European Agency for Safety and Health at Work

Work-related musculoskeletal disorders: prevalence, costs and demographics in the EU

National report: Spain

European Agency for Safety and Health at Work

Authors: Jessica Durán and Iñigo Isusi (IKEI).

Project management: Lorenzo Munar (EU-OSHA).

This report was commissioned by the European Agency for Safety and Health at Work (EU-OSHA). Its contents, including any opinions and/or conclusions expressed, are those of the author(s) alone and do not necessarily reflect the views of EU-OSHA.

Cataloguing data can be found on the cover of this publication.

Luxembourg: Publications Office of the European Union, 2019

Table of Contents

List of figures and tables

Summary

Prevalence of MSDs

- The percentage of both Spanish men and women workers reporting that their work affects their health is higher (48 % and 42 %, respectively) than the average levels for the 28 EU Member States (EU-28) (39 % and 35 %, respectively).
- The percentage of Spanish workers affected by back pain is relatively similar to the EU-28 average, whereas the prevalence of muscular pain in the shoulders, neck and/or upper limbs as well as in the lower limbs is higher in Spanish workers than the EU-28 average.
- National data show that the most frequent musculoskeletal disorder (MSD)-related problems are back pain, neck and upper limb pain. Other significant problems such as headaches, eye fatigue and lower extremity pain affect fewer people. Women and older people are generally more likely to be affected by these health problems than men and younger people.
- National data show that MSD-related work accidents represent a significant proportion of the total number of work accidents. They accounted for 37.3 % of all work accidents resulting in sick leave in Spain in 2017, a much greater proportion than other accidents such as knocking against a stationary object or a worker in motion, or being hit by a moving object. Musculoskeletal overload was consistently the main reason for work accidents in Spain during the period 2014-2017.
- Work accidents caused by musculoskeletal overload and resulting in sick leave affect particularly those workers between 40 and 49 years old, those between 30 and 39 years old and men. In addition, they are particularly prevalent among those working in certain occupations, namely labourers, skilled workers in the manufacturing industries, unskilled workers in services, and workers in the hotels, restaurants and catering sector and trade services, followed by workers in health services and social care, skilled workers in construction, and drivers and operators of mobile machinery. These MSD-related work accidents affect three main areas in particular, namely the back (including the spine and the thoracolumbar vertebrae), the upper limbs and the lower limbs.
- The two main causes of these MSD-related work accidents are body movement with physical stress and body movement without physical stress.
- The number of recognised cases of occupational diseases resulting in sick leave in Spain was 9,167 in 2017, a figure that has increased each year since 2013. By type of occupational disease, the highest number by far of recognised cases corresponds to occupational diseases caused by physical factors (7,404 recognised cases in total in 2017), specifically those related to MSDs. The average duration of sick leave (for all recognised cases) is 78.88 days, whereas sick leave associated with physical factors has an average duration of 84.12 days (data for 2017). With regard to the different physical factors causing occupational diseases, and the type of disease, more than half of recognised cases were caused by forced postures and repetitive movements at work resulting in fatigue and inflammation of the tendon sheaths, peritendinous tissues, and muscular and tendinous insertions; the next most common type of occupational disease was forced postures and repetitive movements at work resulting in nerve paralysis due to pressure.
- Looking at data for 2017, the sectors with the largest numbers of recognised cases of occupational diseases resulting in sick leave and caused by physical factors are manufacturing; the wholesale and retail trade; and repair of motor vehicles and motorcycles. Regarding the average duration of sick leave caused by physical factors, the longest average durations are found in the extractive industries; agriculture, livestock, hunting, forestry and fishing; and information and communications.
- Since 2013, the number of recognised cases of occupational diseases resulting in sick leave and caused by physical factors has been slightly higher among women, and most recognised cases are in workers aged between 35 and 54 years old, particularly people aged 40-44 years old and people aged 45-49 years old. The average duration of sick leave for people with recognised cases of

occupational diseases resulting in sick leave and caused by physical factors is higher for women (92.72 days) than for men (75.14 days), and this average duration also increases with age.

- The highest incidence rates of occupational diseases resulting in sick leave and caused by physical factors are in manufacturing, followed by administrative activities and auxiliary services; water supply, sanitation activities, waste management and decontamination; and, finally, construction.

Impact of MSDs

- With regard to the costs and other burdens related to MSDs, the available data on (disability-adjusted life years (DALYs) show that the number of years of life lost and lived with disability resulting from work-related MSDs per 100,000 workers represents a higher percentage of the total number of years of life lost and lived with disability due to other reasons (cancer, circulatory problems, injuries, etc.) than the EU-28 average.
- A national study shows that MSDs represented 23 % of the total costs related to temporary work disability (EUR 1,702 million in total) in 2007. This is equivalent to EUR 1.62 per EUR 1,000 of national gross domestic product.
- National data sources show that up to 77.6 % of Spanish workers reported feeling some type of frequent discomfort associated with postures adopted or efforts made at work, and the most common parts of the body affected were the lower back, the neck and the upper back. The economic sectors with the highest percentages of workers reporting feeling some type of frequent discomfort associated with postures adopted or efforts made at work include water supply and sanitation activities, and health services and social care, followed by transport and storage. Discomfort in the lower back affects some sectors in particular, namely transport, construction and health activities. Meanwhile, discomfort in the neck is particularly likely to be experienced by workers in financial and insurance activities, information and communications, professional activities, real estate activities, public administration and education. Finally, discomfort in the upper extremities particularly affects workers in the water supply industry and construction.
- The percentage of Spanish employees who work in companies that support employees to return to work after long-term sickness is lower than the EU-28 average.
- Available data show that a higher percentage of people in Spain have reported a relatively long period off work as a result of a work-related health problem resulting in sick leave than the average level for the EU. For instance, 20 % of Spanish workers reporting a work-related health problem resulting in sick leave had a period off work of 6 months or more, compared with an average of 12 % in the EU-28.

Risk factors for MSDs

- Concerning physical risk factors, 77 % and 69 % of Spanish employees work in establishments where employees have jobs involving working in a standing position and repetitive hand/arm movements, respectively. Meanwhile, 54 % of Spanish employees work in establishments where employees work in tiring/painful positions, 52 % work with computers/laptops and 50 % work in sitting positions. A comparison with EU-level data shows that the two most important physical risk factors for workers in Spain (jobs that involve standing and repetitive hand/arm movements) are the same as in the EU-28, although Spanish employees seem to have a higher level of exposure to both risk factors than workers in the EU-28 on average. Spanish employees are also more exposed to tiring/painful positions than their EU-28 counterparts.
- National data show that some of the physical demands to which Spanish workers are most commonly exposed are risk factors particularly associated with MSDs, such as repetitive hand/arm movements and tiring/painful positions. Repetitive hand/arm movements are the most frequently required MSD-related risk factor, particularly in the extractive industries, transport and construction,

whereas the adoption of painful/tiring postures particularly affects sectors such as the extractive industries, construction and health activities. Of Spanish workers, 11.9 % report that the main risk of accidents at work is linked to extra physical effort, and this is most commonly reported in four particular sectors, namely the wholesale and retail trade, the manufacturing industries, health services and social care, and construction. More than 80 % of Spanish workers affected by specific MSDs reported that their MSDs were caused and/or aggravated by work.

- Organisational and psychosocial risk factors also play a role as potential triggers of MSDs. The most relevant of these factors among Spanish employees relate to the pace of work being dependent on other people's demands, tight deadlines and working at very high speed. Other relatively important risks include overall fatigue, the pace of work being dependent on the boss and difficulties with sleep. A comparison with EU-level data shows that the relative importance of the different organisational and psychosocial risk factors is similar in Spain and in the EU. Spanish employees are as exposed or more exposed to the various risks than their EU counterparts.

Prevention of MSDs

- Surveys of enterprises suggest that Spanish employees benefit considerably from measures aimed at preventing MSDs in their workplaces, particularly the provision of equipment that helps with lifting or moving, the provision of ergonomic equipment and rotation of tasks to reduce repetitive movements. Meanwhile, a higher percentage of Spanish employees work in establishments that provide training on various preventive activities than their European counterparts, particularly training on the proper use and adjustment of work equipment and how to prevent psychosocial risks.
- The activities most frequently carried out in Spanish workplaces to prevent occupational risks are medical examinations, risk assessments and the preparation of prevention plans. By economic sector, the chemistry and the construction sectors are the most active sectors in the implementation of activities to prevent occupational safety and health risks. In addition, the probability that preventive activities are carried out increases with the size of the workplace.

1 Introduction

1.1 Background

This is the national musculoskeletal disorders (MSDs) facts and figures overview report for Spain ([1]). This national report is part of a much larger project, '**MSDs facts and figures overview: prevalence, costs and demographics of MSDs in Europe**', intended to support policy-makers at EU and national levels by providing an accurate picture of the prevalence and costs of MSDs across Europe, pulling together existing data from a number of relevant and reliable official statistical sources. This national report is considered complementary to the overview report covering the EU as a whole, *Work-related MSDs: prevalence, costs and demographics in the EU – Final report* ([2]).

The European Agency for Safety and Health at Work (EU-OSHA), aware of the limits of EU data sources related to MSDs, decided to complement and enrich EU-level findings with national data and analyses. This national report is not intended to provide a comprehensive and exhaustive national overview of MSDs. Rather, the main criteria followed in relation to gathering national data were to identify and focus on national MSD-related information that is either not available at EU level or complementary to existing data. Moreover, EU-OSHA considers that making the information/data identified at national level accessible to the European occupational safety and health (OSH) community and Member States (by publishing it in English) is also important. By sharing this national data at EU level, EU-OSHA aims to improve knowledge on the MSD topic among policy-makers, OSH professionals and national authorities in general.

This national report is structured into five chapters, including this introductory chapter, Chapter 1. Chapter 2 presents some data on the prevalence of MSDs among national workers, as well as information on MSD-related occupational diseases and accidents at work. Chapter 3 analyses the impact of MSDs, presenting information on health, work and employment outcomes (including information on costs linked to MSDs). Chapter 4 identifies several risk factors underpinning MSDs, including physical as well as organisational/psychosocial and sociodemographic risk factors. Chapter 5 provides some information related to activities carried out by enterprises/establishments intended to prevent MSDs within the workforce, including training and support activities to help workers returning to work. Finally, the report lists the main national data sources on MSDs along with (when possible) links through which this information can be accessed. All chapters follow the same structure: each chapter presents national data on MSDs based on EU-level data sources and these data are subsequently complemented with information from national data sources (if any). This has been done to ensure that all reports contain a minimum level of basic information, harmonised for all the Member States analysed.

The structure of this national report is the same as that of the general European overview report (mentioned above), and readers are invited to consult the information available in the equivalent chapter of the general European report for a more comprehensive overview of the issues addressed in this national report.

From a methodological perspective, the information presented in this report comes from national data sources based either on surveys or on administrative data related to the issue of MSDs. This national information has been complemented in some cases with information from European/international data sources to allow comparisons between national and EU-level results.

([1]) Information about the occupational safety and health system in Spain is available at: https://oshwiki.eu/wiki/OSH_system_at_national_level_-_Spain

([2]) This report is available at: This report is available at: https://osha.europa.eu/en/publications/msds-facts-and-figures-overview-prevalence-costs-and-demographics-msds-europe/view

1.2 Causes and consequences of MSDs: a framework

1.2.1 Main sources of information on MSDs

MSDs refer to impairments of bodily structures such as muscles, joints, tendons, ligaments, nerves, cartilage, bones and the localised blood circulation system (EU-OSHA, 2002) ([3]). If MSDs are caused or aggravated primarily by work and by the effects of the immediate environment in which work is carried out, they are known as work-related MSDs.

The two main sources of information and data regarding MSDs are surveys based on self-reporting and administrative data.

In the case of self-reporting, people are asked whether or not they suffer from an MSD (either in general or a specific type of MSD). When assessing the prevalence of MSDs through surveys, it is customary to ask about the part of the body affected by health complaints and not about the clinical nature of the complaint.

Questions regarding the prevalence of MSDs are included in different surveys. The formulation of the questions used varies between surveys, and also between different waves of these surveys. These differences are likely to result in different outcomes.

Another important source of information is administrative data. Two examples of available administrative data are:

- data on the number (and proportion) of occupational diseases recognised to be due to diseases of the musculoskeletal system and connective tissue;
- data on declared work-related accidents.

Estimates of MSD prevalence based on self-reporting may include people with relatively mild health complaints as well as people with severe health complaints. Statistics based on administrative data are likely to include only people with more severe health complaints (severe enough to result in the complaint being recognised as an occupational disease).

1.2.2 A multidimensional model of MSDs

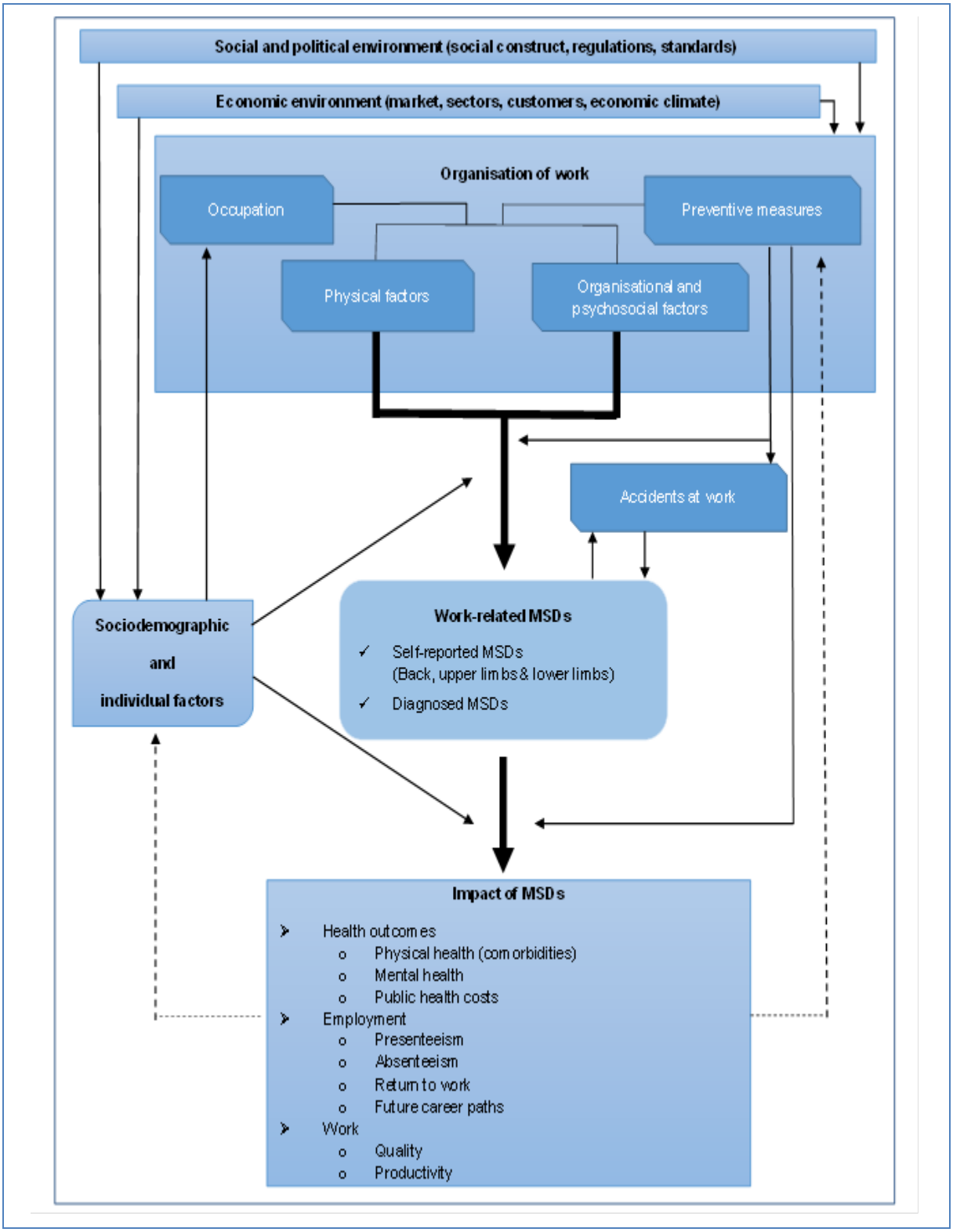
MSDs can be caused by many different (combinations of) factors and may have many different consequences. Figure 1 shows the main causes and consequences of MSDs that have been identified in previous studies.

The objective of this national report is to present additional country-specific information regarding the following aspects of the framework depicted in Figure 1:

- the prevalence of MSDs;
- the impact of MSDs;
- risk factors for MSDs;
- the prevention of MSDs.

([3]) EU-OSHA — European Agency for Safety and Health at Work, 'Introduction to work-related musculoskeletal disorders', *Facts 71*, 2002. Available at: https://osha.europa.eu/sites/default/files/publications/documents/en/publications/factsheets/71/Factsheet_71_-_Introduction_to_work-related_musculoskeletal_disorders.pdf

Figure 1: Theoretical framework of work-related MSDs



Note: theoretical framework developed by Panteia, vhp performance and IKEI

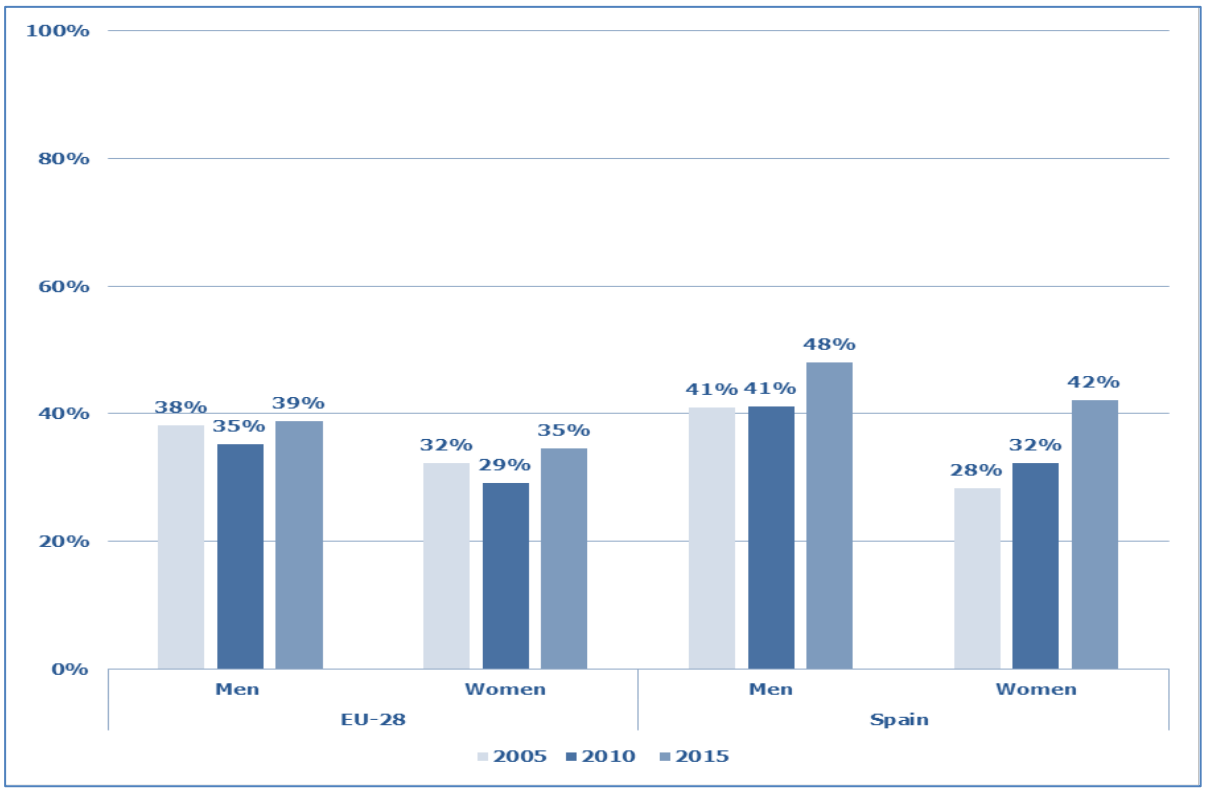
2 Prevalence of MSDs

2.1 Self-reported MSDs

In this chapter, an overview of the prevalence of MSDs in Spain and in comparison with the EU-28 is presented.

First, Figure 2 illustrates the percentages of workers, by gender, in Spain who report that their work affects their health. Around 48 % of men and 42 % of women report that their work affects their health (data for 2015); both percentages are higher than the corresponding EU-28 averages (39 % and 35 %, respectively).

Figure 2: Percentages of workers who reported that their work affects their health in the EU-28 and in Spain, by gender, in 2005, 2010 and 2015



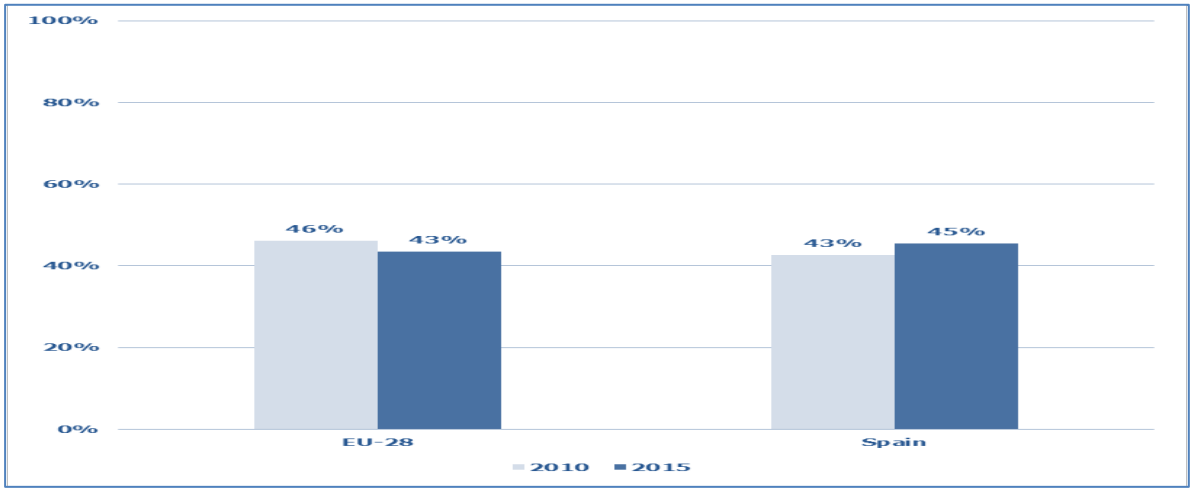
Source: Panteia, based on data from the 2005, 2010 and 2015 waves of the European Working Conditions Survey (EWCS) ([4])

The main focus is on three specific categories of MSDs, namely back pain, muscular pain in the upper limbs and muscular pain in the lower limbs.

([4]) Eurofound (European Foundation for the Improvement of Living and Working Conditions), EWCS. Information about the survey is available at: https://www.eurofound.europa.eu/surveys/european-working-conditions-surveys

Figure 3 shows the percentages of workers who reported back pain in the past 12 months in the EU-28 and in Spain. According to the available information, back pain is more prevalent in Spain than in the EU-28 (EWCS 2015). In 2015, 45 % of Spanish workers reported back pain in the past 12 months, whereas the equivalent figure for the EU-28 was 43 %.

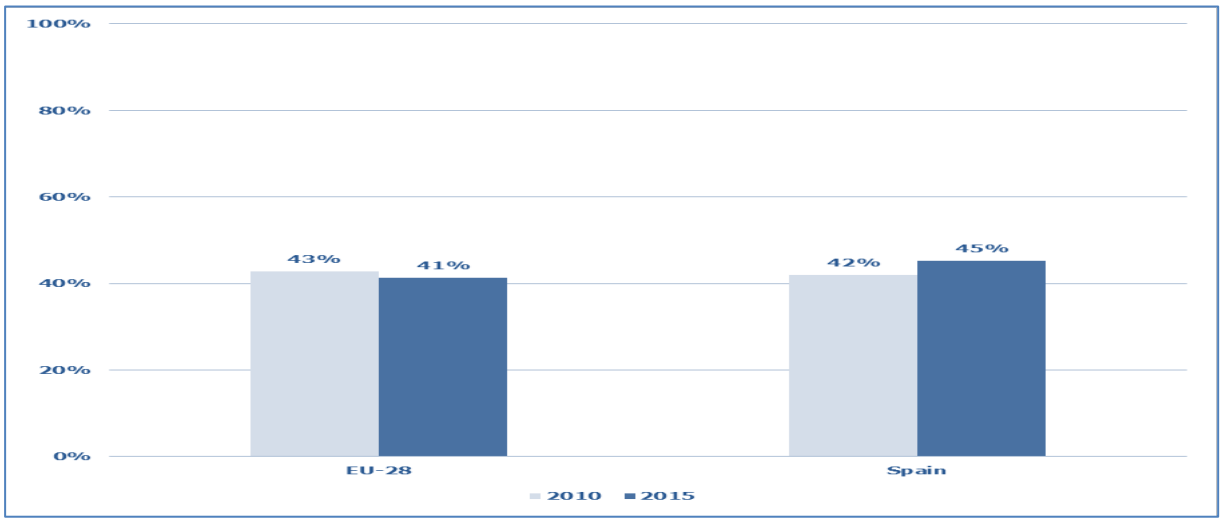
Figure 3: Percentages of workers who reported back pain in the past 12 months in the EU-28 and Spain, in 2010 and 2015



Source: Panteia, based on data from the 2010 and 2015 waves of the EWCS

Figure 4 illustrates the percentages of workers who reported muscular pains in the shoulders, neck and/or upper limbs in the past 12 months in the EU-28 and in Spain. According to the available data, the percentage of Spanish workers reporting this type of muscular pain was 45 % in 2015, which was higher than the percentage for the EU-28 (41 %).

Figure 4: Percentages of workers who reported muscular pains in the shoulders, neck and/or upper limbs in the past 12 months in the EU-28 and Spain, in 2010 and 2015

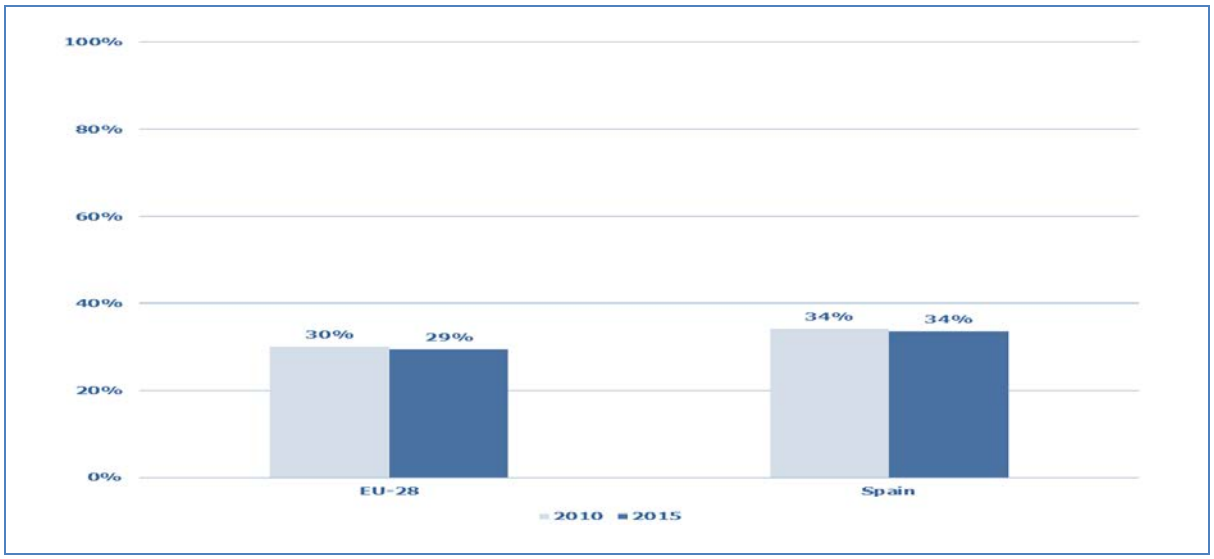


Source: Panteia, based on data from the 2010 and 2015 waves of the EWCS

Finally, Figure 5 presents the percentages of workers who reported muscular pain in the lower limbs in the past 12 months in the EU-28 and in Spain. The available data show that the percentage of Spanish workers reporting being affected by this type of muscular pain was 34 % in 2015, higher than the figure

for the EU-28 (29 %). No significant differences in these percentages are apparent between 2010 and 2015.

Figure 5: Percentages of workers who reported muscular pains in the lower limbs in the past 12 months in the EU-28 and Spain, in 2010 and 2015



Source: Panteia, based on data from the 2010 and 2015 waves of the EWCS

Furthermore, and looking specifically at national sources, the Spanish National Survey on Working Conditions ([5]), based on the 6th EWCS, shows data on health problems suffered by workers in the past 12 months (see Table 1). The data for 2015 reveal that the most common health problems are back pain, neck and upper limb pain, and general tiredness, each of which affect 45 % of Spanish workers. Other problems that are also prevalent are headaches and eye fatigue (36 % of workers), lower extremity pain (34 %) and anxiety (18 %). Finally, the least common health problems are hearing problems (5 %) and skin problems (6 %).

By gender, female workers are generally more likely to suffer from MSD-related health problems than male workers. In particular, 51 % of women experience neck and upper limb pain, compared with 41 % of men; 50 % experience back pain, compared with 41 % of men; and 37 % experience lower extremity pain, compared with 31 % of men. By age, MSD-related health problems are more likely to occur as age increases.

By occupation, on average unskilled workers seem to be more affected by MSD-related health problems than other groups, as they are more likely to suffer from back pain (57 %), neck and upper limb pain (57 %) and lower extremity pain (48 %). Meanwhile, operators of machines and technical equipment are also more likely than average to experience back pain (54 %).

By area of economic activity, the results of the survey show that workers in the health sector are particularly affected by MSD-related complaints, particularly back pain (55 %) and neck and upper limb pain (52 %). In addition, workers in the farming sector suffer particularly from back pain (53 %) and lower extremity pain (44 %).

([5]) Instituto Nacional de Seguridad e Higiene en el Trabajo (INSHT), Encuesta Nacional de Condiciones de Trabajo 2015 6ª EWCS (National Survey on Working Conditions, 2015, 6th EWCS). More information available at: http://encuestasnacionales.oect.es/

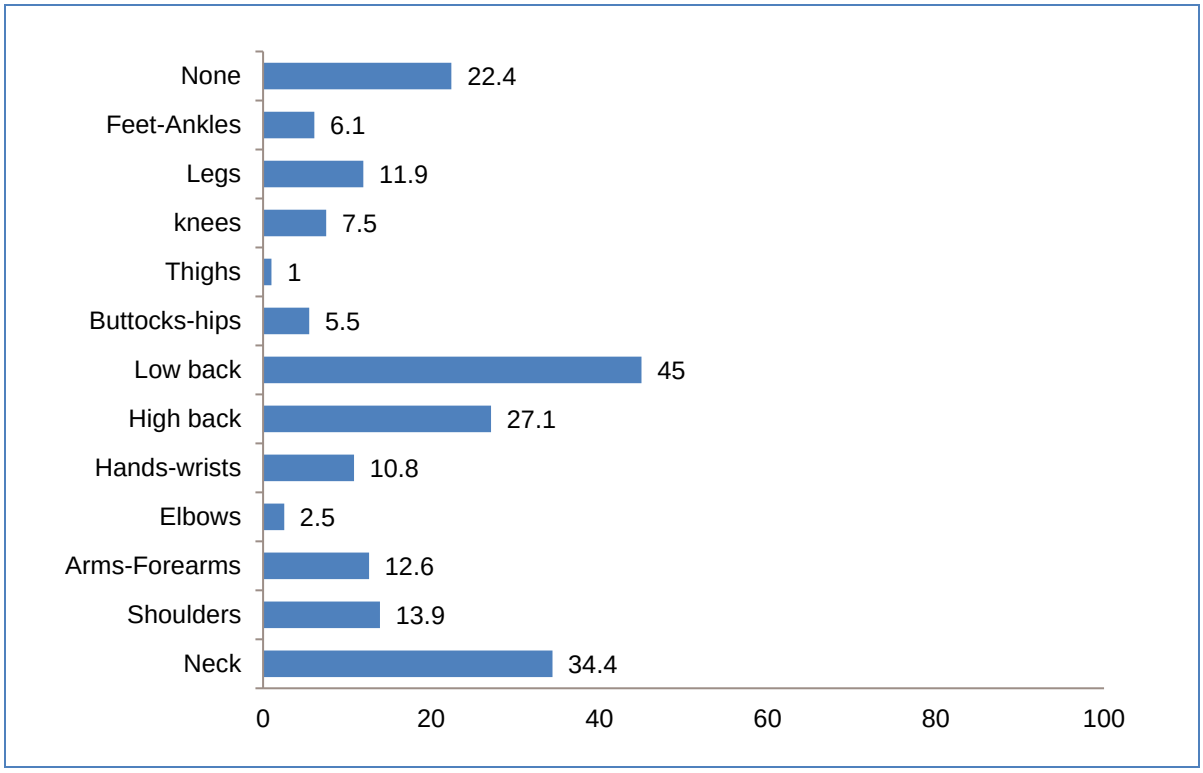
Table 1: Health problems in the past 12 months, by sociodemographic variables, 2015

		Hearing problems	Skin problems	Back pain	Neck and upper limb pain	Lower extremity pain	Headaches, eye fatigue	Anxiety	General tiredness
Gender	Men	**7 %**	5 %	41 %	41 %	31 %	31 %	15 %	39 %
	Women	4 %	**7 %**	**50 %**	**51 %**	**37 %**	**41 %**	**21 %**	**50 %**
Age	Up to 34 years of age	2 %	6 %	34 %	32 %	21 %	32 %	16 %	38 %
	35-49 years of age	5 %	6 %	46 %	48 %	35 %	37 %	18 %	47 %
	50 years of age and over	**9 %**	7 %	**55 %**	**54 %**	**44 %**	**38 %**	19 %	**48 %**
Occupation	Directors and managers	2 %	1 %	39 %	39 %	39 %	34 %	**24 %**	49 %
	Technicians and scientific and intellectual professionals	4 %	7 %	41 %	43 %	27 %	**42 %**	17 %	42 %
	Technicians and support professionals	7 %	7 %	42 %	40 %	22 %	37 %	18 %	46 %
	Accounting and administrative employees	3 %	6 %	40 %	40 %	24 %	37 %	17 %	36 %
	Service workers and salespeople	3 %	6 %	43 %	41 %	35 %	32 %	19 %	45 %
	Skilled workers in the agricultural sector	4 %	3 %	50 %	48 %	**44 %**	25 %	13 %	44 %
	Artisans and skilled workers in industry and construction	**10 %**	5 %	47 %	51 %	37 %	33 %	15 %	41 %
	Operators of facilities and machinery	8 %	5 %	**54 %**	50 %	34 %	32 %	18 %	**54 %**
	Elementary occupations	6 %	7 %	**57 %**	**57 %**	**48 %**	38 %	19 %	**53 %**
Economic activity	Farming	7 %	5 %	**53 %**	50 %	**44 %**	26 %	10 %	46 %
	Industry	**8 %**	5 %	44 %	46 %	32 %	32 %	17 %	47 %
	Building	**8 %**	3 %	44 %	46 %	39 %	35 %	9 %	42 %
	Commerce and hospitality	3 %	5 %	45 %	45 %	35 %	32 %	20 %	48 %
	Transport	**8 %**	3 %	**51 %**	45 %	31 %	35 %	13 %	42 %
	Administrative, auxiliary and financial activities	3 %	8 %	42 %	47 %	32 %	38 %	22 %	43 %
	Public administration and defence	4 %	5 %	39 %	41 %	30 %	39 %	9 %	39 %
	Education	7 %	7 %	43 %	40 %	26 %	**45 %**	18 %	40 %
	Health	4 %	**11 %**	**55 %**	**52 %**	35 %	**43 %**	**26 %**	**50 %**
	Other services	4 %	6 %	42 %	41 %	36 %	34 %	16 %	38 %
Average		5 %	6 %	45 %	45 %	34 %	36 %	18 %	45 %

Notes: based on a total of 3,364 workers; figures for notable groups shown in bold
Source: Spanish National Survey on Working Conditions, 6th EWCS, 2015

Meanwhile, available national data sources ([6]) also show that up to 77.6 % of Spanish workers reported feeling some type of frequent discomfort associated with postures adopted or efforts made at work; in other words, only 22.4 % of respondents did not identify any discomfort (data for 2011). The most common body parts where workers reported frequent discomfort associated with postures adopted or efforts made at work are the lower back (45.0 % of respondents), the neck (34.4 %) and the upper back (27.1 %) (see Figure 6).

Figure 6: Body location of the most frequent complaints associated with postures or efforts made at work (percentage of workers, some workers may have multiple complaints), 2011



Source: 7th National Survey on Working Conditions, 2011

The results by sector (see Table 2) show that the economic sectors with the highest percentages of workers reporting feeling some type of frequent discomfort associated with postures adopted or efforts made at work are water supply and sanitation activities, and health activities, followed by transport and storage (84.0 %, 84.0 % and 81.7 %, respectively).

In the survey sample as a whole, discomfort in the lower back particularly affects some sectors, namely transport, construction and health activities. Meanwhile, discomfort in the neck is particularly felt in sectors such as financial and insurance activities, information and communications, professional activities, real estate activities, public administration and education. Finally, discomfort in the upper extremities is particularly likely to be experienced in sectors such as water supply and sanitation activities, and construction.

(6) Instituto Nacional de Seguridad e Higiene en el Trabajo (INSHT). VII Encuesta Nacional de Condiciones de Trabajo 2011 (7th National Survey on Working Conditions, 2011). More information available at: http://www.oect.es/InshtWeb/Contenidos/Documentacion/FICHAS%20DE%20PUBLICACIONES/EN%20CATALOGO/OBSERVATORIO/Informe%20(VII%20ENCT).pdf

Table 2: Body location of the most frequent complaints associated with postures or efforts made at work (possibility of multiple answers), by economic sector, 2011

	Neck	Upper extremities	Upper back	Lower back	Buttocks/ hips	Thighs	Legs	Knees	Feet/ankles	Any complaint
Sector A	23.0	38.2	20.3	50.9	6.3	3.0	13.2	12.4	5.5	77.7
Sector B	30.8	47.9	42.9	43.7	4.1	2.5	7.5	4.9	2.5	77.7
Sector C	29.4	37.5	23.5	42.9	5.7	0.6	9.4	7.9	5.6	76.7
Sector D	36.9	29.6	26.0	41.7	3.7	1.5	3.2	13.3	5.8	75.1
Sector E	35.9	46.3	20.0	49.6	3.2	5.6	10.3	16.9	8.1	84.0
Sector F	28.1	38.3	25.1	52.5	6.5	1.0	9.5	16.3	3.9	79.1
Sector G	27.2	27.8	26.4	42.5	4.4	1.2	17.0	6.6	8.6	75.0
Sector H	39.0	26.4	29.4	53.7	8.2	1.1	12.0	10.5	3.3	81.7
Sector I	23.0	35.3	20.6	41.2	5.1	1.4	27.3	7.8	18.0	80.2
Sector J	49.6	32.2	33.1	38.8	4.6	1.7	5.2	2.6	2.5	74.0
Sector K	53.3	29.8	30.3	38.1	4.5	0.0	5.7	3.3	2.5	77.8
Sector L	43.5	14.1	32.5	35.3	5.5	0.0	3.3	3.3	1.8	65.3
Sector M	47.4	30.9	30.4	43.1	4.2	0.8	6.3	2.8	3.6	75.5
Sector N	35.6	31.9	29.9	47.2	3.9	0.6	10.4	6.1	2.3	75.4
Sector O	44.2	29.2	29.4	43.0	3.9	0.6	7.2	6.7	3.9	78.6
Sector P	43.7	25.6	32.3	42.4	5.1	0.5	6.6	4.9	4.6	74.9
Sector Q	43.7	37.8	31.5	52.2	9.3	1.3	10.0	3.8	4.1	84.0
Sector R	35.2	27.7	27.0	41.0	5.3	1.5	8.2	8.6	2.9	72.9
Sector S	35.8	38.0	27.8	41.5	3.1	0.9	13.6	7.8	7.8	79.6
Sector T	21.9	33.7	22.4	46.9	6.5	0.4	12.0	8.1	5.2	76.0
Sector U	45.6	31.6	33.4	30.8	7.0	0.0	17.5	0.0	0.0	77.6
Average	34.4	32.6	27.1	45.0	5.5	1.0	11.9	7.5	6.1	77.6

Note: Sector A = agriculture, livestock, hunting, forestry and fishing; Sector B = extractive industries; Sector C = manufacturing industries; Sector D = electricity, gas and steam supply; Sector E = water supply and sanitation activities; Sector F = construction; Sector G = wholesale and retail trade; Sector H = transport and storage; Sector I = hotels, restaurants and catering; Sector J = information and communications; Sector K = financial and insurance activities; Sector L = real estate activities; Sector M = professional, scientific and technical activities; Sector N = administrative and auxiliary service activities; Sector O = public administration and defence, social security; Sector P = education; Sector Q = health and social services activities; Sector R = artistic and entertainment activities; Sector S = other services; Sector T = households as employers; Sector U = organisation and extraterritorial organism activities. Figures for notable groups shown in red./ Source: 7th National Survey on Working Conditions, 2011

2.2 MSD-related occupational diseases and accidents at work

This section is intended to provide national information on MSD-related work accidents and occupational diseases. Available national data show that MSD-related work accidents represent a significant proportion of the total number of work accidents (see Table 3). In 2017, there were a total of 515,082 work accidents resulting in sick leave in Spain, with 37.3 % of them (or 192,029 in absolute terms) being MSD-related, a much greater proportion than other accidents such as knocking against a stationary object or being hit by a worker in motion, or being hit by a moving object (24.7 % and 14.4 % of total work accidents, respectively, or 127,392 and 74,337 in absolute terms). It is interesting to note that musculoskeletal overload was consistently the main reason for work accidents in Spain during the period 2014-2017.

Table 3: Work accidents resulting in sick leave, by contact – mode of injury, 2017

	2014	2015	2016	2017
Physical overload on the musculoskeletal system	165,100	177,789	189,304	192,029
Knocking against a stationary object or a worker in motion	103,948	111,527	118,686	127,392
Being hit by a moving object	56,925	63,283	68,506	74,337
Contact with sharp or hard objects	39,759	43,442	46,473	50,385
Traffic accidents	14,477	15,640	16,976	18,633
Other causes	44,416	46,342	49,120	52,306
Total	424,625	458,023	489,065	515,082

Source: National Ministry of Labour, Migration and Social Security, statistics on work accidents

The available national data also make it possible to describe in more detail these MSD-related work accidents resulting in sick leave. The results included in Table 4 show that MSD-related work accidents particularly affect those workers between 40 and 49 years old and between 30 and 39 years old (31.9 % and 28.3 % of all work accidents, respectively, or 61,284 and 54,432 in absolute numbers). Of all MSD-related accidents, 67.9 % happen to men and 32.1 % to women (130,478 and 61,551 work accidents, respectively).

Table 4: Work accidents caused by musculoskeletal overload and resulting in sick leave, by gender and age, 2017

Age	Total	Men	Women
16-19 years old	1,462	1,009	453
20-29 years old	26,597	18,114	8,483
30-39 years old	54,432	38,946	15,486
40-49 years old	61,284	42,557	18,727
50-59 years old	40,849	25,494	15,355
60+ years old	7,405	4,358	3,047
Total	192,029	130,478	61,551

Source: National Ministry of Labour, Migration and Social Security, statistics on work accidents

As far as occupational categories are concerned, MSD-related work accidents are particularly prevalent among those working in certain occupations, namely labourers, skilled workers in the manufacturing industries, unskilled workers in services, and workers in the hotels, restaurants and catering (HORECA) sector and trade services (18.5 %, 12.7 %, 11.9 % and 10.8 % of all cases in 2017, respectively, or 35,444, 24,414, 22,889 and 20,763 cases) (see Table 5). MSD-related work accidents are less prevalent among workers in health services and social care, skilled construction workers, and drivers and operators of mobile machinery (9.9 %, 8.6 % and 7.0 % of all cases in 2017, respectively, or 18,992, 16,488 and 13,517 cases in absolute terms). It should be noted that the most affected occupations remained the same during the period 2014-2017.

Table 5: Work accidents caused by musculoskeletal overload and resulting in sick leave, by type of occupation, 2014-2017

Type of occupation	2014	2015	2016	2017
Directors and managers	694	630	576	598
Technicians and scientific professionals in health and education	4,602	4,964	5,116	4,751
Other technicians and scientific and intellectual professionals	1,141	1,169	1,129	1,205
Technicians and support professionals	5,948	6,356	6,808	6,826
Office employees not attending to the public	2,557	2,578	2,469	2,427
Office employees attending to the public	1,846	1,833	1,825	1,789
Workers in HORECA and trade services	18,004	19,114	20,735	20,763
Workers in health services and social care	16,709	17,919	19,266	18,992
Workers in protection and security services	6,976	6,692	6,369	6,244
Skilled workers in the agriculture, livestock, forestry and fishing sector	4,847	4,961	4,829	4,897
Skilled construction workers (except operators of machines)	12,235	13,745	14,842	16,488
Skilled workers in the manufacturing industries (except installation and machine operators)	20,802	22,255	23,812	24,414
Operators of installations and fixed machinery, and assemblers	9,920	10,697	10,910	10,785
Drivers and operators of mobile machinery	10,991	11,987	13,283	13,517
Unskilled workers in services (except transport)	20,580	22,074	23,904	22,889
Labourers in the agriculture, fishing, construction, manufacturing and transport industries	27,248	30,815	33,431	35,444
Total	165,100	177,789	189,304	192,029

Source: National Ministry of Labour, Migration and Social Security, statistics on work accidents

In addition, the available national data identify the main causes (or abnormal events leading to the accident - “deviation”) of MSD-related work accidents (see Table 6). Two main causes account for nearly 9 out of 10 MSD-related work accidents. These are body movement with physical stress and body movement without physical stress, representing 65.4 % and 24.1 %, respectively, of all MSD-related work accidents in 2017, or 125,495 and 46,248 accidents in absolute numbers.

Table 6: Work accidents derived from musculoskeletal overload and resulting in sick leave, by type of deviation, 2016 and 2017

	2016	2017
Deviation due to electrical problems, explosion, fire	295	377
Deviation by overflow, overturn, leak, flow, vaporisation, emission	192	219
Breakage, bursting, splitting, slipping, fall or collapse of materials	1,476	1,594
Loss of control (total or partial) of machinery, means of transport or handling equipment, hand-held tool, object or animal	6,846	7,497
Slipping, stumbling and falling	6,170	6,532
Body movement without physical stress (generally leading to an external injury)	46,484	46,248
Body movement with physical stress (generally leading to an internal injury)	123,694	125,495
Shock, fright, violence, aggression, threat	612	671
Other Deviations not listed above in this classification.	1,367	1,321
No information	2,168	2,075
Total	189,304	192,029

Source: National Ministry of Labour, Migration and Social Security, statistics on work accidents.

Finally, the available information ([7]) shows that MSD-related work accidents particularly affect three main areas of the body, namely the back (including the spine and the thoracolumbar vertebrae), the upper limbs and lower limbs (37.0 %, 27.4 % and 25.2 % of all cases in 2017, respectively, or 70,961, 52,699 and 48,480 work accidents) (see Table 7).

(7) Ministerio de Trabajo, Migraciones y Seguridad Social (National Ministry of Labour, Migration and Social Security), statistics on work accidents, several years. More information available at: http://www.mitramiss.gob.es/estadisticas/eat/welcome.htm

Table 7: Work accidents caused by musculoskeletal overload and resulting in sick leave, by part of the body affected, 2016 and 2017

Part of the body	2016	2017
Head	247	263
Neck, including spine and cervical vertebrae	10,364	10,160
Back, including spine and thoracolumbar vertebrae	72,010	70,961
Trunk and organs	7,525	7,864
Upper limbs	50,717	52,699
Lower limbs	47,014	48,480
The whole body or multiple parts	1,023	1,195
Another part of the body	215	229
No information	189	178
Total	189,304	192,029

Source: National Ministry of Labour, Migration and Social Security, statistics on work accidents

In addition, the CEPROSS electronic notification system ([8]) provides information on the number of recognised cases of occupational diseases resulting in sick leave in Spain. According to CEPROSS, in 2017, this number was 9,167. The number of cases has progressively increased each year since 2013 (when the total amounted to 7,174), whereas in 2012 and 2013 the figures were lower than in the previous year. By type of occupational disease, the highest number by far of recognised cases (7,404 recognised cases in total in 2017) corresponds to occupational diseases caused by physical factors (noise, vibrations, repetitive movements, forced postures, radiation, etc.). Other important diseases are occupational diseases caused by biological agents (686 recognised cases) and occupational skin diseases caused by substances and agents not included in any of the other categories (411 recognised cases).

Regarding the average duration of sick leave (see Table 8), the average duration (for all recognised cases) is 78.88 days. Occupational diseases caused by carcinogens result in the longest sick leave (231.44 days), followed by occupational diseases caused by inhalation of substances and agents not included in other categories (114.40 days). Sick leave associated with physical factors has an average duration of 84.12 days (data for 2017).

([8]) Ministerio de Trabajo, Migraciones y Seguridad Social (National Ministry of Labour, Migration and Social Security), Sistema CEPROSS (Comunicación de Enfermedades Profesionales, Seguridad Social) de notificación electronica (CEPROSS electronic notification system). More information available at: http://www.seg-social.es/wps/portal/wss/internet/EstadisticasPresupuestosEstudios/Estadisticas/EST231/2082

Table 8: Number of recognised cases of occupational disease resulting in sick leave and average duration (days), by group of occupational diseases, 2011-2017

Occupational disease group	2011	2012	2013	2014	2015	2016	2017
Number							
Group 1	315	277	256	230	272	271	278
Group 2	**6,609**	**6,046**	**5,811**	**5,979**	**6,610**	**7,363**	**7,404**
Group 3	289	341	467	617	708	638	686
Group 4	352	308	288	266	314	335	370
Group 5	424	424	319	335	407	466	411
Group 6	19	14	33	28	9	18	18
Total	8,008	7,410	7,174	7,455	8,320	9,091	9,167
Average duration							
Group 1	53.21	50.42	43.75	55.19	45.76	56.06	50.16
Group 2	**62.93**	**66.91**	**62.58**	**66.14**	**70.68**	**71.83**	**84.12**
Group 3	51.88	50.60	31.37	37.03	29.61	32.20	27.40
Group 4	88.80	104.18	88.85	93.24	99.71	96.16	114.40
Group 5	38.24	40.26	29.59	37.22	37.35	42.19	51.28
Group 6	167.79	239.64	170.94	205.00	236.33	217.00	231.44
Average	62.23	65.90	59.96	63.58	66.01	68.25	78.88

Notes: Group 1, occupational diseases caused by chemical agents; Group 2, occupational diseases caused by physical factors; Group 3, occupational diseases caused by biological agents; Group 4, occupational diseases caused by inhalation of substances and agents not included in other sections; Group 5, occupational skin diseases caused by substances and agents not included in other sections; Group 6, occupational diseases caused by carcinogens

Source: CEPROSS

CEPROSS also provides more detailed information on the number of recognised cases of occupational diseases resulting in sick leave and caused by physical factors, as well as on the average duration of sick leave (see Table 9). In 2017, the total number of recognised cases was 7,404; the number of recognised cases has progressively increased since 2013. Looking at 2017 in detail, the sectors with the largest numbers of recognised cases of occupational diseases resulting in sick leave and caused by physical factors are sector C (manufacturing) and sector G (the wholesale and retail trade; repair of motor vehicles and motorcycles), with 2,742 and 1,253 recognised cases, respectively.

In addition, regarding the average duration of sick leave caused by physical factors, the longest average durations are found in sector B (the extractive industries), with 131.50 days on average; sector A (agriculture, livestock, hunting, forestry and fishing), with 108.87 days; and sector J (information and

communications), with 106.48 days. These are well above the average number of days of sick leave for all sectors, which is 84.12 days.

Table 9: Number and average duration (days) of recognised cases of occupational diseases resulting in sick leave and caused by physical factors (Group 2), by economic sector, 2011-2017

Sector	2011	2012	2013	2014	2015	2016	2017
Number							
Sector A	154	144	142	142	199	237	261
Sector B	246	50	23	20	13	27	12
Sector C	3,076	2,753	2,558	2,513	2,711	2,958	2,742
Sector D	4	2	6	1	0	0	1
Sector E	52	47	53	89	71	82	90
Sector F	526	501	412	419	434	469	484
Sector G	887	891	848	938	1,027	1,142	1,253
Sector H	82	83	85	98	94	115	106
Sector I	319	345	399	407	485	558	581
Sector J	29	29	32	25	32	33	21
Sector K	7	4	5	4	9	7	4
Sector L	2	2	3	0	2	2	1
Sector M	68	66	43	34	43	55	64
Sector N	499	487	511	513	644	767	898
Sector O	165	158	176	219	212	219	187
Sector P	79	84	96	92	118	131	147
Sector Q	230	206	225	254	286	325	269
Sector R	38	50	48	65	59	58	54
Sector S	144	142	140	137	158	162	200
Sector T	2	2	6	9	9	12	21
Sector U	0	0	0	0	0	0	0
No information	0	0	0	0	4	4	8
Total	6,609	6,046	5,811	5,979	6,610	7,363	7,404

Sector	2011	2012	2013	2014	2015	2016	2017
Average duration							
Sector A	48.94	53.23	62.52	66.35	75.72	75.81	108.87
Sector B	51.35	99.64	112.83	83.30	98.77	83.26	131.50
Sector C	62.04	66.16	59.56	63.58	68.19	68.15	77.19
Sector D	105.25	38.50	66.67	164.00	-	-	37.00
Sector E	72.37	56.74	79.23	82.92	90.27	60.00	79.88
Sector F	65.22	68.33	63.43	65.54	71.86	70.47	76.76
Sector G	61.92	69.67	59.31	67.28	67.78	69.17	83.51
Sector H	53.44	52.65	78.73	62.87	69.18	77.02	102.03
Sector I	71.12	74.64	70.30	70.97	67.60	84.08	97.98
Sector J	76.28	102.69	81.69	85.16	69.94	57.52	106.48
Sector K	59.57	93.25	119.20	70.50	155.78	80.14	53.00
Sector L	7.00	13.00	38.67	–	29.50	157.00	5.00
Sector M	71.91	80.08	79.49	79.56	74.16	58.25	62.58
Sector N	70.84	65.55	62.38	76.62	77.28	76.77	90.24
Sector O	62.25	52.04	59.73	55.12	68.12	75.37	77.12
Sector P	61.81	71.60	80.56	54.64	60.36	60.49	75.36
Sector Q	67.47	57.70	63.99	64.23	78.41	81.98	95.57
Sector R	57.45	87.78	70.96	67.17	97.31	65.97	96.04
Sector S	57.69	64.75	64.17	64.25	76.85	81.58	84.64
Sector T	183.00	150.50	68.33	47.67	68.67	69.42	75.29
Sector U	–	–	–	–	–	–	–
No information	–	–	–	–	78.25	132.00	253.63
Average	62.93	66.91	62.58	66.14	70.68	71.83	84.12

Source: CEPROSS

CEPROSS also publishes data on the number of recognised cases of occupational diseases resulting in sick leave and caused by physical factors broken down by gender and age (see Table 10). Since 2013, the number of recognised cases in women has been higher than the number of recognised cases

in men. Thus, in 2017 there were 3,783 recognised cases in women and 3,621 in men, and in 2011 there were 3,003 recognised cases in women and 3,606 in men. From an age perspective, most of the recognised cases were in workers aged between 35 and 54 years old, particularly in people aged 40-44 years old (1,451 recognised cases) and in people aged 45-49 years old (1,449 recognised cases).

Table 10: Number of recognised cases of occupational diseases resulting in sick leave and caused by physical factors (Group 2), distributed by gender and age, 2011-2017

Characteristic	2011	2012	2013	2014	2015	2016	2017
Gender							
Men	3,606	3,075	2,897	2,919	3,288	3,601	3,621
Women	3,003	2,971	2,914	3,060	3,322	3,762	3,783
Age							
Under 20	11	5	1	0	2	6	2
20-24	126	119	86	67	76	96	96
25-29	429	313	323	240	276	312	278
30-34	892	724	607	636	649	665	607
35-39	1,043	1,008	973	1,006	1,040	1,158	1,110
40-44	1,308	1,146	1,114	1,101	1,235	1,361	1,451
45-49	1,149	1,086	1,076	1,122	1,284	1,427	1,449
50-54	935	978	902	1,026	1,146	1,307	1,275
55-59	584	535	587	594	679	752	844
60-64	129	129	140	185	218	276	290
65+	3	3	2	2	4	3	2
Not available	0	0	0	0	1	0	0
Total	6,609	6,046	5,811	5,979	6,610	7,363	7,404

Source: CEPROSS

Concerning the average duration of recognised cases of occupational diseases resulting in sick leave and caused by physical factors, in 2017 the total average duration was 84.12 days (see Table 11). By gender, the average duration was higher for women (92.72 days) than for men (75.14 days). From an age perspective, the average duration of sick leave increases with age. Thus, those who are under 20 years of age have an average duration of 26.50 days, whereas for workers who are between 60 and 64 years of age, the average duration is 106.86 days.

Table 11: Average duration (days) of recognised cases of occupational diseases resulting in sick leave and caused by physical factors (Group 2), distributed by gender and age, 2011-2017

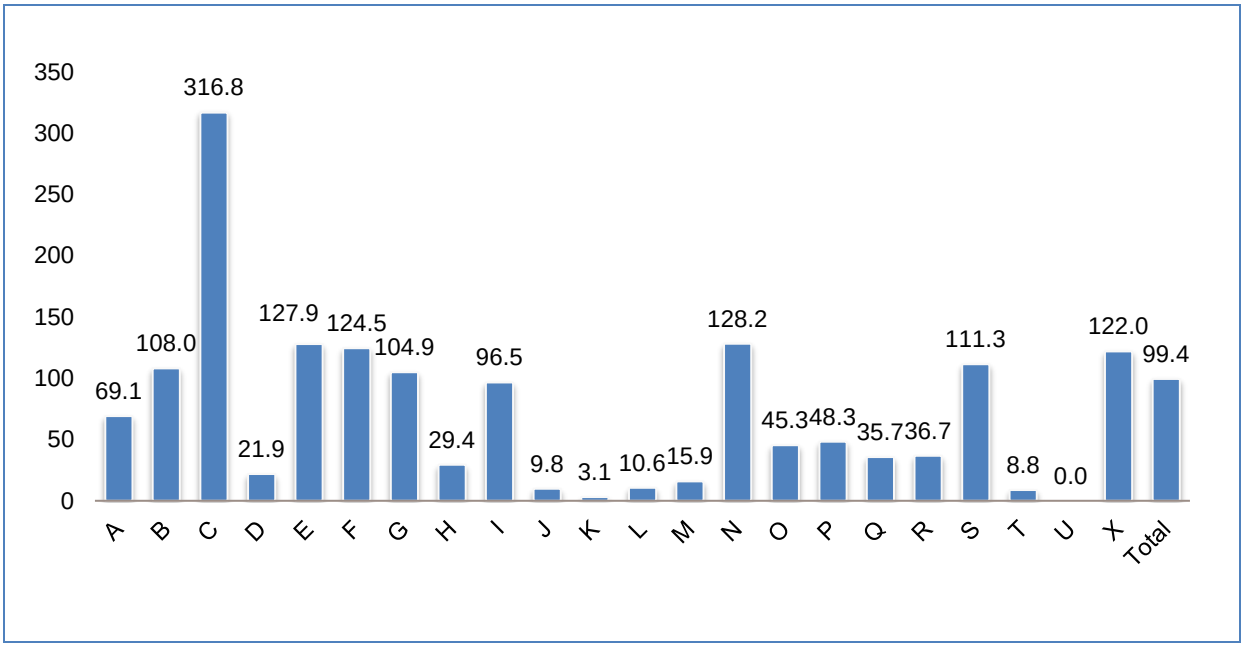
Characteristic	2011	2012	2013	2014	2015	2016	2017
Gender							
Men	58.61	63.79	60.52	59.68	63.55	64.98	75.14
Women	68.11	70.15	64.63	72.31	77.73	78.39	92.72
Age							
Under 20	27.36	20.40	13.00	–	67.50	23.67	26.50
20-24	39.28	49.82	38.85	36.79	50.17	41.53	48.91
25-29	46.34	44.66	51.37	55.93	64.84	58.93	62.33
30-34	60.80	61.36	52.88	59.25	57.84	62.98	71.11
35-39	58.10	62.70	56.98	62.18	64.73	72.08	76.95
40-44	58.05	71.17	63.25	63.57	67.75	67.65	79.71
45-49	66.46	67.41	67.21	64.65	77.47	71.04	83.33
50-54	72.48	71.97	66.87	74.69	74.42	75.10	90.67
55-59	72.61	75.26	75.00	76.04	81.67	82.73	105.43
60-64	102.09	88.54	63.97	80.82	74.68	97.62	106.86
65+	98.33	23.33	47.00	36.50	70.00	91.67	92.50
Not available	–	–	–	–	28.00	–	–
Average	62.93	66.91	62.58	66.14	70.68	71.83	84.12

Source: CEPROSS

Note: Sectors are A (agriculture, livestock, hunting, forestry and fishing); B (extractive industries); C (manufacturing); D (supply of electric power, gas, steam and air conditioning); E (water supply, sanitation activities, waste management and decontamination); F (construction); G (wholesale and retail trade; repair of motor vehicles and motorcycles); H (transportation and storage); I (hospitality); J (information and communications); K (financial and insurance activities); L (real estate activities); M (professional, scientific and technical activities); N (administrative activities and auxiliary services); O (public administration and defence; compulsory social security); P (education); Q (health and social services activities); R (artistic, recreational and entertainment activities); S (other services); T (activities of households as employers of domestic personnel and as producers of goods and services for their own use); U (activities of extraterritorial organisations and organisations)

Figure 7 shows the incidence rate of occupational diseases resulting in sick leave and caused by physical factors, as registered by CEPROSS. The incidence rate of occupational diseases is the number of occupational diseases resulting in sick leave for every 100,000 workers exposed to the risk. The highest incidence rate of occupational diseases resulting in sick leave was for sector C (manufacturing), which was 316.8 in 2017. Other sectors with high rates were sector N (administrative activities and auxiliary services) (128.2), sector E (water supply, sanitation activities, waste management and decontamination) (127.9), and sector F (construction) (124.5).

Figure 7: Incidence rates of occupational diseases resulting in sick leave and caused by physical factors (Group 2), by economic sector, 2017



Notes: The incidence rate of occupational diseases represents the number of occupational diseases resulting in sick leave for every 100,000 workers exposed to the risk. The indexes refer to diseases recognised within the year.

Sectors are A (agriculture, livestock, hunting, forestry and fishing); B (extractive industries); C (manufacturing); D (supply of electric power, gas, steam and air conditioning); E (water supply, sanitation activities, waste management and decontamination); F (construction); G (wholesale and retail trade; repair of motor vehicles and motorcycles); H (transportation and storage); I (hospitality); J (information and communications); K (financial and insurance activities); L (real estate activities); M (professional, scientific and technical activities); N (administrative activities and auxiliary services); O (public administration and defence; compulsory social security); P (education); Q (health and social services activities); R (artistic, (recreational and entertainment activities); S (other services); T (activities of households as employers of domestic personnel and as producers of goods and services for their own use); U (activities of extraterritorial organisations and organisations); X (no information)

Source: CEPROSS

A comparison of the different physical factors causing occupational diseases (data for 2017) (see Table 12) shows that more than half of recognised cases (4,426) were caused by forced postures and repetitive movements at work resulting in fatigue and inflammation of the tendon sheaths, peritendinous tissues, and muscular and tendinous insertions. Diseases caused by forced postures and repetitive movements at work resulting in nerve paralysis due to pressure were the next most common (2,412 recognised cases).

Concerning the average duration of recognised cases of occupational diseases resulting in sick leave and caused by physical factors, the longest average durations were for ophthalmological diseases as a result of exposures to ultraviolet radiation (167.00 days), diseases caused by compression or atmospheric decompression (148.56 days) and diseases caused by forced postures and repetitive movements at work affecting removal by fatigue of the spinous process (141.20).

Table 12: Number and average duration (days) of recognised cases of occupational diseases resulting in sick leave and caused by physical factors (Group 2), by type of physical factor, 2011-2017

▪ Type of disease caused by physical factors	2011	2012	2013	2014	2015	2016	2017
Number of recognised cases							
A	42	25	17	14	13	18	19
B	66	88	108	133	107	130	98
C	157	118	87	86	95	93	74
D	4,520	4,064	3,783	3,778	4,181	4,516	4,426
E	7	6	5	4	6	15	5
F	1,572	1,544	1,599	1,741	1,942	2,296	2,412
G	98	43	19	26	26	34	51
H	4	6	8	2	4	4	9
I	1	3	1	3	2	3	3
J	3	0	2	4	2	4	3
K	1	1	0	1	1	0	0
L	138	148	181	187	231	250	304
M	0	0	1	0	0	0	0
Total	**6,609**	**6,046**	**5,811**	**5,979**	**6,610**	**7,363**	**7,404**
Average duration	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**
A	81.07	142.52	46.65	84.71	137.85	103.33	124.26
B	69.92	95.24	67.56	69.98	70.88	74.88	94.64
C	61.90	56.66	47.18	56.79	41.64	39.66	46.27
D	58.34	62.44	58.58	60.40	68.05	67.80	76.60
E	32.29	46.17	48.60	78.25	84.17	37.27	141.20
F	71.54	73.78	69.39	76.73	74.72	79.99	97.00
G	80.52	96.91	48.74	74.54	95.92	94.35	100.61
H	118.00	163.83	264.75	18.50	272.50	133.25	148.56
I	116.00	79.00	119.00	234.33	433.50	68.00	106.67
J	4.67	–	26.50	136.00	49.50	25.00	167.00
K	155.00	350.00	–	1.00	8.00	–	–
L	95.07	82.72	85.26	79.09	82.86	76.57	88.05
M	–	–	6.00	–	–	–	–
Average	**62.93**	**66.91**	**62.58**	**66.14**	**70.68**	**71.83**	**84.12**

Note: The types of disease are A (hearing loss or deafness caused by noise); B (osteoarticular or angioneurotic diseases caused by mechanical vibrations); C (diseases caused by forced postures and repetitive movements at work: diseases of serous cavitiesdue to pressure, subcutaneous cellulitis); D (diseases caused by forced postures and repetitive movements at work: fatigue and inflammation of the tendon sheaths, peritendinous tissues and muscular and tendinous insertions); E (diseases caused by forced postures and repetitive movements at work: removal by fatigue of the spinous process); F (diseases caused by forced postures and repetitive movements at work: nerve paralysis due to pressure); G (diseases caused by forced postures and repetitive movements at work: injuries to the meniscus by tearing or compression resulting in cracks or complete breaks); H (diseases caused by atmospheric compression or decompression); I (diseases caused by ionising radiation); J (ophthalmological diseases as a result of exposures to ultraviolet radiation); K (diseases caused by radiation); L (diseases of thee vocal cord nodules due to the sustained efforts of the voice for professional reasons); M (miners' nystagmus)

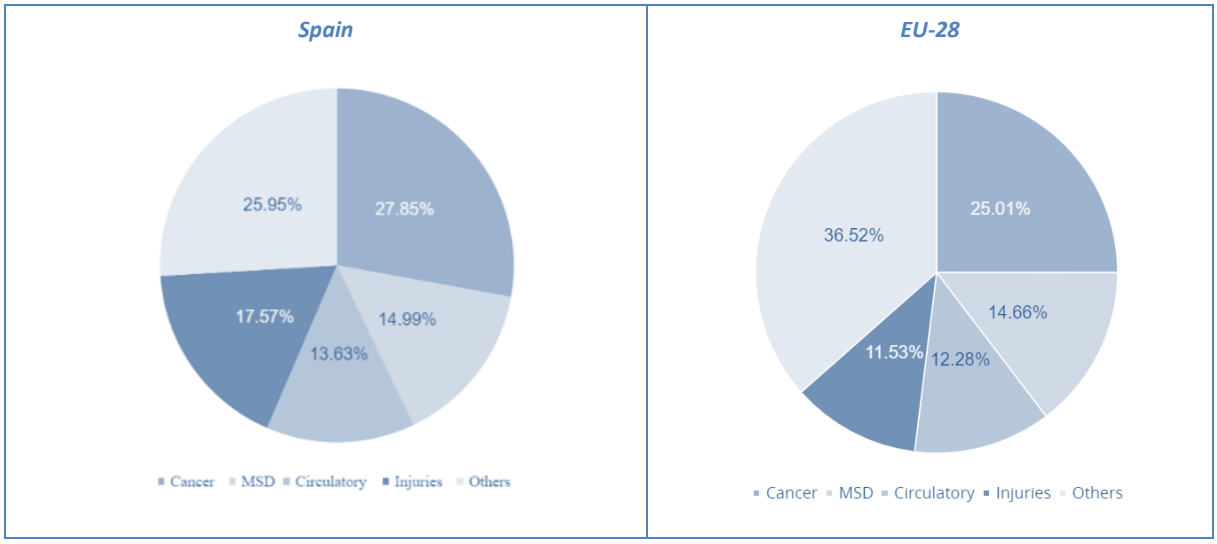
Source: CEPROSS

3 Impact of MSDs

3.1 Health outcomes

With regard to costs and burdens related to MSDs. the available data([9]) on DALY rates ([10]) show that the number of years of life lost and lived with disability resulting from work-related MSDs represent 14.99 % of the total number of years of life lost and lived with disability due to other reasons (cancer, circulatory problems, injuries, etc.), which is slightly higher than the EU-28 average (14.66 %) (see Figure 8).

Figure 8: Distribution of years of life lost and lived with disability (DALYs) per 100,000 workers, by main work-related illnesses in Spain and the EU-28, 2017



Source: Panteia, based on EU-OSHA, data visualisation, 'The economics of occupational safety and health', 2017. Available at: https://visualisation.osha.europa.eu/osh-costs#!/eu-analysis-illness

The data set out above can be complemented with data from a Spanish study ([11]) that estimated the annual cost of temporary work disability caused by MSDs in Spain. According to the main results obtained in this study, MSDs were the leading cause of temporary work disability in Spain in 2007, accounting for 18 % of all cases of temporary work disability (908,781 cases), 23 % of all lost working days (39,342,857 in total) and 23 % of the total costs related to temporary work disability (EUR 1,702 million in total). This is equivalent to EUR 1.62 per EUR 1,000 of national gross domestic product. Meanwhile, the annual number of temporary work disability episodes per 1,000 employees was 45, and the average cost per temporary work disability episode in Spain due to MSDs was EUR 1,873. In addition, there was wide variation among regions in temporary work disability costs.

([9]) EU-OSHA, data visualisation, 'The economics of occupational safety and health', 2017. Available at: https://visualisation.osha.europa.eu/osh-costs#!/eu-analysis-illness

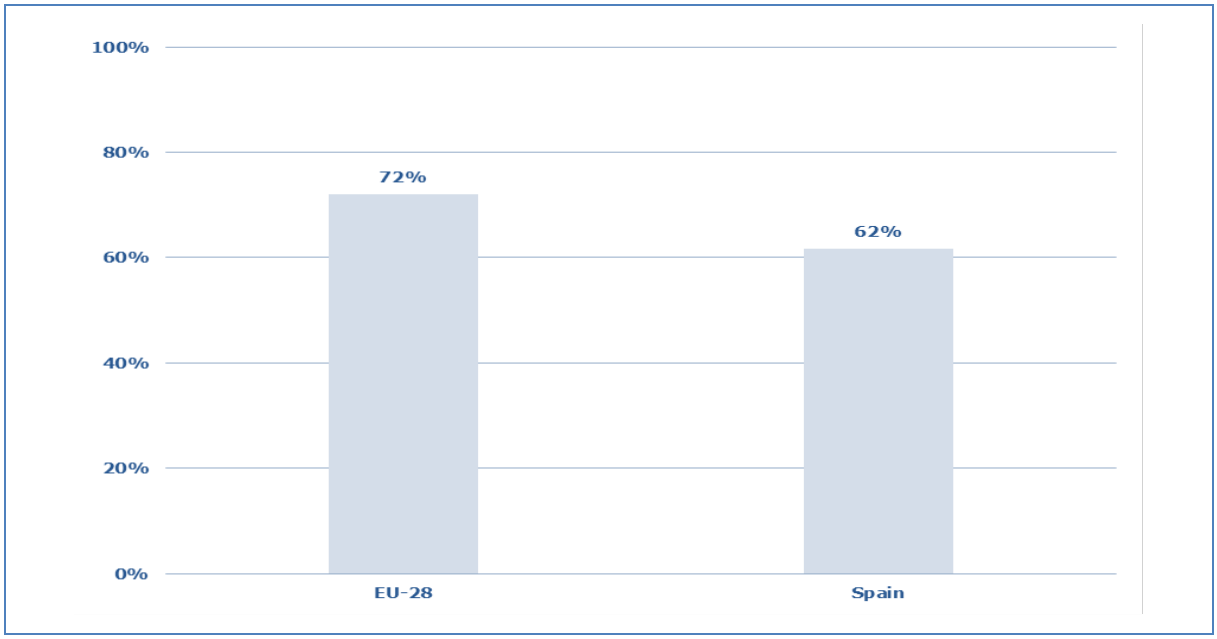
([10]) A DALY is the sum of years of life lost (YLL) because of work-related death and years of life lived with disability (YLD) due to work-related injury and illness. DALY rate refers to DALYs per 100,000 workers.

([11]) Lázaro P., Parody, E., García-Vicuña, R., Gabriele, G., Jover, J. Á. and Sevilla, J., 2014, 'Coste de la incapacidad temporal debida a enfermedades musculoesqueléticas en España' ('Cost of temporary work disability due to musculoskeletal diseases in Spain'), Reumatología Clínica, Vol. 10. No 2, pp. 65-138.

3.2 Employment and work outcomes

Around 62 % of Spanish employees work in companies that support employees to return to work after long-term sickness. This percentage is considerably higher in the EU-28 (72 %) (data from ESENER 2 ([12]) for 2014; see Figure 9).

Figure 9: Percentages of employees working in establishments with support measures for employees returning to work after long-term sickness in the EU-28 and Spain, 2014



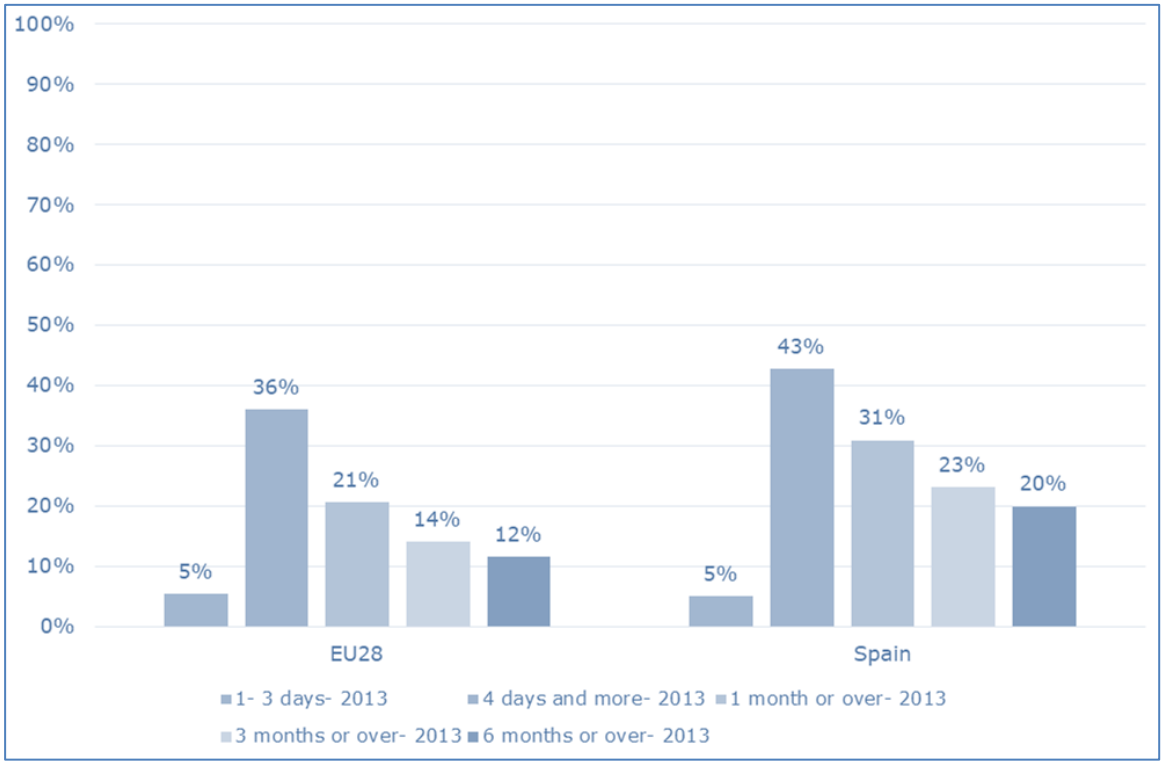
Note: Data are weighted with the employee-proportional weighting factor. This weighting factor controls for the disproportional nature of the national samples, is scaled to the number of employees instead of the number of establishments in the universe, and allows for international analysis. ESENER covers employees in enterprises employing five or more workers.

Source: Panteia, based on ESENER 2 data

([12]) EU-OSHA, Second European Survey of Enterprises on New and Emerging Risks (ESENER 2). Information about the survey is available at: https://osha.europa.eu/en/facts-and-figures/esener

Figure 10 is based on publicly available data from the Labour Force Survey (LFS) ([13]) ad hoc modules. It shows the percentages of people who reported a work-related health problem resulting in sick leave characterised by various periods off work, in the EU-28 and in Spain in 2013. The available data show that a higher percentage of people in Spain than in the EU-28 reported a long period off work as a result of a work-related health problem that resulted in sick leave. Thus, up to 43 % of Spanish workers reported a period of 4 days or more off work, in comparison with only 36 % in the EU-28. Moreover, 20 % of Spanish workers who reported a work-related health problem resulting in sick leave had a period off work of 6 months or more, in comparison with only 12 % in the EU-28.

Figure 10: Percentages of people reporting a work-related health problem resulting in sick leave by period off work, in the EU-28 and Spain, 2013



Source: Panteia, based on LFS ad hoc module (Eurostat)

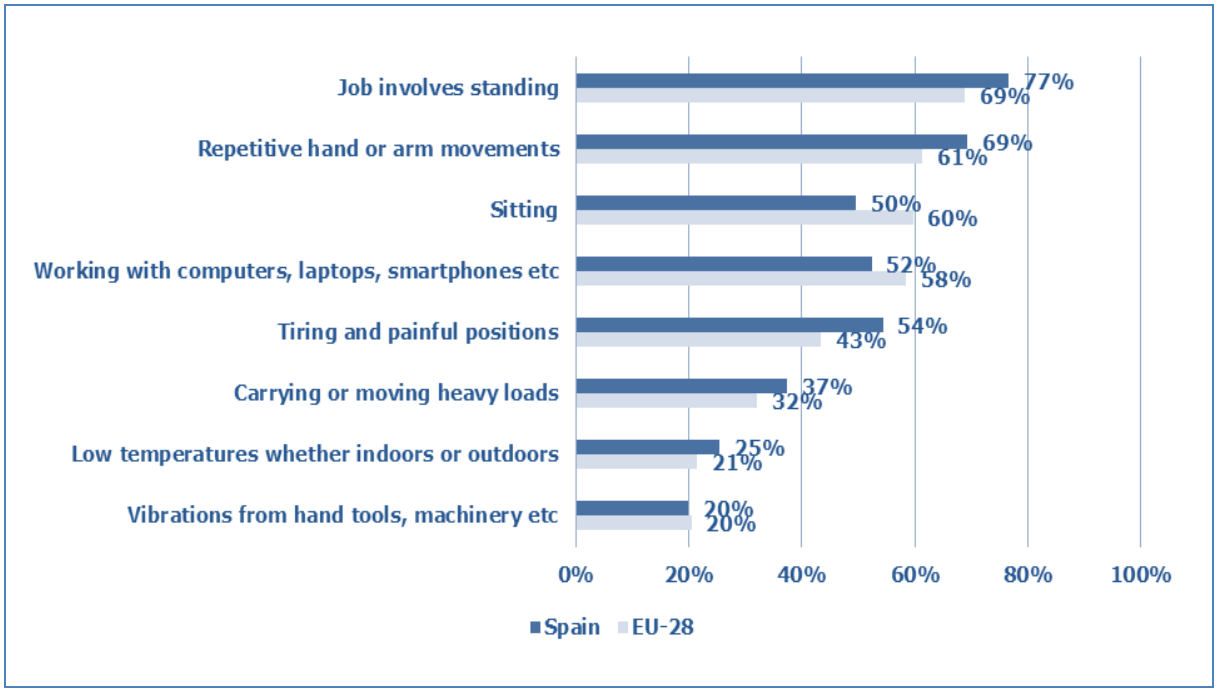
([13]) Eurostat, European Union LFS ad hoc module on accidents at work and other work-related health problems. Information about the survey is available at: https://ec.europa.eu/eurostat/web/microdata/european-union-labour-force-survey

4 Risk factors for MSDs

4.1 Physical factors at work

A large percentage of Spanish employees are exposed to physical factors at work that may have an influence on MSDs (see Figure 11). More precisely, 77 % of employees work in establishments where employees work in standing positions, and 69 % work in establishments where employees use repetitive hand/arm movements. Meanwhile, approximately half of employees work in establishments where employees work in tiring/painful positions, work with computers/laptops or work in sitting positions (54 %, 52 % and 50 %, respectively). Other physical risks factors are less apparent, particularly carrying/moving heavy loads, low temperatures and the presence of vibrations.

Figure 11: Percentages of employees working in establishments where there are certain physical risk factors in Spain and the EU-28, 2015 (2010 for standing)



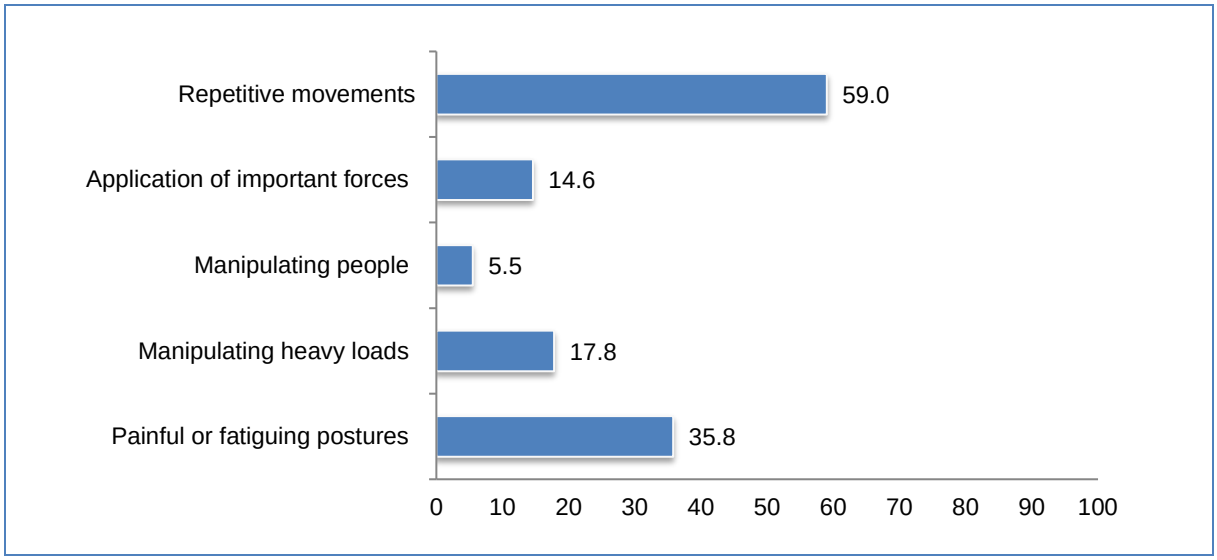
Note: Data are weighted with the employee-proportional weighting factor. This weighting factor controls for the disproportional nature of the national samples, is scaled to the number of employees instead of the number of establishments in the universe, and allows for international analysis. ESENER covers employees in enterprises employing five or more workers.

Source: Panteia, based on ESENER 2 data

A comparison with EU level data shows that the two most important physical risks factors (jobs that involve standing and repetitive hand/arm movements) are the same for the EU-28 and Spain, although Spanish employees seem to be more exposed to both of than EU workers. In addition, Spanish employees are more exposed to the presence of tiring/painful positions than their EU counterparts, whereas the opposite is true for risks posed by working with computers/laptops and working in sitting positions. Spanish employees seem to be more exposed to the remaining physical risks than their EU counterparts.

Some of the physical demands to which Spanish workers are most commonly exposed are risk factors particularly associated with MSDs, such as forced postures, handling of heavy loads, the application of force and repetitive movements. Available national data show that repetitive hand/arm movement is a potential risk factor affecting up to 59 % of workers, and the adoption of painful/tiring postures affects 35.8 % of workers (these figures cover only those workers who report being affected ‘often’ or ‘always/nearly always’) (see Table 13).

Table 13: Percentages of workers identifying certain physical demands at work (*), 2011



(*) Workers responding 'often' or 'always/nearly always'

Source: 7th National Survey on Working Conditions, 2011

By economic sector, repetitive movements are also the most common physical demand at work in the extractive industries (68.4 %), transport (67.4 %) and construction (67.3 %) (see Table 14). Adopting painful/tiring postures was the second most commonly reported physical demand, particularly affecting sectors such as the extractive industries, construction and health activities (50 %, 48.7 % and 48.6 %, respectively). The handling of heavy loads, whether lifting or moving loads or people, particularly affected workers in health activities, construction and agriculture (59.7 %, 41.4 % and 34.8 %, respectively).

Table 14: Percentages of workers identifying physical demands at work (*), by economic sector, 2011

Sector	Painful or fatiguing postures	Manipulating heavy loads/people	Application of force	Repetitive movements
Sector A	48.3	34.8	28.8	67.1
Sector B	50.0	32.3	34.2	68.4
Sector C	33.4	23.0	17.4	63.4
Sector D	27.1	10.6	16.9	57.6
Sector E	43.6	17.6	21.1	60.5
Sector F	48.7	41.4	34.3	67.3
Sector G	29.9	23.8	14.6	54.4
Sector H	37.3	23.3	15.0	67.4
Sector I	31.3	20.5	10.0	65.0

Sector	Painful or fatiguing postures	Manipulating heavy loads/people	Application of force	Repetitive movements
Sector J	33.1	5.8	4.1	64.5
Sector K	29.4	1.0	1.7	63.4
Sector L	20.7	5.1	1.7	44.1
Sector M	28.2	5.1	3.7	50.8
Sector N	32.5	10.1	8.7	60.9
Sector O	32.6	12.1	7.9	51.9
Sector P	34.3	14.4	5.3	43.7
Sector Q	48.6	59.7	24.4	57.2
Sector R	28.5	13.0	7.9	54.0
Sector S	40.7	12.5	8.4	64.3
Sector T	36.2	23.8	11.6	59.5
Sector U	38.9	0.0	5.6	77.8
Average	35.8	23.3	14.6	59.1

(*) Workers responding 'often' or 'always/nearly always'

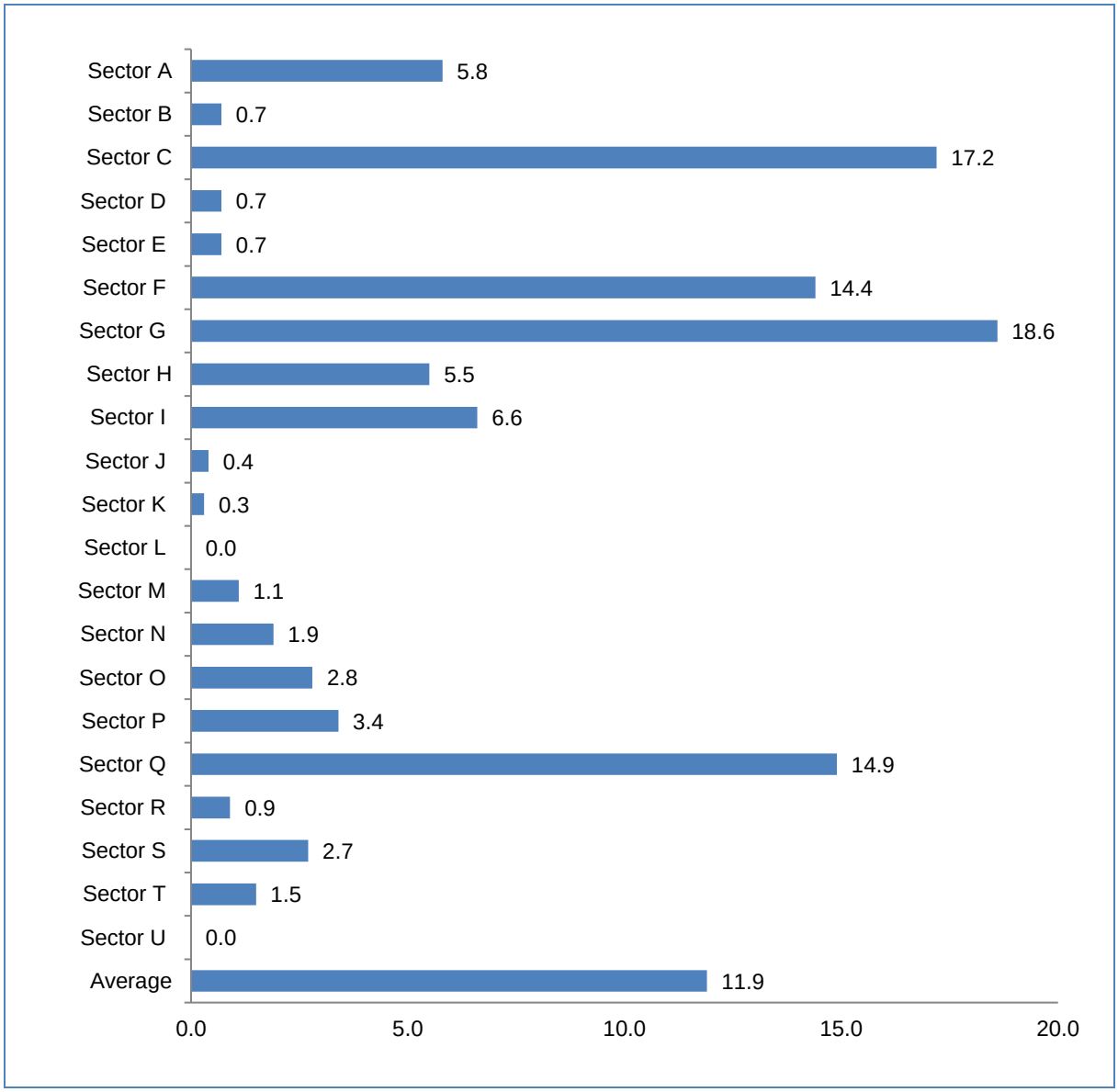
Note: Sector A = agriculture, livestock, hunting, forestry and fishing; Sector B = extractive industries; Sector C = manufacturing industries; Sector D =electricity, gas and steam supply; Sector E = water supply and sanitation activities; Sector F = construction; Sector G = wholesale and retail trade; Sector H = transport and storage; Sector I = HORECA; Sector J = information and communications; Sector K = financial and insurance activities; Sector L = real estate activities; Sector M = professional, scientific and technical activities; Sector N = administrative and auxiliary service activities; Sector O = public administration and defence, social security; Sector P = education; Sector Q = health and social services activities; Sector R = artistic and entertainment activities; Sector S = other services; Sector T = households as employers; Sector U = organisation and extraterritorial organism activities.

Figures for notable groups shown in red.

Source: 7th National Survey on Working Conditions, 2011

In addition, 11.9 % of Spanish workers report that the main risk of accidents at work is linked to extra physical effort. An analysis by economic sector shows that this is most commonly reported in four particular sectors, namely the wholesale and retail trade, the manufacturing industries, health services and social care, and construction (18.6 %, 17.2 %, 14.9 % and 14.4 % of the respondents, respectively) (see Figure 12). These are also economic sectors with a relatively high prevalence of accidents at work.

Figure 12: Percentages of workers exposed to extra physical effort, by economic sector, 2011



Note: Sector A = agriculture, livestock, hunting, forestry and fishing; Sector B = extractive industries; Sector C = manufacturing industries; Sector D = electricity, gas and steam supply; Sector E = water supply and sanitation activities; Sector F = construction; Sector G = wholesale and retail trade; Sector H = transport and storage; Sector I = HORECA; Sector J = information and communications; Sector K = financial and insurance activities; Sector L = real estate activities; Sector M = professional, scientific and technical activities; Sector N = administrative and auxiliary service activities; Sector O = public administration and defence, social security; Sector P = education; Sector Q = health and social services activities; Sector R = artistic and entertainment activities; Sector S = other services; Sector T = households as employers; Sector U = organisation and extraterritorial organism activities

Source: 7th National Survey on Working Conditions, 2011

National data also confirm that a high percentage of Spanish workers who are affected by specific MSDs suggest that these MSDs are caused and/or aggravated by work. Thus, more than 80 % of workers believe this to be the case, irrespective of the body part affected (see Table 15). In addition, approximately 6 out of 10 workers have visited a doctor because of an MSD, again irrespective of the body part affected.

Table 15: Percentages of workers affected by MSDs who believe that their MSD is caused and/or aggravated by work, and percentages of workers visiting a doctor because of an MSD, by location of pain, 2011

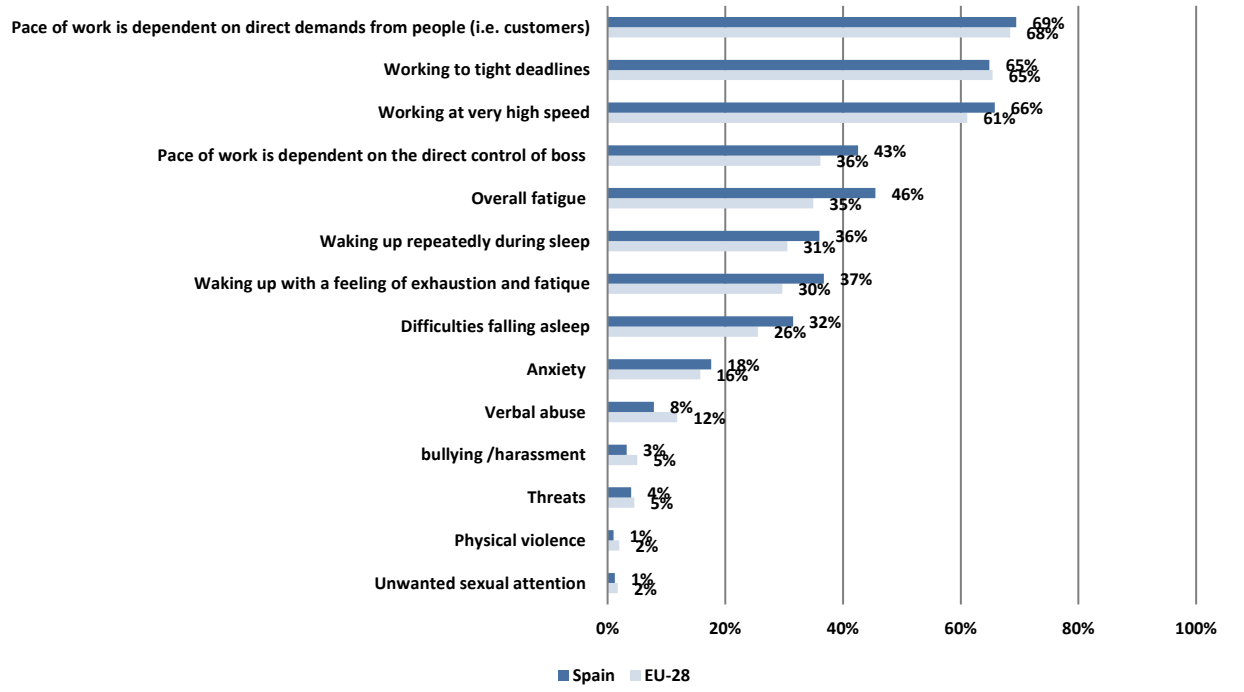
Location of pain	Aggravated or produced by work	Visit to doctor
Neck	86.9	58.5
Back	87.1	60.4
Shoulders, arms, elbows, wrists, hands or fingers	87.1	59.6
Legs, knees or feet	81.0	56.8

Source: 7th National Survey on Working Conditions, 2011

4.2 Organisational and psychosocial risk factors at work

Organisational and psychosocial risk factors also play a role as potential triggers of MSDs (see Figure 13). The most relevant of these factors among Spanish employees relate to the pace of work being dependent on other people's demands, tight deadlines, and working at very high speed (more than 65 % of employees work in establishments where these risks are present). Other relatively important risks include overall fatigue, the pace of work being dependent on the boss and difficulties with sleep.

Figure 13: Percentages of employees working in establishments where the following organisational/psychosocial risk factors are present in Spain and the EU, 2015



Note: Data are weighted with the employee-proportional weighting factor. This weighting factor controls for the disproportional nature of the national samples, is scaled to the number of employees instead of the number of establishments in the universe, and allows for international analysis. ESENER covers employees in enterprises employing five or more workers.

Source: Panteia, based on ESENER 2 data

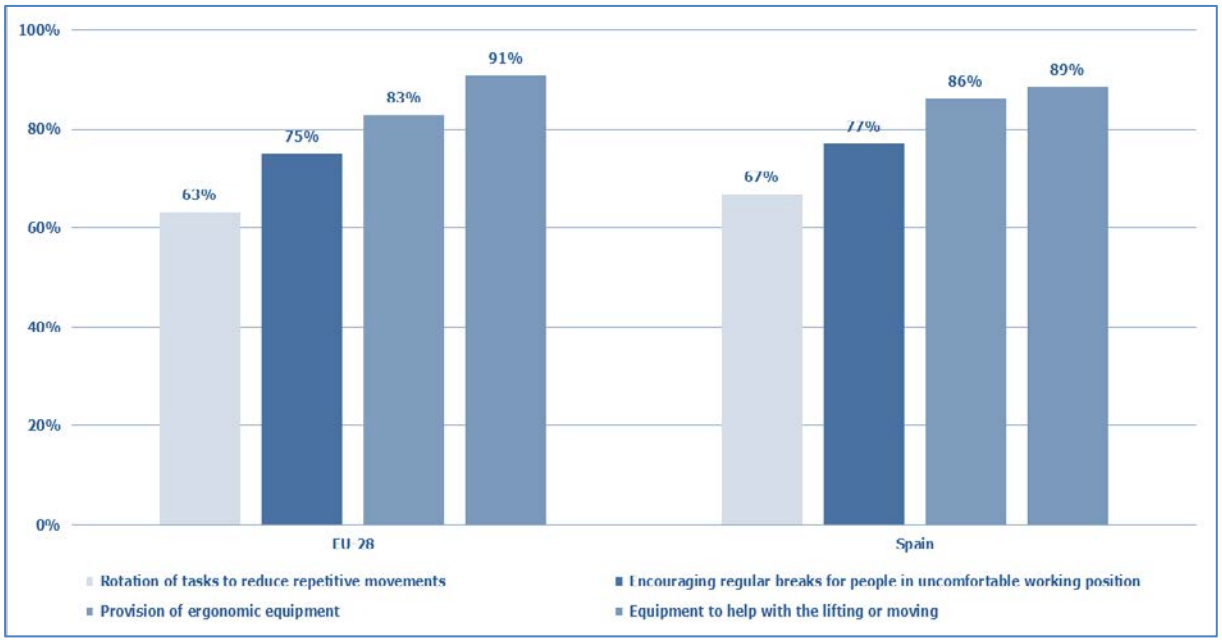
A comparison with EU-level data shows that the general order of importance of the different organisational and psychosocial risk factors is similar to that seen in Spain. The available data show that Spanish employees are as exposed as or more exposed than their EU counterparts to the various risk factors, particularly in relation to overall fatigue, working at very high speed and the pace of work being under the direct control of the boss.

5 Prevention of MSDs

A high proportion of Spanish companies report implementing measures to prevent MSDs within their establishments: 89 % of employees work in companies where equipment to help with lifting or moving is provided, and 86 % work in companies where ergonomic equipment is provided. Moreover, 67 % of Spanish employees work in companies that have introduced rotation of tasks to reduce repetitive movements, and 77 % work in companies that encourage regular breaks for people who work in uncomfortable positions (data for 2014; see Figure 14). For one of the measures (equipment to help with lifting or moving, 91 % in the EU-28 compared with 89 % in Spain), the Spanish percentage is relatively low compared with the EU-28 average. For the other measures, the EU-28 average levels are slightly lower than the Spanish levels.

Figure 14: Percentages of employees working in establishments where the following preventive measures are in place, EU-28 and Spain, 2014

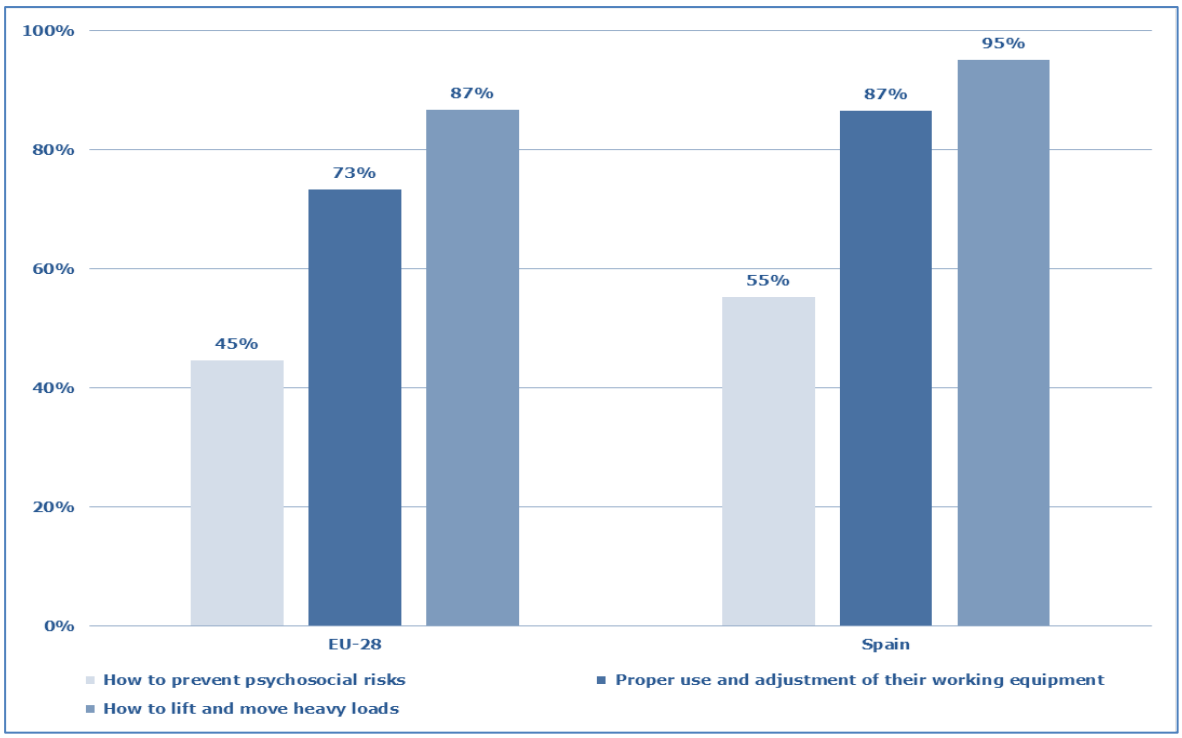
Note: Data are weighted with the employee-proportional weighting factor. This weighting factor controls for the disproportional nature of the national samples, is scaled to the number of employees instead of the number of establishments in the universe, and allows for international analysis. ESENER covers employees in enterprises employing five or more workers.



Source: Panteia, based on ESENER 2 data]

As shown in Figure 15, 95 % of Spanish employees work in companies where training on how to lift and move heavy loads is provided. Eighty-seven per cent work in companies where training on the proper use and adjustment of work equipment is provided, and 55 % work in companies where training on how to prevent psychosocial risks is provided (data for 2014). These percentages are considerably higher than EU-28 levels, particularly for training on proper use and adjustment of work equipment and how to prevent psychosocial risks (73 % and 45 %, respectively, in the EU-28).

Figure 15: Percentages of employees working in establishments where training is provided in the EU-28 and Spain, 2014



Note: Data are weighted with the employee-proportional weighting factor. This weighting factor controls for the disproportional nature of the national samples, is scaled to the number of employees instead of the number of establishments in the universe, and allows for international analysis. ESENER covers employees in enterprises employing five or more workers.

Source: Panteia, based on ESENER 2 data

Furthermore, the National Survey on Safety and Health Management in Enterprises (Encuesta Nacional de Gestión de la Seguridad y Salud de las Empresas — ENGE ([14])) provides information on activities conducted in the workplace to prevent occupational risks (2009 data). On average, the most frequent activities were giving medical examinations in the previous year (done by 81.1 % of the companies), carrying out risk assessments (done by 76.9 % of companies, although construction companies were not included) and preparing a prevention plan (done by 64.7 % of companies).

By economic sector, the chemistry sector is one of the most active sectors in the implementation of activities to prevent occupational risks (see Table 16). Thus, it has the highest percentages for the preparation of a prevention plan (77.1 %), providing information about occupational risks and about preventive measures adopted (67.3 %), defining emergency measures (60.4 %), the establishment of priorities and efficacy checks for preventive actions (52.1 %), obliging all managers to include a prevention perspective in all decisions taken (53.1 %), researching work accidents (52.1 %) and preparing a self-protection plan (45.8 %). The construction sector also has high figures for the implementation of activities for preventing occupational risks: 91.7 % of companies carried out medical examinations in the previous year, 75.9 % provided training on labour risks and health at work, and 67.5 % planned preventive action.

By workplace size, the probability that an employer will carry out activities to prevent occupational risks increases as the size of the workplace increases (see Table 17). For instance, 77.4 % of workplaces with fewer than 10 employees had provided medical examinations in the previous year, compared with 92.3 % of workplaces with 250 or more employees.

([14]) Instituto Nacional de Seguridad e Higiene en el Trabajo (INSHT), ENGE, 2009. More information available at: http://encuestasnacionales.oect.es/

Table 16: Activities conducted in the workplace to prevent occupational risks, by economic sector, 2009 (%)

Activity	Total	Economic sector											
		1	2	3	4	5	6	7	8	9	10	11	12
Medical examination in the past year	81.1	81.2	83.8	83.7	91.3	79.5	91.7	84.8	77.7	73.0	73.4	73.8	72.4
Risk assessment (*)	76.9	72.4	81.8	83.7	87.5	77.9	–	78.5	77.7	75.7	76.3	71.7	68.8
Preparation of a prevention plan	64.7	64.7	64.0	77.1	69.2	68.0	76.0	60.8	60.2	63.9	62.7	63.7	58.0
Information about occupational risks and about measures adopted	59.9	61.4	60.8	67.3	61.1	65.2	71.0	58.0	63.8	57.9	57.3	58.6	46.6
Training on occupational risks and health at work	59.1	57.1	55.0	66.7	63.2	61.7	75.9	52.2	60.2	60.5	57.2	58.3	49.6
Planning of preventive action	57.3	54.7	56.8	67.3	58.5	62.8	67.5	55.8	50.0	55.0	57.2	60.0	49.5
Definition of emergency measures	51.8	48.0	51.9	60.4	52.2	53.0	59.8	45.4	54.5	53.3	57.4	54.9	49.5
Establishment of priorities and efficacy checks for preventive actions	44.2	44.3	44.5	52.1	50.2	49.4	49.1	42.8	40.5	42.9	46.4	46.2	36.1
Obliging all hierarchical representatives to include a prevention perspective in all decisions taken	35.4	34.7	35.1	53.1	37.5	41.7	42.2	34.0	23.1	33.8	41.4	36.1	28.9
Research on work accidents	35.2	37.9	35.7	52.1	47.8	42.3	51.0	26.3	30.3	34.4	40.1	35.9	23.8
Preparation of a self-protection plan	31.9	29.7	30.8	45.8	31.3	35.6	42.0	31.9	30.0	24.1	37.1	38.9	25.3
Practices derived from the emergency plan (e.g. drills)	27.1	18.7	27.4	43.8	31.7	31.6	28.0	24.3	21.3	25.7	45.7	31.3	24.7

(*) Workplaces in the construction sector are not included

Notes: Based on a total of 5,146 workplaces

Sector 1 = agriculture, livestock, hunting, forestry and fishing; Sector 2 = manufacturing and extractive industries; Sector 3 = chemistry; Sector 4 = metal; Sector 5 = other industries; Sector 6 = construction; Sector 7 = commerce and hospitality; Sector 8 = transport and communication; Sector 9 = financial services, real estate and rental activities, and business services; Sector 10 = public administration and education; Sector 11 = sanitary and veterinary activities, and social services; Sector 12 = other social and personal activities

Source: ENGE, 2009

Table 17: Activities conducted in the workplace(*) to prevent occupational risks, by size of workplace, 2009 (%)

Activity	Total	Workplace size (number of employees)			
		Fewer than 10	10-49	50-249	250 and over
Medical examination in the past year	81.1	77.4	91.3	96.6	92.3
Risk assessment	76.9	73.2	86.5	94.5	100.0
Preparation of a prevention plan	64.7	60.0	76.6	86.9	92.1
Information about occupational risks and about measures adopted	59.9	55.4	71.5	80.5	87.2
Training on occupational risks and health at work	59.1	54.3	71.5	80.1	89.7
Planning of preventive action	57.3	51.9	71.1	82.0	87.2
Definition of emergency measures	51.8	47.3	62.9	72.5	89.7
Establishment of priorities and efficacy checks for preventive actions	44.2	39.1	56.4	70.4	79.5
Obliging all hierarchical representatives to include a prevention perspective in all decisions taken	35.4	29.8	49.1	62.1	79.5
Research on work accidents	35.2	27.6	53.4	72.8	85.0
Preparation of a self-protection plan	31.9	29.1	36.5	52.7	79.5
Practices derived from the emergency plan (e.g. drills)	27.1	22.7	36.5	53.9	74.4

(*) Workplaces in the construction sector are not included

Note: Based on a total of 5,146 workplaces

Source: ENGE, 2009

6 Main national data sources on MSDs

- Data source 1: INSHT — National Survey on Working Conditions (Encuesta Nacional de Condiciones de Trabajo), 2015. Available at: http://encuestasnacionales.oect.es/
- Data source 2: INSHT— 7th National Survey on Working Conditions (VII Encuesta Nacional de Condiciones de Trabajo), 2011. Available at: http://www.oect.es/InshtWeb/Contenidos/Documentacion/FICHAS%20DE%20PUBLICACIONES/EN%20CATALOGO/OBSERVATORIO/Informe%20(VII%20ENCT).pdf
- Data source 3: INSHT — National Survey on the Management of Labour-related Risks within Enterprises — ESENER 2 (Spain) (Encuesta Nacional de Gestión de Riesgos Laborales en las Empresas). Available at: http://encuestasnacionales.oect.es/
- Data source 4: INSHT, National Survey on Safety and Health Management in Enterprises (Encuesta Nacional de Gestión de la Seguridad y Salud de las Empresas (ENGE)), 2009. Available at: http://encuestasnacionales.oect.es/
- Data source 5: Ministry of Labour, Migration and Social Security — CEPROSS electronic notification system (Sistema CEPROSS (Comunicación de Enfermedades Profesionales, Seguridad Social) de notificación electronica). Available at: http://www.seg-social.es/wps/portal/wss/internet/EstadisticasPresupuestosEstudios/Estadisticas/EST231/2082
- Data source 6: Ministry of Labour, Migration and Social Security — statistics on work accidents, several years. Available at: http://www.mitramiss.gob.es/estadisticas/eat/welcome.htm

The European Agency for Safety and Health at Work (EU-OSHA) contributes to making Europe a safer, healthier and more productive place to work. The Agency researches, develops, and distributes reliable, balanced, and impartial safety and health information and organises pan-European awareness raising campaigns. Set up by the European Union in 1994 and based in Bilbao, Spain, the Agency brings together representatives from the European Commission, Member State governments, employers' and workers' organisations, as well as leading experts in each of the EU Member States and beyond.

European Agency for Safety and Health at Work

Santiago de Compostela 12, 5th floor
48003 Bilbao, Spain
Tel. +34 944358400
Fax +34 944358401
E-mail: information@osha.europa.eu

http://osha.europa.eu