

Incidence and Prevalence of Occupational Diseases in Spain

Ana M. García^a and Rafael Gadea^b

INCIDENCE AND PREVALENCE OF OCCUPATIONAL DISEASES IN SPAIN

Objective. To estimate the impact of occupational diseases in Spain in terms of incidence and prevalence and to compare them with the notifications actually made.

Design. Data of incidence and prevalence were obtained from studies carried out in Spain and in other countries. These studies were mostly based on epidemiological investigations, occupational diseases monitoring systems and surveys with representative samples of workers.

Participants. Data of incidence and prevalence were applied to the whole of working population in Spain in 2006.

Setting. Spain, 2006.

Main measurements. Incidence and prevalence of occupational diseases and illness (including musculoskeletal, skin, respiratory and mental diseases, and malignant cancers).

Results. It is estimated that a mean of 87 856 incident cases of occupational diseases occurred in Spain in 2006, most of them musculoskeletal diseases (30 757 estimated incident cases) and skin diseases (12 481 cases). Moreover, according to our estimations, 9153 respiratory diseases, 8205 cases of mental illness, and 6082 malignant cancers related to different occupational exposures were diagnosed in Spain in 2006. A total of 999 591 male workers and 1 007 862 female workers suffered some disease or illness related to their working conditions, the most common being musculoskeletal and mental diseases.

Conclusions. Occupational diseases impact could be quite over what it is showed in the official occupational diseases registry in Spain. It is necessary to give visibility to this problem to provide adequate care and prevention of occupational diseases in the population.

Key words: Occupational health. Occupational diseases. Incidence and prevalence of occupational diseases.

Objetivo. Estimar el impacto de las enfermedades laborales en España en términos de incidencia y prevalencia, y compararlo con las notificaciones realmente efectuadas.

Diseño. Se obtienen datos de incidencia y prevalencia procedentes de estudios llevados a cabo en España y en otros países y basados en investigaciones epidemiológicas, en sistemas de vigilancia centinela de enfermedades laborales y en encuestas a muestras representativas de trabajadores.

Participantes. Los datos de incidencia y prevalencia obtenidos en estos estudios se aplican al conjunto de la población ocupada en España en 2006.

Emplazamiento. España, 2006.

Mediciones principales. Incidencia y prevalencia de enfermedades y alteraciones de origen laboral (incluyendo enfermedades osteomusculares, enfermedades de la piel, enfermedades respiratorias, alteraciones mentales o tumores malignos, entre otras).

Resultados. Se estima que en el año de estudio se produjeron en España una media de 87.856 enfermedades relacionadas con el trabajo, la mayoría enfermedades osteomusculares (30.757 casos incidentes estimados) y de la piel (12.481 casos). Además, según nuestras estimaciones, en 2006 se diagnosticaron en España 9.153 casos de enfermedades respiratorias, 8.205 casos de alteraciones mentales y 6.082 tumores malignos relacionados con exposiciones a riesgos laborales.

Un total de 999.591 trabajadores y 1.007.862 trabajadoras presentaron en dicho año alguna enfermedad o problema de salud relacionado con el trabajo; las más frecuentes han sido las enfermedades osteomusculares y las alteraciones psicológicas.

Conclusiones. El impacto de las enfermedades laborales podría ser muy superior al que reflejan los datos del registro oficial de enfermedades profesionales. Es necesario hacer visible este problema para atender y prevenir adecuadamente las enfermedades de origen laboral en la población.

Palabras clave: Salud laboral. Enfermedades laborales. Incidencia y prevalencia de enfermedades laborales.

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^aDepartment of Preventive Medicine and Public Health, University of Valencia, Trade Union, Environment, and Health Institute (ISTAS), Valencia, Spain.
^bTrade Union, Environment, and Health Institute (ISTAS), Valencia, Spain.

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Correspondence: A.M. García. ISTAS. Almirante, 3, 4.ª. 46003 Valencia. España. E-mail: anagar@uv.es

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Introduction

There is an obligatory system for notifying professional diseases,¹ defined according to current regulations² as a disease contracted as a result of work and recorded in the corresponding professional disease chart. The new professional diseases chart of 2006,³ which updates the previous one,^{4,5} includes 6 sections related to occupational risks (chemical, physical and biological contaminants, and situations of exposure to physical workloads) and the list of occupations or work tasks that can be a cause of these diseases.

An important novelty of the new notification system of professional diseases is that it considers doctors of the National Health System as potential notifiers in the register. Indeed, as explicitly established in the guidelines, when doctors of the National Health System, whilst carrying out their professional duties, are aware of the existence of a disease which is included in the aforementioned table, they must notify it through the competent authority of each autonomous community to the management or collaborating unit of the Social Security responsible for the protection of the professional needs of the worker affected.

Many experts believe that this collaboration could play a decisive role in increasing the capacity of highlighting work related health problems, to a large extent ignored beyond the injuries and death due to work accidents. In a recent review⁶ it was observed that total deaths caused by occupational diseases could be, according to estimates in other countries, between 5 and 20 times

higher than mortality due to work accidents.

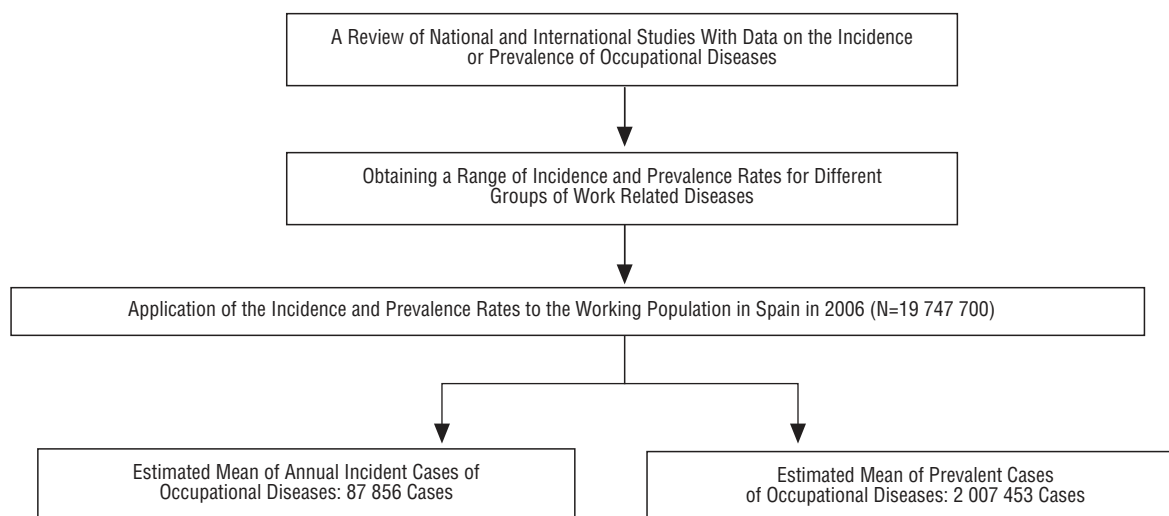
In a previous study,⁷ applying the risks attributable to deaths due to occupational diseases calculated by Finnish investigators,⁸ we estimated that in 2005 there were 16 000 deaths caused by occupational exposure in Spain, mainly tumours (more than 9000 deaths) and cardiovascular diseases (around 3600). The objective of this paper is to estimate the impact of occupational diseases in Spain, in terms of their incidence and prevalence, in order to compare them with the notifications actually made.

Methods

Estimations of Incidence

A search was made of the papers in the scientific literature that presented data on the incidence of occupational diseases in the working population. A large part of the studies found were based on voluntary sentinel events of occupational origin notification systems, the British system called THOR (The Health and Occupation Reporting Network), being one of the most experienced and complete.⁹ This system includes a series of programs aimed at the notification of different types of diseases (respiratory, dermatological, musculoskeletal, infections, psychiatric, etc), and the doctors are voluntary notifier specialists in each of the corresponding areas.¹⁰

On the other hand, one of the most common and better established sentinel occupational diseases notification systems in our country is the Programa de Vigilancia Epidemiológica en Salud Laboral (Epidemiological Vigilance in Occupational Health Program (Occupational Health Medical Sentinel Network) of the



General Scheme of the Study

Incidence and prevalence of occupational diseases in Spain from estimators obtained in national and international studies. Data calculated for the working population in 2006.

Navarre Institute of Occupational Health.¹¹ The doctors from the primary care centres participate in this system, with a coverage of about 75% of the Navarre working population.

The Finnish occupational diseases register, recognised as one of the most complete and reliable in the world, also enables the incidences for a series of occupational diseases to be calculated.¹²

Lastly, some years ago one of the few studies, actually Canadian, that estimated the incidence of a wide group of occupational diseases for a general population, was published.¹³ The author calculated the incidence rates of occupational diseases in Canada,

which was based, on the compensation for occupational diseases statistics in Canada, data from a voluntary notification system of occupational diseases, and on the data on the incidence of some groups of principal diseases available in previous epidemiological studies.

With the information available in these 4 sources,¹⁰⁻¹³ we have constructed a range of incidences for different categories of large groups of occupational diseases, as presented in Table 1. The number of incident cases of occupational diseases occurring in Spain for each disease group has been calculated, applying these incidences to the mean population working in Spain in 2006.¹⁴

TABLE 1

	Lower Estimate	Source ^a	Upper Estimate	Source ^a
Musculoskeletal diseases	5.35	2	25.80 ^b	4
Hearing problems or deafness due to noise	1.42 ^c	3	9.98	1
Skin diseases	3.48	2	9.16 ^d	1
Mental disturbances	0.03	2	8.28	3
Respiratory diseases	2.31	3	6.96 ^e	1
Malignant tumours	0.57	2	5.25	1
Nervous system diseases	3.08 ^f	2	3.08 ^f	2
Infectious diseases	0.96	2	1.38	1
Cardiovascular diseases	0.61 ^g	1,2	0.61 ^g	1,2
Eye diseases	0.33 ^f	2	0.33 ^f	2
Gastrointestinal diseases	0.004 ^f	2	0.004 ^f	2

^aSources: 1. Kraut, 1994¹³; 2. Riihimäki, et al, 2004¹²; 3. Cherry, et al, 2002¹⁰; 4. Instituto Navarro de Salud Laboral, 2006¹¹.

^bUpper limb tendonitis and carpal tunnel syndrome.

^cHearing diseases.

^dDermatitis.

^eChronic respiratory diseases, asthma, pneumoconiosis.

^fOnly one source available.

^gIncludes the addition of hand-arm vibration syndrome (Riihimäki et al, 2004) and myocardial infarction (Kraut, 1994).

TABLE 2**Prevalence ($\times 100$ workers) of Occupational Diseases According to Different Sources**

	Men		Women	
	Lower Estimator ^a	Upper Estimate ^b	Lower Estimate ^a	Upper Estimator ^b
Musculoskeletal diseases	2.22	6.15 ^c	2.62	9.63 ^c
Stress, depression, or anxiety	0.70	1.80 ^d	0.97	3.26 ^d
Lung diseases	0.36 ^e	0.35 ^{e,f}	0.31	0.54 ^{e,f}
Cardiovascular diseases	0.23	0.32 ^g	0.13	1.03 ^g
Headaches, visual fatigue	0.13	1.62 ^h	0.19	3.21 ^h
Hearing problem or deafness due to noise	0.18	0.24 ⁱ	0.05	0.38 ⁱ
Infectious diseases	0.10	0.97 ^j	0.13	1.14 ^j
Skin diseases	0.10	0.47	0.13	0.76
Others ^k	0.26	0.82	0.27	0.44

^aAccording to European Labour Force Survey, 1999.¹⁶

^bAccording to the National Survey on Working Conditions, 2003.¹⁵

^cBack pain.

^dStress.

^eFor this disease category the upper and lower limits are reversed according to the source.

^fOther respiratory diseases (men); asthma (women).

^gDiseases of the veins (varicose veins, thrombosis).

^hHeadaches.

ⁱReduced hearing.

^jRespiratory system infections.

^kThe "Others" category of possible diseases (not specified) logically differ between both sources, so the list of problems contemplated in the closed responses are also different.

Estimations of Prevalence

The estimations of the prevalence of occupational diseases have been based on information recorded in 2 sources: the V National Survey of Working Conditions (VENCT) from Spain and the European Labour Force Survey (LFS) from 1999. The ENCT is carried out periodically on a representative sample of the working population in Spain. In the fifth ENCT of 2003,¹⁵ questions on a series of symptoms and health problems suffered by the workers were included, asking them whether these processes they identified were related to exposures occurring during work. For its part, the LFS of 1999,¹⁶ carried out on representative samples of workers from different European countries, also introduced a series of questions on health problems related to work. For the calculation of prevalent cases of occupational diseases occurring in Spain, the prevalences estimated in these 2 sources for different disease groups (Table 2) have been applied to the mean population working in Spain in 2006.¹⁴

Results

The estimations of incident cases of occupational diseases in Spain in the year 2006 are shown in Table 3. The range (according to lower and upper estimations, Table 1) and the mean are included in the Table. Overall, we can estimate that a mean of around 90 000 new work related diseases occur each year. By order of frequency, the greatest number of incident cases would occur in the musculoskeletal group of diseases, followed by skin diseases

TABLE 3

	Lower Estimate N	Upper Estimate N	Mean N	%
Musculoskeletal diseases	10 565	50 949	30 757	35.0
Skin diseases	6872	18 089	12 481	14.2
Hearing problem or deafness due to noise	2804	19 708	11 256	12.8
Respiratory diseases	4562	13 744	9 153	10.4
Mental disturbances	59	16 351	8205	9.3
Nervous system diseases	1126	10 368	5747	6.5
Malignant tumours	6082	6082	6082	6.9
Infectious diseases	1896	2725	2310	2.6
Eye diseases	1205	1205	1205	1.4
Cardiovascular diseases	652	652	652	0.7
Gastrointestinal diseases	8	8	8	0.0
Total	35 830	139 881	87 856	100

*According to incident rates and sources shown in Table 1 and the mean working population in Spain in 2006 (N=19 747 700).¹⁴

TABLE 4**Estimated Prevalent Cases of Occupational Diseases by Disease Groups. Spain, 2006***

	Lower Estimate N	Upper Estimate N	Mean N	%
Men				
Musculoskeletal diseases	260 425	722 170	491 298	49.1
Stress, depression, or anxiety	82 754	211 367	147 060	14.7
Lung diseases	42 819	41 099	41 959	4.2
Cardiovascular diseases	27 241	37 576	32 408	3.2
Headaches, visual fatigue	14 899	190 230	102 564	10.3
Hearing problems or deafness due to noise	20 660	28 182	24 421	2.4
Infectious diseases	11 722	113 903	62 812	6.3
Skin diseases	12 176	55 190	33 683	3.4
Others	30 478	96 289	63 384	6.3
Total	503 175	1 496 007	999 591	100
Women				
Musculoskeletal diseases	209 629	770 891	490 260	48.6
Stress, depression, or anxiety	77 323	260 966	169 145	16.8
Lung diseases	25 136	43 228	34 182	3.4
Cardiovascular diseases	10 130	82 453	46 291	4.6
Headaches, visual fatigue	15 053	256 964	136 008	13.5
Hearing problems or deafness due to noise	3863	30 419	17 141	1.7
Infectious diseases	10 726	91 258	50 992	5.1
Skin diseases	10 217	60 839	35 528	3.5
Others	21 407	35 222	28 315	2.8
Total	383 484	1 632 240	1 007 862	100

*According to prevalences and sources shown in Table 2 and the mean working population by sexes in Spain in 2006 (11 742 600 men and 8 005 100 women).¹⁴

and loss of hearing due to noise. The respiratory diseases and mental disturbances of work origin also have notable incidences.

For its part, the estimation of prevalent cases of work-related diseases for both sexes is shown in Table 4. According to the mean estimations, around 1 million workers and a similar figure of workers annually suffer diseases and health

problems associated with their work.

Practically half of these problems, both in men and women, are musculoskeletal diseases. The next category in frequency in males are problems with psychological well-being (stress, anxiety, depression), also second in importance and somewhat more common in women.

Lastly, in Table 5, the under-registration of occupational diseases is calculated from the comparison of our mean incidence estimations with the data from the official statistics from the Ministry of Work and Social Affairs.¹⁷ As can be seen in the Table, the mean under-registration of occupational disease incidents in the year 2006 would be 75%. By disease categories, the lack of knowledge of well recognised occupational problems, such as deafness caused by noise, should be noted.

The under-registration of some more serious diseases, such as malignant tumours or cardiovascular diseases is also worth mentioning.

Discusión

According to our estimations, around 90 000 incident cases of diseases due to occupational exposure are diagnosed annually. Also, around 2 million workers suffer from some health disorder related to their working conditions. Practically 3 out of every 4 cases may not be recognised as an occupational disease and this under-recording may

mainly affect the more serious diseases group. In fact, 99.8% (N=21 865) of all the occupational diseases recognised in Spain in the year of the study were described as mild or not involving sick leave.¹⁷ Only 40 serious cases of occupational diseases were recognised in the whole of Spain in 2006, and none were fatal.

**TABLE
5**

	Registered Occupational Diseases ^a (A)	Estimated Occupational Diseases ^b (B)	Under-registered (B – A / B × 100)
Musculoskeletal diseases	16 794 ^c	30 757	45.40
Skin diseases	1405 ^d	12 481	88.74
Hearing problems or deafness due to noise	578	11 256	94.86
Respiratory diseases	345 ^e	9153	96.23
Mental disturbances	NM	8205	NM
Nervous system diseases	2219 ^f	5747	61.39
Malignant tumours	4 ^g	6082	99.93
Infectious diseases	302	2310	86.93
Eye diseases	7 ^h	1205	99.42
Cardiovascular diseases	NM	652	NM
Gastrointestinal diseases	NM	8	NM
Total	21 905 ⁱ	87 856	75.07

^aData published by the Ministry of Works and Social Affairs, 2006.¹⁷ The diseases are classified according to the table of occupational diseases (OD) current in 2006.⁴

^bMean estimates (Table 3).

^cOnly includes the categories relevant to the "Occupational Diseases Produced by Physical Agents" section.

^dOnly includes the OD section, "Occupational Diseases of the Skin by Substances and Agents Not Included Previously."

^eOnly includes the OD section "Occupational Diseases produced by inhalation of substances not included previously."

^fOnly includes the OD category "Paralysis of the Nerves Due to Pressure."

^gOnly includes the relevant categories of the OD section "Systematic Diseases."

^hOnly includes the OD categories, "Cataracts caused by radiant energy" and "Corneal Dystrophy Due to Gases, Vapours, etc."

ⁱCorresponds to all the occupational diseases notified in 2006. The categories included in the Table add up to a total of 21 654 (therefore, our calculation has not been able to classify 251 cases).

NM indicates not measurable.

It is essential to know the impact and distribution of work-related diseases to adequately plan the necessary preventive and healthcare strategies to minimise the dangers of work on health.¹⁸

The deficiencies of the official notification system, a unique systematic monitoring source in this sense, are generally recognised by all the experts in occupational health.¹⁹ The compensatory character of the system, rather than being a public health monitor, the limitations on being based on a closed list of diseases, despite its recent update,^{3,5} and some unidentified problems in the notification circuit, which probably might explain the unusual decrease in the number of occupational diseases notified since the new regulations²⁰ came into force, are at the root of these deficiencies.

The calculations made in this work are not without limitations. Except in 2 cases (the Sentinel Occupational Diseases Monitoring System of the Navarre Occupational Health Institute and the National Survey on Working Conditions), the rest of the sources used come from observations and estimations made for populations of other countries. However, in general, they may be considered as comparable environments to Spanish ones, possibly even better as regards working conditions. Some basic indicators (eg, occupational risk) are clearly worse in Spain compared with Finland or the Europe-15 group,²¹ where some of the

sources used come from.^{12,16} On the other hand the British and Navarre registers have limitations both in spectrum of diseases covered, as well as regards the voluntary nature of the notification system.⁹⁻¹¹ The fact is that one of the principal sources for incidence estimation, the Canadian study,¹³ on the other hand, on being based on information available in 1989, may have introduced distortions in the estimations, since exposure situations to occupational risks may very likely change with time.

Another point to consider is the variability in the estimators used to calculate the incidence and prevalence data for different diseases. For example, the estimated incidence for occupational musculoskeletal diseases is 5 times higher in the Canadian study¹³ when compared to the data of the Finnish register.¹² This dispersion may be partly due to real differences in the incidence of the diseases in the

different countries, but we also believe that it mainly shows the difficulties in recognising the multiple causes and largely non-specific occupational diseases. In the present article we have adopted a conservative approach by mainly using mean estimations. Well planned follow-up studies would be needed, which should include representative working populations in our country, to be able to make more precise estimations. Despite all these limitations, the overall assessment of the different sources of error that could have affected the results presented in this study, suggest to us that our estimations more likely undervalue the real dimension of the problem. The occupational health medical sentinel networks, as promoted by the Navarre Occupational Health Institute, have shown the frequency with which occupational diseases (such as upper limb tendonitis, carpal tunnel syndrome, asthma, or occupational dermatoses), are dealt with by the Public Health System, without being recognised as occupational diseases.²² Some authors have estimated that 16% of the problems seen in primary care centres are probably related to working conditions.²³ The new regulations on occupational diseases allows doctors in the health system to take part in recognising occupational diseases, somewhat necessary to adequately treat and prevent these processes. However, to put this function into operation will not be an easy task. Firstly, training in occupational health of

What Is Known About the Subject

- In the workplace there are exposures that produce risk factors which can lead to health and wellbeing problems for the workers.
- The system for registering occupational diseases in Spain, despite its recent update, is recognisably limited for evaluating the frequency and characteristics of occupational diseases in our country.

What This Study Contributes

- It has been estimated that in the year 2006 in Spain there were around 90 000 incident cases of occupational diseases.
- Approximately 2 million workers have some health problem related to their working conditions.
- It is necessary to highlight the impact of occupational diseases as a public health problem in Spain in order to approach their prevention and care properly.

doctors in general medicine as well as those in the different specialities (with the logical exception of occupational medicine) is completely insufficient.²⁴ It would also require the development of support structures by the Health Administration which would make it easier for doctors to carry out the functions of recognising and notifying cases, as well as occupational health units which function in some autonomous communities, but not in all, and not always with the appropriate functions.²⁵

All in all, the recognition of the work origin of a large part of the diseases seen in the Public Health System is absolutely necessary, due to its implications in terms of derived costs and compensation, and the rights of the workers, as well as to implement suitable preventive measures. In this sense, primary care doctors should play a fundamental role, always having the necessary support and resources. We believe that it would be a very positive step to open a debate as regards the opportunities and obstacles to approach this task, and that journals, such as *ATENCIÓN PRIMARIA*, would be a very valuable forum to channel and communicate the different opinions on this matter.

For the time being, with the present article, we hope we have contributed to highlight the importance and impact of work related health problems in Spain and it leads to the steps necessary to improve the current situation.

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