sample of our study included 15,063 men and 12,402 women. The average response rate was 48% for all eligible participants, ranging from 28% in The Netherlands to 69% in the Czech Republic. The countries included in the survey were grouped into five welfare state regimes, following Eikemo[58] and Bambra's[59] standard classification. We used the following typologies of welfare state regimes: Scandinavian (Finland, Norway, Sweden, and Denmark), Anglo-Saxon (Ireland and UK), Continental (The Netherlands, Germany, Switzerland, France, Belgium, Austria, and Luxembourg), Southern (Spain, Portugal, Italy, and Greece), and Eastern (Latvia, Lithuania, Estonia, Bulgaria, Poland, Slovenia, Croatia, Hungary, Slovakia, Romania, and the Czech Republic). Malta, Cyprus and Turkey, although they were included in the 4th EWCS, were not considered in our analysis, because they did not match any of the welfare state regime characteristics. Table 2 summarizes the characteristics of each welfare state regime, and our hypothesis about how the social protection policies and socio-cultural traditions of each welfare state regime could be affecting gender inequalities in the exposure to work-related psychosocial hazards.

Table 2 Researchers' hypothesis of influence on gender inequalities in the exposure to work-related psychosocial hazards based on the common features of social/work protection policies and socio-cultural context of the welfare state regime

	Social/work protection policies[57-59]	H	Socio-cultural context[52, 66, 115-117]	H
Welfare state regime				
Scandinavian				
Finland Norway Sweden Denmark	The state promotes social equality of the highest standards through a redistributive social security system, providing highly decommodifying programmes, universalism and generous social transfers, a commitment to full employment and an important social protection system and a	++	Social-democratic. The well-being of their citizens is largely independent in social provisions from family roles. Child care and house work are well balanced between women and men. The male bread-winner model is not relevant.	++

strongly interventionist state. The well-being of their citizens is largely independent of prevailing market conditions.

Continental

<p>Netherlands Germany Switzerland France Belgium Austria Luxembourg</p>	<p>Benefits are often earnings related, administered through the employer; and geared towards maintaining existing social patterns. The redistributive impact is minimal. However, the role of the market is minimal. Social expenditures are high and social benefits are good. Social security is tied to labour market position.</p>	<p>+ +</p>	<p>Conservative-corporatist. The role of the family is emphasised. Child care and house work is acceptably balanced between women and men. The male bread-winner model is not relevant.</p>
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Anglo-Saxon

<p>Ireland United Kingdom</p>	<p>The state provision of welfare is minimal, social protection levels are modest and often involve entitlement criteria, and recipients are usually means-tested and stigmatized. The state minimises the decommodification effects of the welfare state regime and a rigid division exists between those, largely the poor, who rely on state aid and those who are able to provide for themselves.</p>	<p>+ +</p>	<p>Conservative-Liberal. The role of the family is not overly emphasised. Child care and house work is acceptably balanced. The male bread-winner model is relevant.</p>
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Southern

<p>Spain Portugal Italy Greece</p>	<p>Characterised by a fragmented system of welfare provision which consists of diverse income maintenance schemes that range from the meagre to the generous and welfare services, particularly, the health care system, that provide only limited and partial coverage.</p>	<p>- -</p>	<p>Conservative. The role of the Catholic church and the family is crucial and reliance on the voluntary sector is also emphasized in social provision. Childcare and housework is quite unbalanced, with women assuming most of these responsibilities. The male breadwinner model is much more relevant.</p>
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Eastern

<p>Latvia Lithuania Estonia Bulgaria Poland Slovenia Croatia Hungary Slovakia Romania Czech Republic</p>	<p>The formerly Communist countries of the East Europe have experienced the demise of the universalism of the Communist welfare state and a shift towards policies of marketization and decentralization. They also have limited welfare services. These countries have experienced extensive economic upheaval and have undertaken comprehensive social reforms. They have emphasized the Liberal regime approaches of marketization, decentralization and the reform of health insurance schemes. In comparison with the other member states of the European Union, they have limited health service provision, and overall population health is relatively poor. However, these countries clearly comprise the most underdefined and understudied regions.</p>	<p>-- --</p>	<p>Post-state-socialist countries. Difficult to categorize as conservative-corporatist, liberal or social democratic. The role of the family is crucial. Traditional gender-roles and patriarchy within the family remains, so that childcare and housework is quite unbalanced, with women assuming most of these responsibilities. The male breadwinner model is relevant.</p>
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H: Researchers' hypothesis of influence on gender inequalities in the exposure to work-related psychosocial hazards: strongly decreasing ++, moderately decreasing +, strongly increasing - - and moderately increasing -

Independent variable

The main explicative variable along the whole study was sex.

Dependent variables

Work-related psychosocial hazards

The demand/control[106], demand/control/social support[107], and effort–reward imbalance models[108], which have been widely used in occupational health research to characterize psychosocial work environments, were followed as a guide for the measurement of the exposure to work-related psychosocial hazards. Job demands were measured through two items with seven response categories and three items with five response categories[113] (Cronbach’s alpha=0.61); job control was assessed with five items with five response categories[113] (Cronbach’s alpha=0.71) and social support with three items with five response categories[113] (Cronbach’s alpha=1.00). Psychosocial job effort was measured through two items with seven response categories[113] and three items with five response categories[113] (Cronbach’s alpha=0.61); and reward was measured by seven items with five response categories[113] (Cronbach’s alpha=0.80) (Appendix VI). Response categories with five options were labelled from 1=almost always to 5=almost never, and those with seven options were labelled from 1=all of the time to 7=never. We calculated the total sum of the scores given for all items used to measure each work-related psychosocial factor. Work-related psychosocial factors were dichotomized on the median. All values equal to or under to the median for each work-related psychosocial factor were classified in the lower exposure category (low-control, low-support, and low-reward). Conversely, all values over the median for each work-related psychosocial factor were classified in the higher exposure category (high-demand and high-effort). The median was used as a reference point, because there was no other objective standardized reference scale. Moreover, several previous studies that have based their analyses of work-related psychosocial hazards on working conditions surveys have also used the median in this way[40]. Work-related psychosocial factors were combined to create three work-related psychosocial hazards: (1) high strain, which represents workers with a score above the median for job demands and equal to or below the median for control; (2) iso-strain, which represents workers with a score above the median for job demands and equal to or below the median for control and social support; and (3) effort–reward imbalance,

which represents workers with a score above the median for effort and equal to or below the median for reward.

Covariates

The adjustment variable for all analysis performed was the age of the worker (15–24, 25–34, 35–44, 45–54, and 55 or over). Other variables, used to explain gender inequalities observed, were: (1) marital status; (2) family burden, measured as time invested in caring for relatives (children and elderly/disabled); (3) sector of economic activity of the company; and (4) part-time/full-time status[113]. Marital status was derived from one survey question: “Are you married or living with your partner?” (yes/no). The variable family burden was assessed with the question “How many hours per day are you involved in caring for and educating your children or caring for elderly/disabled relatives?” The number of hours per week was calculated by multiplying each reply by 7. We assumed that the worker reported the mean number of hours worked per day considering the whole week. We generated four categories: from 1 to 14 hours a week; from 15 to 21, from 22 to 35 and 36 or more hours a week. Economic activity of the company was determined according to the statistical classification of economic activities of the European Community (NACE11)[113] and was grouped into four sectors: (1) agriculture (agriculture and fishing); (2) industry (manufacture and mining, electricity, gas and water supply, wholesale and retail trade); (3) construction (construction); and (4) services (hotels and restaurants, transport and communication, financial intermediation, real estate, public administration and defence, education and health). Finally, part-time/full-time status was derived from one question, which asked “do you work part-time or full-time?” with two possible answers: part-time or full-time. The analysis was stratified by occupational social class as a proxy for social class[112]. Occupation was grouped into three categories: (1) managers/professional (legislators and senior officials and managers, professionals, technicians, and associate professionals); (2) clerks/service/shop workers (clerks, service workers, and shop and market sales workers); and (3) manual workers (unskilled agricultural and fishery workers, craft and related trades workers, plant and machine operators and assemblers, elementary occupations). This operationalization of the

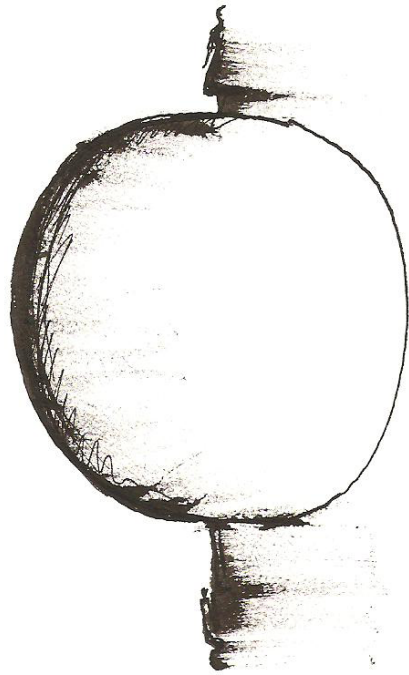
occupation into three categories of occupational social class was based on the five categories of the Registrar-General's Social Classes classification (RGSCs): I: professionals; II: managers, III non-manual: skilled non-manual; III: manual: skilled manual; IV: semi-skilled manual; V: unskilled manual. The RGSC classification is based on occupational skill and has been widely used in previous reports and studies focusing on social class[118].

Statistical analysis

We calculated the proportion of men and women in each category of occupational social class overall and within each welfare state regime, and differences were analyzed using the Chi-square test with its P values. Then, we calculated the prevalence of high strain, iso-strain, and effort–reward imbalance in men and women in the whole sample and separately in each of the five welfare state regimes and applied the Chi-square test with its P values to analyze gender differences. In addition, multivariate logistic regression models were used to estimate crude and adjusted prevalence ratios (PRs) and 95% confidence intervals (95% CIs) for all 28 countries together and separately for each of the five welfare state regimes, considering men as the reference group. Age was the common adjustment variable. After age adjustment, the following four independent adjustment models were applied to the PR to try to explain the gender inequalities observed: Model 1 (M1), PR adjusted for age and marital status; Model 2 (M2), PR adjusted for age and family burden; Model 3 (M3), PR adjusted for age and sector of economic activity of the company; and Model 4 (M4), PR adjusted for age and part-time/full-time status. All analyses were done separately for managers/professionals, clerks/service/shop workers, and manual workers. Respondents who did not answer the questions[113] needed to characterize work-related psychosocial hazards were excluded from our analysis (a maximum of 89 men and 75 women). Analyses were performed using SPSS v15 and Stata v9. To enhance the representativity of our results, we applied two types of weighting to the data[113]: selection probability weighting and non-response weighting. Both weightings were applied to the data before starting the analysis and the process of constructing the dependent variables. Selection probability weighting was applied to avoid the consequences of giving more probability of

selection to respondents living in smaller households. Non-response weighting was applied to avoid a bias in the estimations caused by the different response rates. The missing values were left out of the analysis after applying both weightings.

5. RESULTS



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5. RESULTS

“In the nineteenth century, the central moral challenge was slavery. In the twentieth century, it was the battle against totalitarianism. We believe that in this century the paramount moral challenge will be the struggle for gender equality around the world”

*Nicholas D. Kristof, Half the Sky: Turning Oppression into Opportunity for Women
Worldwide, 2009*

5. RESULTS

5.1 Paper 1

Campos-Serna J, Ronda-Pérez E, Artazcoz L, Moen BE, Benavides FG. Gender inequalities in occupational health related to the unequal distribution of working and employment conditions: a systematic review. *Int J Equity Health*. 2013 Aug 5;12(1):57. Open Access. Highly accessed article. Impact Factor: 1.84

5.2 Paper 2

Campos-Serna J, Ronda-Pérez E, Artazcoz L, Benavides FG. [Gender inequalities in occupational health in Spain]. *Gac Sanit*. 2012 Jul-Aug;26(4):343-51. Spanish. Impact Factor:1.33

5.3 Paper 3

Campos-Serna J, Ronda-Pérez E, Moen BE, Artazcoz L, Benavides FG. Welfare state regimes and gender inequalities in the exposure to work-related psychosocial hazards. *Int J Occup Environ Health*. 2013 Jul-Sep;19(3):179-95. Impact Factor:1.03

5. RESULTS

This section presents the three articles that compound the core of this dissertation as the results.

5.1. Paper 1

Campos-Serna J, Ronda-Pérez E, Artazcoz L, Moen BE, Benavides FG. [Gender inequalities in occupational health related to the unequal distribution of working and employment conditions: a systematic review](#). *Int J Equity Health*. 2013 Aug 5;12(1):57. Open Access. Highly accessed article. Impact Factor: 1.84

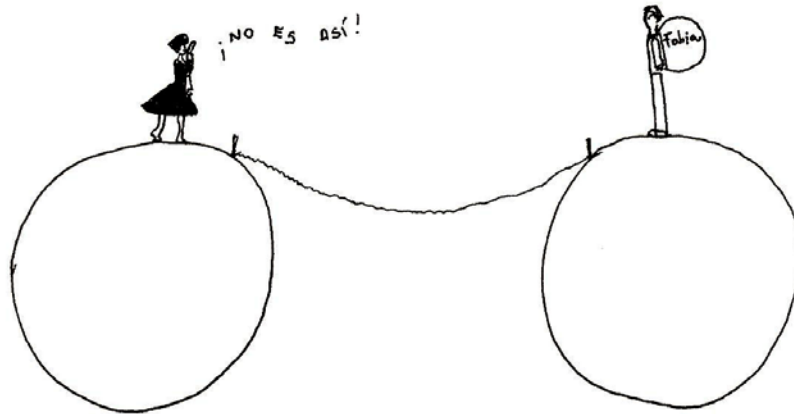
5.2. Paper 2

Campos-Serna J, Ronda-Pérez E, Artazcoz L, Benavides FG. [[Gender inequalities in occupational health in Spain](#)]. Gac Sanit. 2012 Jul-Aug;26(4):343-51. Spanish. Impact Factor:1.33

5.3. Paper 3.

Campos-Serna J, Ronda-Pérez E, Moen BE, Artazcoz L, Benavides FG. [Welfare state regimes and gender inequalities in the exposure to work-related psychosocial hazards.](#) Int J Occup Environ Health. 2013 Jul-Sep;19(3):179-95. Impact Factor:1.03

6. DISCUSSION



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6. DISCUSSION

“C'est par le travail que la femme a conquis sa dignité d'être humain; mais ce fut une conquête singulièrement dure et lente”

Simone de Beauvoir, Le deuxième sexe I, 1999

6. DISCUSSION

6.1 Main results

6.3 Strengthens and limitations

6.3 Recommendations and further lines of research

6. DISUSSION

This section presents and discusses firstly the main results of each of the three articles that compound the core of this dissertation, secondly shows their strengths and limitations and finally introduces implications, applicability and recommends further research lines.

6.1 Main results

Results from the first paper show that more women than men have lower control on the job demands; otherwise, men are more exposed to high job demands, less social support and higher effort-reward imbalance than women do. In addition, men are exposed to longer work hours, higher degree of physical demands and noise at the workplace, and occupy higher job positions than women. However, more women than men reported poorer self-perceived mental and physical health and job insecurity. In addition, more women than men have worse contractual working conditions, as they are temporary contracts, work without a contract or in part-time jobs.

Accordingly, to our findings, several studies have indicated that employed women experience worse psychosocial working conditions than employed men, and that a higher health burden might result from these exposures[31-33]. Furthermore, other studies have found that men experience higher job demands, effort, and overcommitment; and lower social support at work; whereas women exhibit lower job control, higher emotional job demands and higher job reward[34-36]. In addition, women's jobs are characterized by a greater level of monotony, with lower participation in planning, higher demands, more psychological and sexual harassment, higher exposure to the public, lower salaries, fewer prospects for promotion, and more precariousness than those of men[8, 37, 100]. Studies have also found that more women than men work with a temporary contract, without a contract or in a part-time job[20, 46, 96, 119]. Finally, also many studies have showed that not only more women than men suffer musculoskeletal problems, but also mental health problems[1, 2, 8, 100, 120].

In relation with the second objective, we found that in Spain there are important work-related gender inequalities, mainly related to working and employment conditions and work-related health problems. In addition, occupational social class and the economic sector of the company have a relevant influence on these gender inequalities. Women have more unfavourable contractual relations, a higher exposure to work-related psychosocial hazards and a higher prevalence of sexual harassment, discrimination and musculoskeletal problems than men do. On the other hand, a higher prevalence of men than women work in shifts works, exposed to high levels of noise and high physical demands, and suffering injuries related to occupational accidents. While, temporal contracts, work-related psychosocial hazards, discrimination, musculoskeletal pain of the upper limb and professional diseases are higher among women non-manual workers, working without a contract and suffering sexual harassment are higher among women manual workers compared with their respectively men counterpart. In general, work-related gender inequalities are considerable higher in the industrial sector, which is a masculinised sector. In the industrial sector, we observe a more remarkable proportion of women than men working without a contract, suffering sexual harassment, discrimination and musculoskeletal pain of the upper limb, in contrast with the service sector where the same inequalities were also observed, but less marketed. In addition in the agriculture and construction sectors these gender inequalities were not observed. However, only in the construction sector women suffer four times more occupational stress than men do.

As we found in our systematic review[121] coinciding with other previous studies[20, 96, 122], women have more unfavourable contractual relations than men do. It means that more women than men work in Spain without a contract or with a temporary contract. That fact implies that more women than men will be exposed to worse work-related hazards derived from their working conditions and will have a reduced access to social protection benefits of labour as for example: paid annual and maternal/paternal leave, temporary incapacity and unemployment benefits[122]. The observed association between being women and working without a contract could be explained, in part, by the high percentage of existing women in the domestic and caring services sector[123,

124] (14.6% vs. 1% of men according to the Spanish Labour Force Survey, 2009[125]), since according to the current legislation when the NSWCS was held in 2007, it was considered legal to work without a contract to any person who engages in domestic and caring services exclusively a time less than 72 hours a month[126]. That more women than men are working without a contract or with a temporary contract could be also explained by less power that women have compared to men in bargain their employment conditions[26, 127] and by the higher discrimination that women suffer in the workplace[96]. The “glass ceiling” phenomenon, which is a metaphor for the invisible barriers that prevent women from reaching positions of power that are occupied by men, and the so-called “sticky floor” phenomenon, which prevents women from loosening the emotional ties that bind them to the rest of the members of the family unit could be reinforcing these two gender inequalities[25].

According to one of the main findings of our systematic review[121], employed women experience worse psychosocial working conditions than men. In Spain, a higher proportion of non-manual employed women are exposed to high demand and low control, high demand, low control and low social support compared to men in the same occupational social class, which match with the results of previous studies[10]. In addition, more women than men were exposed to high effort and low reward in the industrial sector and in the non-manual occupational social class. This result, that agrees with previous studies[83], but contrast with the results of our systematic review[121], could be related to any mechanisms of discrimination that more women than men suffer in their workplace, specifically associated with gender[96], which in our study was also higher in the industrial sector and among non-manual women compared to men in the same economic sector of the company and the same occupational social class. This discrimination that women suffer higher than men in the workplace has been found in previous studies[96] and could be explained partly by the marked vertical segregation of the Spanish labour market, which places women in the lower positions of the decision making scale and also by horizontal segregation that generates and perpetuates masculinised (industry and construction) and feminised sectors of economic activity (services), where gender roles are more marked[25]. For example, the asymmetry in duration between women and men in the maternal/paternal leave women in an inferior

position than men in the workplace. However, it would be require further research to contrast and clarify these hypotheses.

We has also found that more women than men suffer sexual harassment, but less marked than other previous studies conducted in Spain[128]. The existence of a higher proportion of women than men experiencing sexual harassment could be explained by aspects of a culture which are deeply rooted and built on the pillars of patriarchy and men domination systems that express their masculinity through sexual harassment[128]. In addition, it could be explained by vertical segregation, that generates gender inequalities in power, which place men in a position of greater power over women, and horizontal segregation that creates men dominated sectors of economic activity of the companies. This hypothesis is consistent with the fact that the proportion of women compared to men that suffer sexual harassment is even higher in the industrial sector, which is mainly dominated by men (75.3% are men), in contrast with the service sector which is a feminised sector. In fact, only in the industrial sector more women than men suffer bullying reinforces this hypothesis. Perhaps that is why the origin of gender inequalities in occupational health is based in cultural aspects, which are built on men domination of women and expressed by andocentric models through processes of sexual harassment, discrimination and bullying against women in the workplace. More specific research is needed to clarify this hypothesis.

In this study we did not detect any gender inequalities in balancing job and family life, contrary to what we expected. Previous studies have found more women than men having problems in balancing job and family life[83, 129-132]. Family demands have not been associated with men's health whereas married women who lived in family units of more than three members had been found having a higher risk of poor self-perceived health status and of psychosomatic symptoms. Among women, working more than 40 hours a week was also associated with poor self-perceived health status and, additionally, with a higher probability of medical visits[129]. Responsibilities over domestic work and childcare are still over women's shoulders compared to men[86, 129, 130, 132]. Perhaps, this could be one of the main reasons because more women than men occupy part-time jobs as we found in our systematic review[121]. Although

women's conflicts in balancing job and family life could be improved by working part-time hours, part-time jobs are segregated into a narrower range of occupations than full-time jobs[46, 47]. These narrow ranges of occupations are typically lower-paid, lower status, more monotonous, with fewer opportunities for advancement and related to job insecurity. In addition, part-timers have fewer social-work-benefits, less professional promotion, fewer opportunities to occupy managerial position in the company and are exposed to worse psychosocial work environments than full-timers[47, 48, 67]. While men invest more hours a week than women in paid work, as we found in our systematic review[121], more women than men invest more hours a week working if we sum the time invested in paid and unpaid work (domestic and childcare)[130, 132]. It is also important to remark here that the more time women than men invest in childcare will explain in certain degree because more women than men are exposed to work-related psychosocial hazards in Europe[133]. The fact that we did not find any gender inequalities in balancing job and family life in Spain could be due to the limited information collected by the questionnaire of the sixth edition of the SNWCS. The inclusion of other specific items related to the family structure (living or marital status, number and age of the family members or number and age of disable family members) or to the use of time (time spent on paid work, domestic work, care of children, elderly, disable relatives), as do other questionnaires like the fourth edition of the EWCS, is essential to improve in the SNWCS the analysis of gender inequalities in balancing job and family life.

The Spanish study shows that a higher proportion of women suffer from work-related health problems than men. Not only do more women than men report musculoskeletal symptoms, but also occupational stress. These results match with those found in our systematic review[121] and also with previous studies[15, 17]. Although some studies has associated the inequalities in reporting musculoskeletal symptoms with differences between women and men in their vulnerability to suffer musculoskeletal affections[134], other studies has postulated that these inequalities are based on the horizontal segregation of the labour market, which places women in workplaces that requires repetitive movements and with a highly exposition to psychosocial hazards[135, 136]. Part of the explanation could be due to the unequal distribution of

domestic and caring work, which makes women more time exposed to the same risk factor as in paid work (double burden)[25, 119]. This fact reduces recovery time in women compared to men after a day of work, a situation that is associated with increased musculoskeletal symptoms[135]. More women than men suffered occupational stress in the construction sector, which is a masculinised sector, nevertheless more men than women were found suffering occupational stress in the industrial sector, which is also a masculinised sector of activity and were more women than men suffer sexual harassment, discrimination and bullying. More specific studies are needed to clarify these complex findings. These findings could perhaps be explained by the greater work-related psychosocial hazards under which women work in the workplace and at home. As we have printed out, despite the dramatic increase of women in the labour market in recent decades, there have been no significant changes in the distribution of domestic work, even when both partners are working full time. Domestic tasks are still unequally distributed, with most of them (for example, caring for children, the elderly and disabled people) remaining women's responsibility[46].

Finally, in relation with the third objective, we found that women are highly exposed than men to high strain, iso-strain, and effort–reward imbalance than men in Europe as a whole. However, in contrast to our hypothesis, gender inequalities in the exposure to work-related psychosocial hazards show only slight variation across all welfare state regimes, and are distinctly higher in managers/professionals than in clerk/service/shop and manual workers. In addition, the Scandinavian welfare state regime shows the highest gender inequalities in the exposure to work-related psychosocial hazards among managers/professionals and clerk/service/shop workers, being more women than men exposed to these work-related hazards. On the other hand, the Eastern welfare state regime was the only one in which gender inequalities in the exposure to work-related psychosocial hazards, with more women than men exposed, were detected across all occupational social classes.

In relation to this highest gender inequalities found in the exposure to work-related psychosocial hazards (high strain, iso-strain, and effort–reward imbalance) in the Scandinavian welfare state regime, our results contrast with those by Dragano et al.[68],

who observed that the psychosocial work environment (low control and high effort-reward imbalance) was better in those welfare state regimes with more generous systems of social and labour market protection policies. However, the data in that study were not analyzed separately by gender and were not stratified by occupational social class. Nevertheless, our results which show the highest gender inequalities in the exposure to work-related psychosocial hazards in those welfare state regimes with greater social protection policies are consistent with those of Bambra et al[72], who used a similar classification of countries and which also analysed data separately by gender, although they did not include Eastern European countries and did not stratify by occupational social class. Bambra et al[72] found that women in the Scandinavian regime and in the Netherlands were more likely to report poor self-perceived health status than men. Their findings make sense in relation to our results of higher exposure to work-related psychosocial hazards in women than men (high strain, iso-strain, and effort-reward imbalance) in those regimes with more favourable social protection policies. Furthermore, it has been suggested that the mechanisms at play in terms of gender and health, and by extension, of the exposure to work-related psychosocial hazards, cannot be overcome by the traditional social democratic welfare interventions of income redistribution and extensive public service provision alone[137].

To explain these surprising results related to the higher proportion of women than men exposed to work-related psychosocial hazards in the Scandinavian welfare regime among manager/professionals we propose five different plausible explanations as a hypothesis that should be tested separately in more specific future studies.

The first obvious explanation could be that the social and labour market protection policies promoted in the Scandinavian welfare regime do not properly integrate the gender perspective; that is to say, the perceptions, experiences, knowledge and interests of women and men, and do not situate the gender equality issue at the centre of analyses and policy decision. Thus, they are not adequate to tackle gender inequalities in exposure to these psychosocial hazards[138-140]. It could be that Scandinavian social and work protection policies may not be sufficient to guarantee equal opportunities for

employed women and men entering in a competitive androcentric labour market[25, 30].

The second explanation comes from the fact that the traditional Scandinavian welfare intervention of income redistribution and extensive public service provision is not sufficient to overcome such inequalities[72, 137]. It has also been argued that such policies have transferred women's economic dependency from the family to the state, from private to public patriarchy[141, 142]. Thus, some studies posit that these social protection policies alone cannot adequately overcome gender-based inequities in occupational health without accompanying changes at the cultural and societal levels[72]. This transfer from "the private to the public patriarchy" is mainly seen in the Continental welfare states, where generous "out-of-work-subsidies" are keeping women out of work (e.g. long maternity leave in Germany). In contrast, Scandinavian welfare states are keeping women in the labour market, which could result in less favourable outcomes on work-related psychosocial hazards. It is precisely in countries that promote policies to keep a large proportion of women (young mothers) in the labour market — women who at the same time have heavy family responsibilities — that the double burden may be expected to be very strong. This argument is consistent with the reduced proportion found in the Scandinavian welfare states among managers/professionals for job strain, iso-strain, and effort–reward imbalance after adjusting for the time spent in caring for children and the elderly (family burden), a task which is traditionally assumed by women[25, 66]. Although it has been argued that in cases of double burden, women are more tempted than men to exchange full-time jobs for part-time jobs (with lower quality: less job control, similar job demands, and reduced wages)[67], this may be only part of the explanation, since we noticed no differences in the PRs after adjustment for part-time/full-time status. Thus, in the Scandinavian welfare state, the larger proportion of women among manager/professionals that do not change working hours or job contents, while at the same time are assuming traditional family responsibilities in caring for children and the elderly could be the main explanation for women's higher exposure to work-related psychosocial hazards. A nuance of this hypothesis could be that the double burden issue added to the pressure of the work sphere could affect women managers/professionals,

clerk/service/shop, and manual in different ways. For example, the effect on managers/professionals could be more independent of the welfare state regime in place, while women working as clerk/service/shop and manual may generally assume a more traditional role as wife, mother, and worker, while being “protected” under the “male breadwinner” model[72].

The third possible explanation for the higher prevalence of women compared to men of being exposed to work-related psychosocial hazards among managers/professionals, could come from a difference in self-perceived exposure, and of what exactly is understood by “a good job,” since standards for job quality may be different between countries, based on social identity aspects related to the socio-culture context in the welfare state regimes[143]. In addition, androcentric models of education could influence women’s perceptions of their work. Cultural and educational values may also shape structures of social inequality, the division of labour, the labour market, and the family, mitigating and/or reinforcing the effect of social welfare policies. Ideas and perceptions may vary according to material interests of social groups, but can also be shared by a majority of the population independent of their material interests[115]. These cultural and educational values could facilitate or hinder the worker’s report of being exposed to work-related psychosocial hazards in the different socio-cultural contexts of the welfare state regimes. This could mean that because of the differences in the educational process and the different socio-cultural contexts of the welfare state, women in the Scandinavian welfare state are more sensitive to the perception of work-related psychosocial hazards than in the Southern regime[72, 143].

The fourth plausible hypothesis could be that in those welfare states with a longer tradition of egalitarian working policies, women are increasingly moving to the top of the hierarchy within the workplace. However, while gender equality may be growing, women could be occupying intermediate positions involving important responsibilities but lacking the level of control needed to mitigate job demands without interfering with their care-giving duties at home. All these hypothesis should be tested empirically in future researches.

Finally, it is possible that gender egalitarian policies have major unexpected side effects. Mandel and Semyonov[144] claim that employing women in the public sector in countries with highly developed gender egalitarian policies is likely to increase rather than decrease the gender gap in rewards, based on an argument that public sector jobs could be linked to worse work-related psychosocial hazards, such as job strain and effort–reward imbalance. Mandel and Semyonov[144] argue that in highly developed welfare states the “glass ceiling” has become lower and wider resulting in reduce access to positions of power, authority, and with high economic rewards for women in higher occupational groups. In general, public policies do not enhance women’s occupational and economic achievements, since none of them seriously challenges the traditional distribution between men and women of market–family responsibilities. The Scandinavian gender egalitarian care policies have shown that the availability of a publicly-funded social care system unintentionally depresses women’s earnings by intensifying their concentration in feminized service jobs and lowering their representation in highly-paid, men dominated positions[145].

6.2 Strengthens and limitations

Each of the three studies included in this thesis dissertation present several limitations. The systematic review has important limitations. One of these limitations could remain in the literature search strategy, the keywords or the inclusion and exclusion criteria used in our review, which were specifically focused on finding studies analyzing the different distribution among women and men in the exposure to occupational hazards in terms of working and employment conditions as determinants of gender inequalities in occupational health. This could be may the reason because we did not find any study analysing bullying, sexual harassment, discrimination and the gender-wage gap ratio in terms of median hourly wage for comparable work from a gender perspective, otherwise all of them have been highlighted as determinants of gender inequalities[146-149]. This could be also the reason that justify that we only found one study integrating the gender perspective to the influence of the occupational social class on the unequal distribution of work-related hazards arising from the working or employment conditions[86]. Otherwise, the occupational social class has been also presented as an important

determinant of gender inequalities in the field of occupational health[46, 79, 80]. Another explanation for this lack of findings could be that these aspects of discrimination, sexual harassment, bullying, gender-gap in wages and the influence of the occupational social class on gender inequalities have been insufficiently investigated in the field of occupational health and the need more research. Another limitation in this review is that some of the differences identified as existing between women and men in some studies were not statistically significant, or that a statistical analysis of significance was simply not conducted. However, the differences shown are present in the highest-quality studies available. Although MEDLINE and EMBASE include both biomedical and sociological references, the indexed scientific literature may not cover all investigations of the impact of gender inequalities as a determinant of occupational health. Therefore, many other studies that reflect gender inequalities may be also published in other documents that are less easily identifiable, the so-called grey literature. However, we applied a highly sensitive search strategy, which produced an optimal result in both databases. Another limitation could come from the possibility of missing articles published in languages other than English or Spanish. However, the language of the article did not initially limit the search strategy, thus articles in a different language also followed the steps in the selection process. In addition, provision was made for translating and including any foreign-language article considered key in this field. Finally, most of the studies analysing how hazards related to working and employment conditions are unequally distributed among women and men, have been mainly conducted in Europe, following a cross-sectional design and have been mainly focused on the unequal distribution of work-related psychosocial hazards.

Furthermore, the second paper has also important limitations. Firstly, the SNWCS is a cross-sectional tool that was not specifically designed to analyze work-related gender inequalities. However, this study is based on the best information available, from the sixth edition of the SNWCS, which was performed for its first time at the worker's home[91]. This fact makes the SNWCS an instrument of great importance in the identification, analysis and monitoring of gender inequalities in occupational health. Another limitation to be noted is the low internal consistency in the scales assessing discrimination and physical violence. This low consistency in the scales could be

caused, because the questions used in the questionnaire were not the most appropriate. On the other hand, in the case of discrimination, the questions used corresponded to the global accepted recommendations of measurement[150].

Although the cross-sectional design represents a study limitation of our third paper, a major strength is that it was carried out with data from a large population, which were collected and controlled through a rigorous quality-protocol for the EWCS[113]. However, a limitation, could come from our choice of welfare state typology, which may have obscured or highlighted some differences in employment organization and work design. It is also possible that neither socio-cultural elements nor the state approaches to reducing gender inequalities were captured by the classification typology followed in our study[59, 151]. The fact that researchers do not yet completely agree on which countries should be included in the Eastern welfare state regime must also be considered[59, 62]. However, the rest of the welfare state typologies used in our study (Scandinavian, Continental, Anglo-Saxon, and Southern) have been described as one of the most empirically accurate one[61, 62, 72]. Another important limitation is the possibility that the models used to characterize work-related psychosocial hazards were not properly represented in the questionnaire items of the EWCS[113]. A further limitation is the fact that only the summary scales (job strain, iso-strain, and effort–reward imbalance) were considered, rather than their constituent subdimensions (high demand, low control, low support, high effort, and low reward). Although the internal consistency and reliability of the summary scales (Cronbach’s alpha) was quite acceptable[152, 153], doing similar analyses with the separate sub-dimensions instead of the summary scales could have shown different results. Nevertheless, exposure to work-related psychosocial hazards as reflected in the summary scales has been found to be correlated with physical[38] and mental disorders[39]. Although the response rate varied widely across all countries, the average was quite acceptable for this type of study. In addition, a specific weight was applied to control the non-response rate[113]. Another possible limitation could stem from the difficulties of translating the survey questions into different languages, cultures, and contexts, which could involve a certain degree of misunderstanding. However, the survey used validated questions and scales. Furthermore, both the linguistic issue and the cultural and contextual aspects were taken

into account in the translation process[113]. Thus, misunderstanding of the questionnaire should not introduce a limitation per se. In addition, trained and experienced interviewers participated in the survey process and the interviewers were subject to random quality controls. A final limitation could be researchers' decision to operationalize the occupational social class into three categories instead of the five proposed by the RGSC classification[118]. However, this decision was necessary so that the occupational groups would be sufficiently large to maintain the statistical power in the analysis.

6.3 Recommendations and further lines of research

It is highly recommended to increase the gender perspective in future research in occupational health. To include the gender perspective means to explore thoroughly women – men exposure differences, not only paying attention to biological, but also socio-political mechanisms in the complex pathways, which interacts between the exposure to work-related hazards and the outcomes as the impact on worker's physical and mental health. To include the gender perspective also means to take into account the particularities of women and men along all the scientific process, from the design of the study until the discussions of the results and of course in the conclusions and recommendations given.

In future editions of the SNWCS, the worker's questionnaire should introduce some modifications, such as including items on the domestic and family sphere, which would allow researchers to tackle gender inequalities in balancing job and family life and how the unequal distribution of domestic task could be influencing gender inequalities in the workplace, which remains unclear after all. All these items are already included in the EWCS, but not in the SNWCS.

One recommendation to reduce the gender inequalities observed in the exposure to work-related psychosocial hazards will be to share more equally the domestic and caring duties among women and men.

More studies related to sexual harassment, bullying and discrimination are needed in occupational health from a gender perspective, taking also into account the occupational social class.

More specific research on how the different types of discrimination (religion, ethnicity and gender) are connected with the worse contractual employment conditions that more women than men held in the workplace are required.

More research should be invested in analyse whist the poorer self-perceived mental and physical health status and job insecurity that more women than men perceived, could be due to the worse contractual working conditions that more women than men did held and by the higher job positions that more men than women did occupy.

It will be of great interest to analyse if the poorer self-preceived mental and physical health status and the higher job insecurity that more women than men perceived are due to the worse contractual conditions that more women than men held or to the higher job positions that more men than women occupy.

More effort should be invested in disentangle what is happening in the industrial and services sectors, a masculinised and a feminised sectors of activity, where gender inequalities analysed in Spain have been found higher. In addition, further work should be done with the gender inequality indicators proposed, trying to identify those which are more sensitive to gender inequalities in occupational health. To achieve this, both the SNWCS and the EWCS could be used. To monitor a long time these more sensitive gender inequality indicators should be of great interest to analyse how social context or policies developed in gender equity could be influencing gender inequalities in occupational health. For example, replicate the same analysis with the last edition of the SNWCS, which have data collected in 2010, will permit to tackle the effects of the global economic crisis on gender inequalities related to working and employment conditions and work-related health problems. The same action could be done analysing the last edition of the EWCS published in 2011. In this sense, taking into account the most sensitive gender inequality indicators specific software could be developed to

monitor gender inequalities using the data from the SNWCS and the EWCS, which are periodically conducted. Going further, the matrix and the results of these analyses could be transfer to researchers and the general population from a interactive website.

Another very interesting analysis will be to take into account age and ethnicity since they also are other two pillars of gender inequalities in occupational health. Moreover, compared some gender inequality indicators within different national or regional working conditions surveys as the recently conducted first edition of the Central America Working Condition Survey (CAWCS) will be of great interest. This action will permit to analyse how gender inequalities in occupational health could vary in different socio-cultural context.

To analyse the impact on physical and mental health of the unequal distribution of work-related hazards among women and men in general and work-related psychosocial hazards in particular, will be also of great interest not only in Spain but also in Europe, taking into account the occupational social class and the welfare state regime.

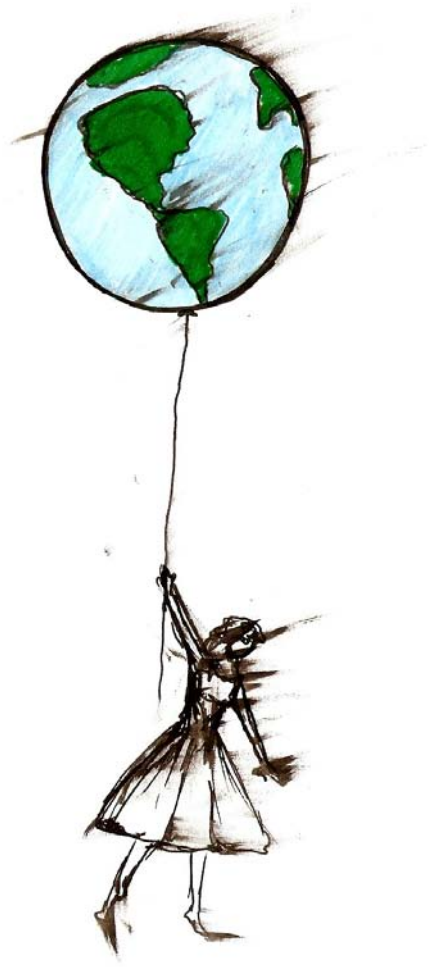
Moreover, it will be interesting to explore how the economic global crisis has impacts on gender inequalities in the exposure to work-related psychosocial hazards taken into account the welfare state regime and the occupational social class. This recommendation could be achieve comparing our results with those coming up from the analysis of the last edition of the EWCS, which has been conducted in the core of the economic crisis in 2010.

In addition, it will be interesting to go deeper in the analysis of the pathways that it seems to exist between invest time in caring and being much more exposed to work-related psychosocial hazards. The hypothesis to test will be that the more time is invested in caring for children, elderly or disable relatives, the more the worker is exposed to work-related psychosocial hazards. Maybe when workers are investing more time in caring they accept more non-standard works, which are much more exposed to these unfavourable psychosocial environments.

Moreover, it would be interesting for researchers to explore the five hypothesis that we have presented above to explain the reasons why the welfare state regimes with more traditions on social benefits and wealth redistribution has the highest gender inequalities in the exposure to work-related psychosocial hazards, being women more exposed than men.

Finally, it will be of great interest to tackle if the unequal gender exposure to these work-related psychosocial hazards has a different impact on women's and men's physical and mental health.

7. CONCLUSIONS



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7. CONCLUSIONS

“Women are no longer victims. They have become leaders. They are at the forefront of the demonstrations. We will share a role in all aspects of life, side by side with men”

Tawakkul Karman, Peace Nobel Prize 2011 (shared with EJ Sirleaf and L Gbowee)

7. CONCLUSIONS

This dissertation led us to the following conclusions:

According to the scientific literature review,

1. Compared to men, women have greater feelings of high job insecurity, worse contractual working conditions, work in worse psychosocial work environments and report poorer self-perceived physical and mental health.
2. Compared to women, men are exposed to longer work hours, high physically demanding work, noise, effort-reward imbalance and have higher job status.
3. We could hypothesize that the poorer self-perceived mental and physical health status and job insecurity that more women than men perceived, could be due to the worse contractual working conditions that more women than men did held and by the higher job positions that more men than women did occupy.

From the Spanish National Working Conditions survey,

4. In Spain, a higher proportion of men compared to women work in shifts works, exposed to high levels of noise, high physical demands, and suffering injuries related to occupational accidents among the whole working population.
5. While temporal contracts, work-related psychosocial hazards, discrimination, musculoskeletal pain of the upper limb and professional diseases are higher among non-manual women workers, working without a contract and suffering sexual harassment are higher among manual women workers compared men in the same category.
6. In Spain, while the industrial sector of activity is where more gender inequalities are observed, followed by the service sector; the agriculture sector is where less gender inequalities are detected. In the Spanish industrial sector of activity, there is a

remarkable higher proportion of women compared to men working without a contract, suffering sexual harassment, discrimination and musculoskeletal pain of the upper limb, in contrast with the service sector where the same inequalities also exist, but they are less market. These gender inequalities are not observed in the construction and the agriculture sectors.

7. In the Spanish construction sector, more women than men suffer occupational stress, while more men than women suffer occupational stress in the industrial sector.

The European Working Conditions Survey shows,

8. The unequal distribution of work-related psychosocial hazards among women and men persists in the highest occupational social strata across all welfare state regimes, with only slight variation.

9. Contrary to what we hypothesized, gender inequalities in the exposure to work-related psychosocial hazards were not lower in those welfare state regimes with greater levels of wealth redistribution and more universal social protection policies (e.g. Scandinavian regime) and more specifically among the non-manual workers.

10. In the lowest occupational social strata, gender inequalities were lower among those welfare state regimes with more comprehensive social protection policies compared to much less comprehensive welfare state regimes (e.g. Eastern).

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9. APPENDIX

9. APPENDIX

9. Appendix

9.1 Appendix I Spanish National Working Condition Survey. INSHT, 2007: Worker's questionnaire and methodology of the sixth edition

9.2 Appendix II Definition of the indicators proposed for analyzing gender inequalities in occupational health from the items of the sixth edition of the Spanish National Working Condition Survey. INSHT, 2007

9.3 Appendix III European Working Condition Survey Questionnaire, 2005: Worker's questionnaire and methodology of the fourth edition

9.4 Appendix IV Inclusion and exclusion criteria used in the selection process of studies

9.5 Appendix V European welfare state regimes classification adapted from Eikemo and Bambra

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9.7 Appendix VII Other papers published during the PhD program related to the dissertation

9.8 Appendix VIII Scientific stays abroad during the PhD program

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9.11 Appendix XI Impact on the media of papers published

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9. Appendix

9.1 Appendix I Spanish National Working Condition Survey. INSHT, 2007: Worker's questionnaire and methodology of the sixth edition

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9.5 Appendix V European welfare state regimes classification adapted from Eikemo and Bambra

9.6 Appendix VI Definition of the work-related psychosocial hazards from the questionnaire of the fourth edition of the European Working Conditions Survey, 2005

9.7 Appendix VII Other papers published during the PhD program related to the dissertation

1. Kjersti Alsaker, Tone Morken, Valborg Baste, **Javier Campos-Serna**, Bente E Moen. Sexual assault and other types of violence in intimate partner relationships. *Acta Obstetricia Et Gynecologica Scandinavica*. 2011; 91(3):301-7. Impac Factor: 1.77

2. **Javier Campos Serna**, Elena Ronda Pérez, J. M. Roel, Montserrat García Gómez, Jerónimo Maqueda Blasco, M^a José López Jacob, Lorena María Ivorra. [Occupational health surveillance protocols in Spain: A gender perspective]. Archivos de prevención de riesgos laborales. 2009; 12(3):116-123.


3. **Javier Campos Serna**, Antonia Almodóvar Molina, Javier Pinilla, Fernando G. Benavides. [Methodological recommendations to consider in the design of surveys in working conditions and health]. Archivos de prevención de riesgos laborales. 2009; 12(4):195-198

4. Fernando G. Benavides, Marta Zimmermann Verdejo, **Javier Campos Serna**, J.A. Carmenate, Lino Carmenate, Isidro Báez, Clotilde Nogareda, Emilia Molinero Ruiz, Josep M^a Losilla, Javier Pinilla. [Basic items to include when designing occupational risk and health questionnaires]. Archivos de prevención de riesgos laborales. 2010; 13(1):13-22.

5. María José Itatí Iñiguez, Andrés A. Agudelo- Suárez, **Javier Campos-Serna**, Cecilia I. Cornelio, Fernando G. Benavides. Encuestas de condiciones de trabajo y salud: su utilización en la investigación en salud laboral.. Medicina y seguridad del trabajo. 2012; 58(228):205-215.

9.8 Appendix VIII Scientific stays abroad during the PhD program

1. Guest PhD student at the Department of Public Health and Primary Health Care, research group of Occupational and Environmental Medicine at the University of Bergen, Norway in the period 01/07 – 30/09 in 2010.



CERTIFICATE

Javier Campos Serna

has in 2010 been working as a guest PhD student at Department of Public Health and Primary Health Care, research group of Occupational and Environmental Medicine at The University of Bergen, Norway in the period 1/7 – 30/9.

He has been working here with data in his project "**Gender inequality on Occupational Health: working conditions and its impacts in health from a gender perspective**". He has been writing a Spanish publication on data gathered in the 6th Edition of the Spanish Nationale Working Conditions Survey, 2007.

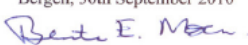
He has also been analyzing the data for a publication comparing data from all EU countries involved in the 4th Edition of the European Working Conditions Survey, 2005. He has been working hard in the period, and most results for this article are produced.


Campos has been a part of the work environment in the group here, and he has attended our scientific meetings and seminars. In addition, he has participated in a course in statistics at our Centre for international health.

He has also presented parts of his work several times during his stay; for the whole group and for parts of the group.

It has been very interesting to work with Campos, and we have enjoyed his presence both scientifically and socially. Our group look forward to future co-operation with him.

Bergen, 30th September 2010


Bente E. Moen
Professor



9.9 Appendix IX Scientific meetings and conferences attendance during the PhD program

1. **Campos-Serna, J.** Gender Inequalities in Occupational Health in Spain: defining indicators through a Systematic literature review. Conference speaker in the Research Seminar Series placed at the School of Public Health in the University of Texas, EEUU. April 9, 2010.



The poster features a vertical graphic on the left with a globe and various health-related terms: OCCUPATIONAL HEALTH, GLOBAL COMMUNITY, PROFESSIONAL EPIDEMIOLOGICAL RESEARCH, ENVIRONMENTAL HEALTH, ENVIRONMENTAL SCIENCE, and PUBLIC HEALTH. The main title is 'EOHS Research Seminar Series' in blue and orange. The topic is 'Gender Inequalities in Occupational Health in Spain: defining indicators through a systematic literature review'. The speaker is Javier Campos Serna, MD, MPH, from the Centre d'investigació en Salut Laboral at Universitat Pompeu Fabra in Barcelona, Spain. The seminar is on Friday, April 9, 2010, from 12:00-1:00 p.m. in SPH RAS 102B. Lunch is provided for the first 50 attendees. Contact information for Bruce Banes is provided. A note at the bottom asks to contact an ITV technician for ITV transmission. The University of Texas School of Public Health logo is at the bottom right.

EOHS
Research Seminar Series

Gender Inequalities in Occupational Health in Spain: defining indicators through a systematic literature review



Javier Campos Serna, MD, MPH
Centre d'investigació en Salut Laboral
Universitat Pompeu Fabra – Barcelona, Spain

Friday, April 9, 2010
12:00-1:00 p.m.
SPH RAS 102B
Lunch will be provided for the first 50 attendees.
Please contact Bruce Banes (713) 500-9462
Bruce.E.Banes@uth.tmc.edu


 **Please contact your ITV technician or administrator if you would like to receive the seminar via an ITV transmission.*

 **THE UNIVERSITY of TEXAS**
SCHOOL OF PUBLIC HEALTH

2. Campos-Serna J, Ronda Pérez E, Piedra N, Benavides FG. Desigualdades de género en salud laboral en España. XXVIII Reunión científica de la Sociedad Española de Epidemiología. Celebrado en Valencia del 27 al 29 Octubre de 2010.

N. 116

Desigualdades de género en salud laboral en España



Centro de Investigación en Salud Laboral

Javier Campos-Serna (1,2), Elena Ronda-Pérez (1,3), Nancy Piedra (4), Fernando G Benavides (1,2)

(1) Centro de Investigación en Salud Laboral (CISAL), Universitat Pompeu Fabra, (2) CIBER Epidemiología y Salud Pública, (3) Área de Medicina Preventiva y Salud Pública, Universidad de Alicante, (4) Universidad de Costa Rica, San José

Sin financiación

Introducción

La división sexual del mercado de trabajo conduce a diferencias y desigualdades de género en las condiciones de empleo y de trabajo, así como en la conciliación de la vida laboral y familiar y, como consecuencia, en la salud de la población trabajadora. Analizar dichas desigualdades es de vital importancia en salud pública para promover políticas públicas dirigidas hacia su eliminación

Objetivo

Analizar las desigualdades de género en las condiciones de empleo, trabajo, conciliación vida laboral y familiar y salud en la población ocupada en España

Material y métodos

La población de estudio fueron 11.054 personas trabajadoras entrevistadas en la VI Encuesta Nacional de Condiciones de Trabajo (ENCT) del Instituto Nacional de Seguridad e Higiene en el Trabajo (INSHT) entre diciembre, 2006 y abril, 2007.

Las desigualdades de género se analizaron mediante 14 indicadores de los 27 propuestos en una reciente revisión sistemática de la literatura. El resto de indicadores no se pudo analizar debido a la falta de información recogida en el cuestionario.

Se describieron las características sociodemográficas y se compararon las prevalencias de cada uno de los indicadores entre mujeres y hombres (referencia). Se calcularon las odds ratio crudas (ORc) y ajustadas (ORa) por edad, nivel de estudios, clase social ocupacional y sector de actividad económica de la empresa y sus intervalos de confianza al 95% (IC95%) mediante modelos de regresión logística multivariados.

Resultados

Tabla 1 Características sociodemográficas en la muestra de la VI ENCT, INSHT, 2007

	Hombres (%)	Mujeres (%)	p ¹
Nivel de estudios	69,6	67,9	.000
16-20	23,0	20,5	
21-25	29,0	31,3	
26-30	20,0	21*	
31-35	19,0	15,0	
36-40	9,0	9,0	
Nacionalidad	86,9	86,4	.390
Española	13,1	13,6	
Nivel de actividad	5,7	3,4	.000
Manos de obra	36,7	29,9	
Operarios	31*	36,4	
Unidocentes	19,1	20,9	
Sector de actividad económica o la empresa			.000
Agraria	0,2	0,7	
Industria	21,5	19	
Construcción	26,5	1,0	
Servicios	51,8	64,7	
Clase social ocupacional²			.000
Manual	67,8	59,7	
No manual	29,1	39,0	

1 Calculado mediante la Chi-cuadrado de independencia respecto a la variable sexo. 2 Clase profesional Iel (1 a 5). 3 Cálculo de Odds Ratio (OR).

Tabla 2 Indicadores de desigualdad de género en las condiciones de empleo, trabajo y conciliación de la vida laboral y familiar en la muestra de la VI ENCT, INSHT, 2007

Indicador	Hombres		Mujeres		ORc ¹	ORa ²
	n	%	n	%		
Condiciones de empleo						
Trabajo sin contrato (IC95%: MCI1000)	189	2,1	287	2,6	1,04 [1,00-1,07]	1,03 [1,00-1,06]
Trabajo con contrato temporal (IC95%: MCI1010)	1335	27,2	1010	28	1,04 [0,94-1,14]	1,31 [1,17-1,47]
Trabajo a turnos (IC95%: MCI1020)	1515	24	927	21,6	0,87 [0,79-0,95]	0,83 [0,75-0,92]
Condiciones de trabajo						
Altas niveles de ruido (IC95%: MCI1050)	918	14,4	249	5,5	0,35 [0,30-0,40]	0,64 [0,54-0,76]
Altas demandas de trabajo físico en mayores de 50 años (IC95%: MCI1060)	621	47,9	307	41,4	0,77 [0,64-0,93]	0,97 [0,80-1,20]
Alta tensión (IC95%: MCI1070)	1470	22,8	1124	24,9	1,10 [1,01-1,21]	1,08 [0,97-1,17]
Baja carga social (IC95%: MCI1080)	772	12	593	13	1,10 [0,99-1,22]	1,19 [1,09-1,29]
Alta estancia y baja recuperación (IC95%: MCI1090)	1517	23,5	1198	26	1,14 [1,05-1,23]	1,12 [1,00-1,24]
Condiciones de la vida laboral y familiar						
Conflicto en la conciliación de la vida laboral y familiar, con un contrato a tiempo completo (IC95%: MCI1100)	1123	24,7	878	24,9	1,01 [0,91-1,12]	0,64 [0,54-0,75]

1 ORc: odds ratio cruda. 2 ORa: odds ratio ajustada por edad, nivel de estudios, sector de actividad y clase social ocupacional. n: N de hombres; M: N de mujeres incluidos en el análisis.

Tabla 3 Indicadores de desigualdad de género en la muestra de la VI ENCT, INSHT, 2007

Indicador	Hombres		Mujeres		ORc ¹	ORa ²
	n	%	n	%		
Salud						
Dolors musculares a nivel del miembro superior (IC95%: MCI1030)	412	7,8	306	8,7	1,31 [1,13-1,51]	1,29 [1,10-1,51]
Síntomas respiratorios (IC95%: MCI1040)	37	0,7	19	0,5	0,72 [0,41-1,25]	1,08 [0,87-1,34]
Resaca (IC95%: MCI1070)	9	0,2	1	0,03	0,18 [0,00-1,22]	0,19 [0,00-1,53]
Lesiones por accidentes de trabajo (IC95%: MCI1080)	782	12,1	364	8,4	0,67 [0,59-0,76]	0,75 [0,65-0,87]
Enfermedades profesionales (IC95%: MCI1090)	229	3,9	170	3,7	1,05 [0,86-1,28]	1,13 [0,91-1,42]


1 ORc: odds ratio cruda. 2 ORa: odds ratio ajustada por edad, nivel de estudios, sector de actividad y clase social ocupacional. n: N de hombres; M: N de mujeres incluidos en el análisis.

Conclusiones


En la población ocupada en España existen importantes diferencias y desigualdades de género en las condiciones de empleo, trabajo y salud independientemente de la edad, el nivel de estudios, la clase social ocupacional y el sector de actividad económica de la empresa


Estas diferencias y desigualdades deberían ser tenidas en cuenta en el proceso de elaboración de las políticas públicas en materia de prevención y promoción de la salud laboral

El cuestionario de la ENCT precisa ser revisado desde una perspectiva de género con la finalidad de aumentar su capacidad en el análisis de las desigualdades de género



LES AUTORS DECLAREN NO TENER NINGUN CONFLICTE D'INTERES





3. **Campos-Serna J**, Ronda-Pérez E, Artazcoz L, Benavides FG. Gender inequalities in Occupational Health in Spain. Industrial Relations in Europe Conference, Barcelona, Spain, 1 – 2 September, 2011. (Conference speaker)

Title: Gender Inequalities in Occupational Health in Spain

Workshop: Workshop 4 - Employment, Gender Equality and Collective Bargaining

Abstract

Introduction

Sexual division of the labour market leads to gender inequalities in employment and working conditions, in the balancing of work and family life, and work related health problems in the working population. The aim of this study was to analyze these gender inequalities in a sample of the employed population in Spain.

Methods

The study population consists of 11,054 workers that participated in the 6th edition of the Spanish National Working Conditions Survey (NWCS). The sample was obtained by a stratified and clustered sampling process. The primary sampling units (municipalities) and secondary units (census tracts) were selected randomly. Tertiary units (employees) were selected following random routes and taken into account certain shares. These shares were based on the proportion of workers employed in: a) the different economic activity sectors (agriculture, industry, construction and services); b) the different size of the companies (1 to 9, 10 to 49, 50 to 249, 250 to 499, 500 or more workers); and c) the 17 Autonomous Regions in Spain. Participants were interviewed in their homes between December 2006 and April 2007 by trained interviewers.

Gender inequalities were analyzed using a set of 25 indicators proposed by the research group. Those indicators were based on the 76 items of the questionnaire of the NWCS. The indicators were elaborated in order to obtain information about women's status in the workplace in relation to men as a standard of reference. During this process, the study made use of the Canadian guidelines and recommendations for the elaboration of gender sensitive indicators as well as a review of the relevant literature and the experience of the research group. The indicators were distributed in four analytical categories: a) employment conditions, which contains three; b) working conditions, nine; c) balancing work and family life, one; and d) work related health problems, twelve.

Multivariate logistic regression models were used to calculate the crude and adjusted odds ratio (aOR) and confidence intervals of 95% (CI95%), men were taken as the reference group. cOR were adjusted by age (16-29, 30-39, 40-49,

50-65 and 65 or more years old); level of studies (less than primary, primary, secondary and tertiary); company's economic activity (agriculture, industry, construction and services) and occupational social class (blue collar and white collar workers).

Results

More women than men worked without a contract (aOR=1.93; CI95%:1.55-2.40), with a temporary contract (1.31:1.17-1.47), in high-strain jobs and with low social support (1.19:1.05-1.36), and in high-effort/low-reward conditions (1.12:1.02-1.24). Women also suffered more sexual harassment (1.86:1.12-3.11) and discrimination (1.66:1.26-2.18) at the workplace; and reported more musculoskeletal problems (1.33:1.14-1.56). More men than women worked with shift work (0.83:0.75-0.92), high noise levels (0.64:0.54-0.76), and high physical demands (0.83:0.76-0.91). Men also suffered more violence at the workplace (0.66:0.56-0.78) and more injuries due to occupational accidents (0.75:0.65-0.87).

Conclusions

Important gender inequalities in employment and working conditions, and work related health problems exist in Spain. The elimination of these inequalities should be considered a public policy priority in occupational health.

Key word: Spain, socioeconomic factors, gender identity, occupational health, health surveys.

4. Campos-Serna J, Ronda-Pérez E, Moen BE, Felt E, Benavides FG. Gender inequalities in Occupational Health across Europe by Welfare State Regime. 4th European Public Health Conference, Copenhagen, Denmark, 9 – 12 November, 2011. (Poster Communication)



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en Salud I iberal

Gender Inequalities in Occupational Health across Europe by Welfare State Regime

Javier Campos-Serna (1,2,3), Elena Ronda-Pérez (1,2,3), Bente E Moen (4), Emily Felt (1), Fernando G Benavides (1,2)

1. Center for Research in Occupational Health, Universitat Pompeu Fabra, Barcelona, Spain; 2. CIBER Epidemiología y Salud Pública (CIBERESP), Spain; 3. Preventive Medicine and Public Health Area, University of Alicante, Alicante, Spain; 4. Research Group for Occupational and Environmental Medicine, Department of Public Health and Primary Health Care, University of Bergen, Bergen, Norway

Without any funds

Background

- The increase of women's participation in the labour market has been one of the most important social phenomena of the last decades.
- Sexual division of the labour market leads to unequal distribution of occupational health hazards among women and men.
- The different roles of countries in the protection and promotion of economic and social well-being has been shown to influence health inequalities. Little is known about how social welfare systems operate on the unequal distribution of occupational hazards among women and men.

Material and Methods

- The study population consists of 29,680 workers from 31 European countries in the IV edition of the European Working Conditions Survey, 2005. The sample followed a multi-stage, stratified and clustered design with a "random walk".
- Nine gender inequality indicators of employment and working conditions were analyzed by comparing differences between men and women.
- The 31 European countries were grouped into 6 welfare state regimes: Scandinavian, Continental, Anglo-Saxon, Southern, Eastern and Mediterranean following an Eurofound classification based on the Esping-Andersen model.

Objective

To analyze gender inequalities related to employment and working conditions across Europe and to explore how they are influenced by welfare state regimes.

Objective

- Multivariate logistic regression models were used to calculate odds ratios adjusted by age and level of studies at 95% confidence intervals for the 31 European countries. Finally, the adjusted odds ratio were stratified by the 6 Welfare State Regimes. Men were the reference group.

Results

Table 1 Gender inequality indicators in employment and working conditions in the sample of the 31 European countries included in the European Working Conditions Survey, 2005 (N=29,680) and grouped by Welfare State Regime

	All Countries ^a	Scandinavian ^a <small>Finland, Norway, Sweden and Denmark</small>	Continental ^a <small>Netherlands, Germany, Switzerland, France, Belgium, Austria and Luxembourg</small>	Anglo-Saxon ^a <small>Ireland and United Kingdom</small>	Southern ^a <small>Spain, Portugal, Italy and Greece</small>	Eastern ^a <small>Latvia, Lithuania, Estonia, Bulgaria, Poland, Slovakia, Croatia, Hungary, Slovenia, Romania and Czech Republic</small>	Mediterranean ^a <small>Mexico, Cyprus and Turkey</small>
Employment conditions							
Without a contract	1.03 [0.94-1.13]	0.86 [0.61-1.23]	0.88 [0.66-1.16]	1.13 [0.89-1.44]	1.91 [1.52-2.40]	0.86 [0.70-1.06]	1.50 [1.24-1.82]
Temporary contract	1.36 [1.26-1.47]	1.65 [1.34-2.04]	1.34 [1.12-1.60]	1.35 [1.09-1.77]	1.88 [1.49-2.23]	1.13 [1.00-1.27]	1.58 [1.12-2.24]
Part-time – partner – children	5.95 [5.29-6.70]	8.83 [6.18-12.6]	11.85 [9.41-14.91]	15.68 [10.18-24.18]	5.78 [3.92-8.53]	1.97 [1.58-2.46]	4.45 [2.98-6.66]
Shiftwork	1.12 [1.05-1.19]	1.27 [1.08-1.49]	1.01 [0.88-1.17]	0.96 [0.74-1.24]	0.91 [0.77-1.09]	1.20 [1.10-1.32]	0.85 [0.64-1.12]
Working conditions							
High noise	0.46 [0.43-0.49]	0.59 [0.50-0.69]	0.36 [0.31-0.41]	0.37 [0.28-0.49]	0.40 [0.34-0.47]	0.50 [0.45-0.55]	0.54 [0.42-0.69]
High workload	0.91 [0.87-0.95]	1.54 [1.35-1.75]	0.95 [0.86-1.05]	0.68 [0.56-0.81]	0.81 [0.70-0.93]	0.82 [0.76-0.90]	0.75 [0.62-0.91]
High demands – low control	1.32 [1.26-1.39]	2.11 [1.83-2.43]	1.00 [0.90-1.11]	1.28 [1.09-1.60]	1.12 [0.97-1.28]	1.40 [1.29-1.53]	1.55 [1.29-1.87]
High demands – low control – low support	1.28 [1.20-1.36]	1.97 [1.69-2.29]	1.02 [0.90-1.15]	1.20 [0.99-1.54]	0.94 [0.78-1.13]	1.28 [1.16-1.41]	1.29 [1.01-1.65]
High effort – low reward	1.03 [0.98-1.08]	1.28 [1.11-1.49]	1.00 [0.96-1.22]	0.81 [0.69-1.03]	0.82 [0.71-0.94]	1.11 [1.02-1.22]	0.90 [0.74-1.09]

^a Adjusted Odds Ratios by age and level of education at its 95% confident intervals being men the reference group
■ Higher proportion of women than men
■ Higher proportion of men than women

Conclusion

- Significant gender inequalities in employment and working conditions exist in Europe.
- Southern and Mediterranean Welfare State Regimes, with the weakest systems of promotion of social equality and with redistributive social security systems, are characterized by a greater proportion of women working without a contract than men.
- While a more comprehensive analysis of the data is needed, Welfare State Regime seems to have a slight influence on gender inequalities in employment and working conditions in Europe.



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The authors declare no conflicts of interest

9.10 Appendix X Other academic merits

1. Co-advisor shared with Fernando G Benavides of the Final Students Master work of the Master degree in Occupational Health at the Universitat Pompeu Fabra (Barcelona), of the student Pamela Merino, entitled: [Gender inequalities in occupational health of the working population at the services sector in Spain]. It is digitally available at: <http://repositori.upf.edu/handle/10230/19835>

The screenshot shows the UPF e-Repository interface. At the top, there is a navigation bar with the UPF logo, the text 'Universitat Pompeu Fabra Barcelona', 'REPOSITORI DIGITAL DE LA UPF', and 'e-Repository'. Below this, there are links for 'Web BibTIC', 'Català | English', 'Ajuda', and 'Identificarse'. A breadcrumb trail reads: 'Inicio → Treballs d'estudiants → Ciències Experimentals i de la Salut → Màster en Salut Laboral. Treballs de fi de màster → Ver documento'.

On the left side, there is a search box with a search button 'Ir'. Below it, there are radio buttons for 'Todo el e-Repository' (selected) and 'Esta colección', and a link for 'Búsqueda avanzada'. Under 'Listar por:', there are two sections: 'Todo el e-Repository' and 'Esta colección', each with a list of sorting options: 'Comunidades y colecciones', 'Por fecha de publicación', 'Autores', 'Títulos', and 'Materias'. At the bottom left, there is a 'Mi cuenta' section with a link 'Identificarse', a question '¿Qué es el e-Repository?', and a row of social media icons.

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Título:	Desigualdades de género en la salud laboral de la población trabajadora del sector servicios en España
Autor:	Merino Salazar, Pamela
Resumen:	Objetivos: Identificar las desigualdades de género en las condiciones de empleo, en la exposición a factores de riesgo psicosocial y en los daños a la salud en los trabajadores asalariados del sector servicios, y examinar si los patrones son diferentes según la categoría ocupacional.
Descripción:	Directores: Fernando G. Benavides, Lucía Artazcoz Tutores UPF: Fernando G. Benavides, Javier Campos-Serna
Tipo de documento:	Trabajos de investigación/Fin de máster
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9.11 Appendix XI Impact on the media of papers published

1. Las mujeres sufren más precariedad, acoso y discriminación en el trabajo. Paper 2.
Source: Servicio de Información y Noticias Científicas (SINC) de la Fundación Española de Ciencia y Tecnología (FECYT), 2010. Available from:
<http://www.agenciasinc.es/Noticias/Las-mujeres-sufren-mas-precariedad-acoso-y-discriminacion-en-el-trabajo>

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BIOMEDICINA Y SALUD: Salud pública

Las mujeres sufren más precariedad, acoso y discriminación en el trabajo

España sufre importantes desigualdades de género en salud laboral, a juzgar por la última Encuesta Nacional de Condiciones de Trabajo. Un artículo publicado en la revista *Gaceta Sanitaria* revela que las mujeres están más expuestas a riesgos psicosociales, al acoso sexual y a la discriminación, mientras que los hombres se enfrentan a mayores niveles de ruido, altas exigencias físicas y a más lesiones por accidentes de trabajo.

Gaceta Sanitaria | 19 julio 2012 10:51

Investigadores del Centro de Investigación en Salud Laboral de la Universidad Pompeu Fabra han analizado las respuestas de los más de 11.000 trabajadores y trabajadoras que participaron en la última Encuesta Nacional de Condiciones de Trabajo.

El estudio, publicado en la revista *Gaceta Sanitaria*, afirma que la precariedad laboral es más profunda entre las mujeres. La probabilidad de trabajar sin contrato es prácticamente el doble que la de sus compañeros masculinos (5,6% frente al 3,1%), sobre todo en los trabajos manuales, donde la probabilidad es 2,32 veces superior.

La temporalidad también es mayor en las trabajadoras (28% frente al 27,2%), pero en esta ocasión los contratos temporales son más habituales en las ocupaciones no manuales, donde el riesgo es 1,34 veces superior. Entre los hombres, en cambio, es más frecuente el trabajo a turnos (24% frente al 21,6%).

La mujer también tiene más posibilidades de enfrentarse a riesgos psicosociales y discriminación en el trabajo. Realizar un alto esfuerzo y recibir a cambio una baja recompensa es más habitual entre

Las mujeres sufren más precariedad, acoso y discriminación en el trabajo. Imagen: SINC

LO ÚLTIMO

- Confirman que el consumo de frutas y verduras reduce el riesgo de mortalidad**
Un estudio europeo ha analizado la relación entre el consumo de frutas y verduras y el riesgo de mortalidad sobre 451.151 individuos durante más de 13 años. Este trabajo, "el estudio epidemiológico más importante que analiza esta asociación", concluye que comer estos alimentos redu...
- Un nuevo test detecta 170 mutaciones recurrentes en población europea**
La empresa GenoClinics ha desarrollado un test genético para la detección de mutaciones recurrentes en personas de origen caucásico y ascendencia europea. La prueba analiza el ADN de los futuros padres y determina si la persona es portadora de alguna de las 170 mutaciones más comunes en la poblac...
- Más de 300 ciudades europeas celebran la Noche de los Investigadores**
Este viernes se celebra la Noche de los Investigadores en toda Europa. Un evento que se realizará simultáneamente en más de 300 ciudades de 33 países con el objetivo de promover la investigación como carrera profesional. Los asistentes podrán participar en experimentos, en espectáculos científico...
- La polifala de Webb aparece por primera vez en España**
La polifala de Webb es una especie vegetal

2. Las desigualdades de género calan hondo en la salud laboral. Paper 2. Source: Ramiro Navarro, Diario de Sevilla, 26/04/2012. Available from: <http://www.diariodesevilla.es/article/salud/1242977/las/desigualdades/genero/calan/hondo/la/salud/laboral.html#>

Las desigualdades de género calan hondo en la salud laboral

Miércoles, 25 de septiembre de 2013

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TRABAJO

Las desigualdades de género calan hondo en la salud laboral

El aumento de la tasa de actividad femenina esconde una importante brecha que hace que las mujeres estén sometidas a más riesgos y en peores condiciones.

RAMIRO NAVARRO | ACTUALIZADO 26.04.2012 - 10:36

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Si bien España es uno de los 27 estados miembros de la Unión Europea donde más ha aumentado la tasa de actividad femenina entre 2005 y 2010 (5,5%), también es uno de los cinco en que mayor es la distancia que la separa de la tasa de actividad masculina (16,1%). Las estadísticas indican que existen desigualdades entre mujeres y hombres en cuanto a las condiciones contractuales, sociales, de trabajo y de tareas domésticas. Todas esas diferencias dibujan una brecha que se traduce también en la salud. Las mujeres están expuestas con más frecuencia que los hombres a riesgos psicosociales (más presión, más estrés, peores condiciones, contratos más precarios, más dificultades para mejorar), mientras que los hombres lo están a riesgos físicos y sufren más lesiones por accidentes de trabajo.



Por sectores, el de la industria es en el que se plasman más diferencias por sexos.

Ahora, un estudio realizado por el Centro de Investigación en Salud Laboral de la Universidad Pompeu Fabra de Barcelona y el Centro de Investigación Biomédica en Red de Epidemiología y Salud Pública (Ciberesp), ha querido ahondar en esas desigualdades. Según recogen los autores del estudio, publicado en *Gaceta Sanitaria*, "existen importantes desigualdades de género en las condiciones de empleo, trabajo y en los problemas de salud relacionados con el trabajo, que se ven influenciadas por la clase social y el sector de actividad, y que sería necesario tener en consideración en las políticas públicas de salud laboral". A la hora de describir las principales diferencias que consolidan esta desigualdad los investigadores hallaron que más mujeres que hombres trabajaban sin contrato con alto esfuerzo o baja recompensa y con tasas más altas de acoso sexual, discriminación y más dolores osteomusculares. Más hombres que mujeres trabajaban a turnos, con altos niveles de ruido, y sufriendo más lesiones por accidentes de trabajo. Las trabajadoras no manuales presentan más tasas de temporalidad, están expuestas a más riesgos psicosociales y sufren mayor discriminación y enfermedades profesionales. Por sectores, el estudio mostró que en el de la industria las desigualdades de género fueron más marcadas. Hasta ahora estas diferencias entre hombres y mujeres aún no se habían analizado en una muestra representativa de toda la población ocupada española. Por eso, la Encuesta Nacional de Condiciones de Trabajo, que reúne datos de más de 11.000 personas, ha supuesto una buena herramienta para poder profundizar en el análisis.

El estudio anima a tener en consideración estas desigualdades en el proceso de elaboración de políticas públicas en materia de prevención y promoción de la salud laboral. Asimismo, recomiendan que las futuras encuestas de condiciones del trabajo modifiquen sus cuestionarios para analizar mejor este fenómeno.

SUP



LA 5

3. Scandinavian women in management positions face most psychosocial risk at work. Paper 3. Source: Servicio de Información y Noticias Científicas (SINC) de la Fundación Española de Ciencia y Tecnología (FECYT), 2013. Available from: <http://www.agenciasinc.es/en/News/Scandinavian-women-in-management-positions-face-most-psychosocial-risks-at-work>

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A sample of men and women from 28 European countries is analysed

Scandinavian women in management positions face most psychosocial risks at work

Español

A new study analyses the inequality between European men and women in their exposure to psychosocial risk factors at work. Scandinavian women experience the worst conditions, whilst Anglo-Saxon men experience the best.

SINC | September 19 2013 10:57

PHOTOGRAPHS



The greatest gender inequality in the exposure to psychosocial risks is also observed in Scandinavian countries. / Dell Inc

Researchers at Pompeu Fabra University have studied how European gender inequalities in exposure to psychosocial risk factors at work vary according to the state of welfare and socio-occupational class.

"Our initial hypothesis was that the more developed social protection policies and the labour market were – as is the case in Scandinavian countries – the lower associated gender inequality would be," Javier Campos, lead author of the work, tells SINC.

The scientists also expected the inequality to be more marked in lower socio-occupational classes with fewer socioeconomic resources, for example, among manual workers.

However, the conclusions, published in the 'International Journal of Occupational and Environmental Health', are completely the opposite. In Scandinavia, executive or professional women showed the highest prevalence in the three types of psychosocial risk.

41.0% of these women felt exposed to high work demands with very little control over them. 34.7% believed they were subjected to high demands without the support of their colleagues. 26.5% thought they invested considerable emotional effort in their job commitment, but received insufficient reward: a low salary or few prospects for progress.

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4. In Scandinavia, High-Level Women Experience More Stress at Work. Paper 3.
Source: Elisabeth Pain, Science Careers, 25/09/2013. Available from:

http://sciencecareers.sciencemag.org/career_magazine/previous_issues/articles/2013_09_25/credit.a1300208

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In Scandinavia, High-Level Women Experience More Stress at Work

By Elisabeth Pain
September 25, 2013

The Scandinavian countries are often held up as the most progressive countries in Europe for workplace gender equality. But a new study suggests that those countries rate worse than the rest of Europe when it comes to workplace stress among professional women.

Almost universally, the highest occupational class was most exposed to hazards, but this effect was largest in Scandinavia.

The [study](#), which was published earlier this month in the *International Journal of Occupational and Environmental Health*, compared gender inequality across Europe as measured by perceived exposure to "work-related psychosocial hazards." It considered three common "hazards": high job demands and little job control; the same high job demands and little job control plus a lack of social support; and high effort and low reward.

The study, which was based on data from the [Fourth European Working Conditions Survey](#) carried out in 2005, analyzed the responses of more than 12,400 women and 15,000 men in 28 countries across Europe. Those countries were divided into five categories (Scandinavian, Anglo-Saxon, Continental, Southern, and Eastern); the categories reflected not just geography but also work protection policies and traditional gender roles. Respondents were also sorted into three occupational classes: managers, professionals, and technicians; service and retail employees; and manual workers. Workplace exposure to psychosocial hazards was compared across gender, geocultural region, and occupational class.

The researchers, who are based in Spain and Sweden, expected to find that strong national policies for employment and social protection correlated with low perceived exposure to gender-related psychosocial hazards, writes first author Javier Campos-Serna of the Center for Research in Occupational Health at the [Pompeu Fabra](#)

9.12 Appendix XII Discussion process maintained with reviewers in paper 1

9.13 Appendix XIII Discussion process maintained with reviewers in paper 2

9.14 Appendix XIV Discussion process maintained with reviewers in paper 3