


# BMJ Open Descriptive study of sickness absence in Spanish regions in 2018: database study

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## ABSTRACT

**Objectives** To provide a wide and thorough description of sickness absence (SA) in Spain, focussing on the different regions of the country and the main characteristics of SA.

**Methods** A study of the SA spells in Spain, managed by the medical units of the National Institute of Social Security in 2018. The geographical scope of this observational study is the regions (Autonomous Community). Incidence, prevalence, and average duration SA in employees and self-employed are described. The study also describes the differences between non-work-related SA and work-related SA. In age and sex variables, the incidence and the average duration are described. The average duration by Diagnostic Chapters (International Classification of Diseases, 10<sup>th</sup> Revision (ICD-10)) and the highest number of SA spells by occupational activity and diagnosis are analysed.

**Results** A total of 540 045 SA spells are analysed by non-work-related SA and 63 441 by work-related SA. The national average prevalence in non-work-related SA spells is 32.98/1000 among employed and 30.48/1000 among self-employed; in work-related SA spells, the prevalence is 3.99/1000. The national incidence in non-work-related SA spells is 24.8/1000 for employees and 9.51/1000 for self-employed workers; in work-related SA spells the incidence is 3.55/1000. The average duration is 58.67 days, with the longest duration being neoplasms and the shortest corresponding to infectious disease. The Community of Madrid shows the lowest prevalence, incidence and average duration in work-related SA. Influenza is the diagnosis that generates the largest number of SA spells. Activities of call centres and temporary employment agency activities are the occupations that have the highest number of SA spells.

**Conclusions** The biggest differences are found in the incidence and average duration, between the non-work-related SA spells and work-related SA. If those characteristics of the SA in which a region is more in deficit are known, it will be possible to do better management of the SA.

## INTRODUCTION

Sickness absence (SA) is one of the benefits of Social Security, included in article 169 of the Consolidated Text of the General Law of Social Security, RDL 8/2015 of 30<sup>th</sup> October. It comprises benefits in kind (medical assistance) and monetary compensations

## Strengths and limitations of this study

- The greatest strength of this study is the broad representativeness of its data.
- The data used are at a national level, which allows a great perspective of sickness absence (SA) in Spain.
- In this study, it has not always been possible to compare the data between employed and self-employed workers.
- It has not always been possible to distinguish in this study between non-work-related and work-related in all SA spells.
- SA spells lasting less than 4 days has not been included in this study.

(benefits for SA). In Spain, there is a distinction between non-work-related SA (common disease and non-occupational accident) and work-related SA (professional illness and occupational accident). The differences between one group and the other can be seen both in the economic amount of the benefits due to sick leave and in the social security contributions. To be entitled to this subsidy, there must be medical examination and SA is certified by the family practitioner from the State Health Services, in case of common disease and non-occupational accident. If it is caused by occupational accidents or professional illness, this sick leave is certified by physicians ascribed to Insurance Companies linked to the Social Security system. Maximum duration of sick leave is 365 days, which can be extended for another 180 days if recovery and return of the worker to workplace are expected at that time. If the duration of sickness benefits has expired and the person's state of health has not improved enough to return to work, the worker may receive a disability pension. The maximum duration of SA benefits is similar to other countries nearby such as Germany, Belgium or Austria. However, there are considerable differences in all European Union countries

in terms of the amount of the payment and the requirements for receiving these benefits.<sup>1</sup>

Concerning the rest of the countries of the Organisation for Economic Co-operation and Development (OECD), Spain is in an intermediate position regarding the SA days per worker/year. Mexico is in the highest position with 27.7 days, whereas Chile, in the lowest position, has 7.3 days. Spain has an average of 10.3 days, which is similar to the level of Austria and the Netherlands (10 days) (<https://stats.oecd.org/index.aspx?queryid=30123>).

Like most European countries, Spain's public sickness insurance spending is a major component of its social security system.<sup>1</sup> The total financial cost of SA in consolidated Social Security budgets for 2019 in Spain reached 11 554 711.16 €, which is 8.89% of the general Social Security budget.<sup>2</sup> Besides, the importance of SA caused by disease or accident is not only determined by the social and financial costs that each State dedicates to it,<sup>3</sup> but also by the resources that employers assign to it,<sup>4</sup> as well as the productivity losses<sup>5</sup> and the deterioration of these workers' health.<sup>6</sup> It has been reported that work absenteeism due to illness is, in itself, a risk factor to fall sick, new periods of SA, unemployment, permanent disability pension,<sup>6-8</sup> social exclusion<sup>9</sup> and death.<sup>10-12</sup> Long SA periods generate both an early retirement from the job market, a slower salary increase and an impoverishment of household wealth.<sup>6-9</sup>

Spain is divided into 17 regions. In each region there are significant differences in education, economic situation, unemployment rate and public health system. By sex, the percentage of men and women is balanced. The number of women is slightly higher, although the number of working men is still higher. By age, the regions with the youngest population are mainly those on the Mediterranean coast and also Castile La Mancha, Extremadura and the Community of Madrid. The northwestern regions are more aged.

In 2017 the working population rate in Spain was 59.41%. The regions with the highest rates of active population were the Canary Islands, the Balearic Islands, the Community of Madrid and Catalonia and those with the lowest rates were the Cantabrian, Western and Central regions. Service sector was the majority of the workforce (76%) in the islands, the Community of Madrid and Andalusia. Industry was the predominant sector in Navarre, the Basque Country and La Rioja; construction in Castile La Mancha; and agriculture and farming in Murcia (<http://uvadoc.uva.es/handle/10324/26416>)

These factors affect the behaviour of SA and their management in very different ways. It is important to know the differences to act accordingly.

Despite its relevance to public policies, there are few studies at the national level that describe the current situation of such benefits in our country; to date, the studies found in the literature related to this topic describe it partially,<sup>13</sup> in some provinces or specific areas,<sup>14</sup> about some specific diseases<sup>15</sup> or specific groups of workers.<sup>16</sup> The used data are national, representing the whole of the

workers in Spain. It is a comprehensive and representative study of the total of SA spells in our country in 2018.

The general objective of this study is to provide a wide description of SA in Spain, focussing on the different regions of the country and according to the main characteristics of SA and differences between regions.

The specific objectives would be the description of the incidence, prevalence and average duration of SA; the description of the average duration and incidence rate about age and sex, as well as the average duration of SA by Diagnostic Chapters following the International Classification of Diseases, 10<sup>th</sup> Revision (ICD-10). The main occupational activities in which there are more workers with SA spells and the main diseases that cause more SA spells.

## MATERIAL AND METHODS

This study is carried out using the statistical databases provided by the Spanish National Institute of Social Security (INSS), which are published on the website of this organisation ([www.seg-social.es/wps/portal/wss/internet/EstadisticasPresupuestosEstudios/](http://www.seg-social.es/wps/portal/wss/internet/EstadisticasPresupuestosEstudios/)), and databases obtained from specific programmes used by the Medical Units.

The reference population is formed by all the workers in Spain covered by the Social Security system in the year 2018. The study excludes the SA cases of Civil workers of the State, Armed Forces personnel and workers of the General Judicial Benefit Society, whose control and management are not an object of study. SA spells with a duration of fewer than 4 days are not included, because they do not obtain economic benefits from the Social Security system in Spain. Our study does not include unemployed workers, because they do not receive SA benefits

In Spain, our system of social security is contributory. To this end, both the worker and the company contribute to the system every month a sum of money (contribution) so that the worker can obtain benefits in case of illness or accident. If the worker is self-employed, it is himself who makes these economic contributions exclusively for non-work-related SA. This self-employed person also can pay voluntarily an extra amount for work-related SA to obtain benefits if he or she has a professional illness or an occupational accident.

Our database does not distinguish between employed and self-employed workers in the case of work-related SA. However, in non-work-related SA such division is made ([table 1](#))

Sample: The 2018 total SA records of the INSS is used, which coincide with the total population studied.

The variables used were: Age (in ranges), sex, average SA duration, diagnosis and diagnostic group (ICD-10), employee or self-employed, non-work-related SA (common disease non-occupational accident) or work-related SA (occupational accident and professional illness), and occupations with higher SA ranking

**Table 1** Prevalence, incidence and average duration of sickness absence in Spain (2018)

	Prevalence			Incidence			Average duration (days)		
	Non-work-related SA			Non-work-related SA			Non-work-related SA		
	Employed	Self-employed	Work-related SA	Employed	Self-employed	Work-related SA	Employed	Self-employed	Work-related SA
Andalusia	29.41	31.43	4.26	19.72	9.28	3.98	44.79	98.35	37.24
Aragon	32.52	30.48	3.94	25.95	11.15	3.39	36.47	75.45	41.45
Principality of Asturias	36	38.96	5.01	18.73	10.85	3.53	58.55	105.03	47.08
Balearic Islands	31.29	21.7	4.72	27.02	6.46	5.15	33.02	84.01	30.94
Canary Islands	40.45	26.45	3.85	25.23	7.96	3.51	48.53	100.87	38.17
Cantabria	39.77	38.68	4.84	23.38	10.92	3.18	51.39	108.36	50.14
Castile and Leon	32.68	31.71	4.35	19.46	9.15	3.44	47.95	95.36	42.07
Castile La Mancha	32.4	35.57	4.48	19.91	9.93	3.96	46.02	98.54	38.08
Catalonia	35.14	28.76	3.8	36.37	10.17	3.6	28.54	83.48	36.06
Extremadura	31.59	38.9	4.64	12.76	8.94	3.68	67.53	112.86	41.42
Galicia	39.79	44.29	5.51	18.52	10.54	3.57	61.39	111.82	49.83
Community of Madrid	29.17	20.79	2.73	25.54	7.71	2.89	33.89	77.75	33.11
Murcia	35.55	40.63	4.12	20.21	11.33	3.39	48.39	98.49	40.2
Chartered Community of Navarra	35.73	30.72	4.28	43.87	16.46	3.88	24.64	55.15	37.86
La Rioja	27.3	25.65	4.41	25.28	10.91	3.91	34.53	69.95	38.87
Valencia	30.68	29.28	4.4	18.06	8.79	3.34	49.29	96.3	42.34
Basque Country	39.58	28.3	3.84	31.15	10.52	3.96	38.16	79.6	36.55
National total	32.98	30.48	3.99	24.98	9.51	3.55	38.81	91.38	38.23

SA, sickness absence.

according to the International Standard Industrial Classification of all Economic Activities (ISIC Rev-4).

The geographical scope of the study is the regions of Spain.

This is an observational study. The statistical calculations used to refer to all the people affiliated with the system who are entitled to receive the SA benefit (AFI), calculated according to the data provided by the Public Employment Service, the General Treasury of Social Security, INSS and the Social Institute of the Navy.

**Incidence:** The ratio that calculates the number of SA (MP2R) per 1000 affiliates. To compute the SA, the number of real registrations for the benefit (MP2R) is used. Monthly datum:  $MP2R \times 1000 / AFI$ . Accumulated datum:  $average (MP2R) \times 1000 / AFI$ .

**Prevalence:** The ratio that calculates the number of SA processes in force per 1000 affiliates. To compute the processes in force, the number of perceivers at the end of the period (MP4) is used. Monthly datum:  $MP4 \times 1000 / AFI$ . Accumulated datum:  $average (MP4) \times 1000 / AFI$ .

The mean general duration is the average of all durations per year. The mean duration per age range and sex were calculated by dividing the number of days in SA by the number of workers in SA in that range. It is also described the number of workers in SA per 1000 affiliates. The median for the average duration per diagnostic chapter is calculated, using the statistics software Excel.

### Patient and public involvement

Anonymised patient data are used in this study. Patients and members of the public are not involved in the conducting of the study.

## RESULTS

A total of 540 045 non-work-related SA spells and 63 441 work-related SA spells is analysed, which are those controlled by the Medical Units of the Spanish National Institute of Social Security. There is a total of 16 373 239 workers affiliated to social security.

The age of the study participants is 16 to 70 years old, both men and women. All are included in all the variables studied (non-work-related, work-related, employed, self-employed, sex, age, diagnosis and occupational activities). Follow-up time is 1 year (2018).

Our results are:

### SA prevalence

The prevalence of non-work-related SA is 32.68/1000, among employed and 30.48/1000 among self-employed. Prevalence of work-related is 3.99/1000. In the non-work-related, it ranges between 27.3 in La Rioja and 40.45 in the Canary Islands in employed persons. In self-employed, it ranges between 21.5 in the Balearic Islands and 40.63 in the Region of Murcia. In work-related SA, it ranges from 2.73 in the Community of Madrid to 5.51 in Galicia (table 1).

### SA incidence

Incidence of non-work-related was 24.87/1000 among employed and 9.51/1000 among self-employed. The incidence of work-related was 3.55/1000. Its values ranged between 12.76 in Extremadura and 36.7 in Catalonia (non-work-related, employed person); for self-employed it ranged between 7.71 in Community of Madrid and 16.46 in Chartered Community of Navarre (non-work-related SA). In work-related SA, it ranged from 2.89 in Madrid to 5.15 in the Balearic Islands (table 1).

### Average SA duration

The average duration of SA was 58.67 days (in non-work-related SA from 38.81 days among employed to 91.38 days among self-employed) with a median of 48.53 days. In non-work-related SA for employees, it ranged between 24.64 days in Chartered Community of Navarre to 67.53 in Extremadura. For self-employed, it varied between 55.15 days in Navarra to 112.86 days in Extremadura. In work-related SA, it ranged from 30.94 days in the Balearic Islands to 50.14 in Cantabria (table 1).

### SA spells and average duration (age ranges and sex)

In table 2, the total number of workers on sick leave by age and sex is analysed. There is a distinction between the absolute number of workers on SA and the number of workers on SA per 1000 affiliated per age group and gender because in Spain, in almost all age groups there are more men than women affiliated to social security. This may result in more absolute numbers of sickness absence for men, although the number of SA is higher for women according to the number of affiliates.

Therefore, the total number of workers in SA by age and sex is higher in men than in women (table 2). According to age range and sex, the number of affiliates in SA is higher in women, except in Castilla and Leon, Chartered Community of Navarre and the Basque Country between 16 and 25 years of age, Principality of Asturias and La Rioja between 26 and 35 years and La Rioja in 36 to 45 and 46 to 55 years.

The average duration of SA is also higher in women than in men in all the age ranges, except in the Community of Madrid and La Rioja for 16 to 25 years, and Principality of Asturias, Balearic Islands, Canary Islands, Catalonia and Chartered Community of Navarre in workers over 65 years of age.

In women, the average duration of SA is 58.5 days (minimum 12 and maximum 137), with a median of 52 days. In men, the average is 53.08 days (minimum 13 and maximum 118), with a median of 44.

### Average SA duration (diagnostic chapter)

The average SA duration, in general, is 56.82 days, with a median of 52.80 days. In all the regions Communities, the longest duration corresponds to neoplasms, followed by heart diseases and mental disorders. The shortest duration corresponds to infectious diseases (table 3).





**Table 3** Average duration (days) by diagnostic chapter (ICD-10)

Diagnostic chapter (I)	Andalucía	Aragon	Principality of Asturias	Balearic Islands	Canary Islands	Cantabria	Castile and Leon	Castile-La Mancha	Catalonia	Extremadura	Gaúcia	Community of Madrid	Region of Murcia	Chartered Community of Navarre	La Rioja	Valencia	Basque Country	Average duration (days)
<b>(I) Certain infectious and parasitic diseases</b>	14.01	7.87	9.33	5.50	9.13	6.40	14.69	14.89	5.09	18.92	17.39	6.59	8.03	3.87	4.69	9.50	9.19	9.65
<b>(II) Neoplasms</b>	1109.78	120.16	131.05	123.93	102.69	113.30	124.41	131.05	99.47	136.05	134.20	87.82	109.89	105.09	104.93	121.97	142.86	117.59
<b>(III) Diseases of the blood and blood-forming organs and certain disorders involving the immune mechanism</b>	91.88	97.53	76.71	61.03	83.72	57.30	76.59	83.38	63.33	121.10	94.43	63.74	89.23	40.54	58.16	85.98	108.07	79.58
<b>(IV) Endocrine, nutritional and metabolic diseases</b>	72.54	67.72	66.06	50.80	64.70	81.62	57.53	72.88	59.03	79.47	88.73	56.96	81.66	43.03	48.54	71.53	81.06	67.22
<b>(V) Mental and behavioural disorders</b>	95.17	90.37	99.28	56.11	83.26	111.34	96.30	94.54	72.03	114.42	110.32	78.88	111.86	65.66	70.64	88.46	116.66	92.03
<b>(VI) Diseases of the nervous system</b>	79.81	61.81	85.12	49.46	70.50	66.51	78.55	74.37	44.88	80.11	96.84	54.49	78.03	26.40	44.64	79.21	70.51	67.02
<b>(VII) Diseases of the eye and adnexa</b>	44.13	42.89	47.85	28.72	40.84	45.41	46.05	44.12	29.17	56.76	48.63	29.62	46.43	18.80	29.77	41.70	46.77	40.35
<b>(VIII) Diseases of the ear and mastoid process</b>	33.04	26.90	33.55	19.33	31.33	29.05	27.30	26.82	18.89	47.66	42.55	21.63	35.98	13.85	19.54	29.13	37.40	29.94
<b>(IX) Diseases of the circulatory system</b>	103.40	107.05	102.25	85.73	90.19	108.21	99.35	104.24	79.86	106.57	111.53	78.86	112.84	80.66	90.12	101.52	119.39	98.8
<b>(X) Diseases of the respiratory system</b>	11.98	10.67	14.22	9.05	12.46	11.07	13.02	13.47	8.27	19.75	16.42	9.70	12.34	6.40	7.68	11.87	17.11	12.09
<b>(XI) Diseases of the digestive system</b>	30.65	35.44	44.16	28.59	39.97	43.95	27.86	35.59	27.19	50.51	47.53	32.56	41.01	14.97	30.98	40.84	37.32	35.48
<b>(XII) Diseases of the skin and subcutaneous tissue</b>	36.37	29.84	46.22	24.18	35.30	42.96	37.86	37.34	25.36	39.37	47.80	26.91	39.30	20.61	27.26	33.74	51.91	35.55
<b>(XIII) Diseases of the musculoskeletal system and connective tissue</b>	70.24	66.89	79.55	50.35	66.45	76.87	70.00	71.17	54.13	85.89	86.54	56.26	73.79	43.11	62.76	71.05	82.61	68.5
<b>(XIV) Diseases of the genitourinary system</b>	40.71	31.78	44.27	25.30	35.36	34.11	35.01	33.76	27.87	46.14	45.16	31.83	43.51	15.56	32.25	37.08	82.86	36.04
<b>(XV) Pregnancy, childbirth and the puerperium</b>	76.91	53.45	51.51	53.46	81.32	61.09	99.29	72.56	63.73	70.08	68.09	51.74	73.30	60.24	57.10	73.43	67.00	64.37
<b>(XVII) Congenital malformations, deformations and chromosomal abnormalities</b>	86.30	69.19	56.00	73.00	86.22	121.65	80.30	107.03	61.09	94.00	99.25	41.00	75.00	50.00	37.76	71.33	90.33	81.25
<b>(XVIII) Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified</b>	36.13	23.88	38.00	23.00	26.00	42.50	33.23	36.11	20.82	35.50	37.25	28.00	100.15	9.00	28.45	31.87	37.67	32.19
<b>(XX) Injury, poisoning and certain other consequences of external causes</b>	59.88	59.12	72.00	45.00	59.00	68.17	66.63	52.48	53.12	70.00	71.75	55.00	65.00	45.00	53.45	66.67	81.00	60.96

\*Chapters XX, XXI and XXII are not included because the number of cases is not significant. ICD-10, International Classification of Diseases, 10<sup>th</sup> Revision.

**Table 4** Sickness absence spells by diagnosis (ICD-10)

Autonomous community of Spain	Code	Diagnosis	SA /1000 affiliates/ per month
<b>Andalusia</b>	M54.5	Low back pain	1.36
	K52	Other non-infective gastroenteritis and colitis	1.00
	J00	Acute nasopharyngitis (common cold)	0.83
	J11	Influenza, virus not identified	0.82
	M54.2	Cervicalgia	0.57
	M54.3	Sciatica	0.52
	J02.9	Acute pharyngitis, unspecified	0.40
	J03.9	Acute tonsillitis, unspecified	0.38
	<b>Aragon</b>	K52.9	Non-infective gastroenteritis and colitis, unspecified
J11		Influenza, virus not identified	1.28
M54.5		Low back pain	1.16
J02.9		Acute pharyngitis, unspecified	0.97
M25		Other joint disorders, not elsewhere classified	0.76
M54.3		Sciatica	0.42
M54.2		Cervicalgia	0.41
F41		Other anxiety disorders	0.38
<b>Principality of Asturias</b>	K52.9	Non-infective gastroenteritis and colitis, unspecified	1.03
	M54.5	Low back pain	0.83
	F41	Other anxiety disorders	0.80
	J11	Influenza, virus not identified	0.55
	M54.3	Sciatica	0.46
	M54.2	Cervicalgia	0.40
	J02.9	Acute pharyngitis, unspecified	0.30
	M23	Internal derangement of knee	0.29
	<b>Balearic Islands</b>	K52.9	Non-infective gastroenteritis and colitis, unspecified
M54.5		Low back pain	1.61
B97.8		Other viral agents as the cause of diseases classified to other chapters	1.26
J11		Influenza, virus not identified	1.15
F41.9		Anxiety disorder, unspecified	0.77
J03.9		Acute tonsillitis, unspecified	0.72
J00		Acute nasopharyngitis (common cold)	0.60
M54.3		Sciatica	0.60
<b>Canary Islands</b>		M54.5	Low back pain
	J11	Influenza, virus not identified	1.16
	K52.9	Non-infective gastroenteritis and colitis, unspecified	1.02
	J00	Acute nasopharyngitis (common cold)	0.82
	J20.9	Acute bronchitis, unspecified	0.59
	F06.4	Organic anxiety disorder	0.57
	M54.3	Sciatica	0.51
	M54.2	Cervicalgia	0.44
	<b>Cantabria</b>	K52.9	Non-infective gastroenteritis and colitis, unspecified
J11		Influenza, virus not identified	1.13
M54.5		Low back pain	0.98

Continued



Table 4 Continued

Autonomous community of Spain	Code	Diagnosis	SA /1000 affiliates/ per month
	R45	Symptoms and signs involving emotional state	0.69
	J02.9	Acute pharyngitis, unspecified	0.67
	J06	Acute upper respiratory infections of multiple and unspecified sites	0.66
	M54.3	Sciatica	0.61
	M54.2	Cervicalgia	0.57
<b>Castile and Leon</b>	M54.5	Low back pain	1.28
	J11	Influenza, virus not identified	0.86
	F41.9	Anxiety disorder, unspecified	0.53
	M54.3	Sciatica	0.52
	J98.8	Other specified respiratory disorders	0.40
	J06.9	Acute upper respiratory infection, unspecified	0.37
	J00	Acute nasopharyngitis (common cold)	0.30
	K52	Other non-infective gastroenteritis and colitis	0.10
<b>Castile La Mancha</b>	M54.5	Low back pain	1.22
	K52.9	Non-infective gastroenteritis and colitis, unspecified	0.79
	J00	Acute nasopharyngitis (common cold)	0.62
	J11	Influenza, virus not identified	0.53
	K52	Other non-infective gastroenteritis and colitis	0.50
	J03.9	Acute tonsillitis, unspecified	0.43
	M54.2	Cervicalgia	0.39
	M54.3	Sciatica	0.37
<b>Catalonia</b>	K52.9	Non-infective gastroenteritis and colitis, unspecified	2.82
	J00	Acute nasopharyngitis (common cold)	2.09
	M54.5	Low back pain	1.96
	J11	Influenza, virus not identified	1.58
	F41.9	Anxiety disorder, unspecified	1.40
	B97.8	Other viral agents as the cause of diseases classified to other chapters	1.05
	J03.9	Acute tonsillitis, unspecified	0.85
	M54.2	Cervicalgia	0.68
<b>Extremadura</b>	M54.5	Low back pain	0.76
	J11	Influenza, virus not identified	0.49
	S93	Dislocation, sprain and strain of joints and ligaments at ankle and foot level	0.28
	M54.2	Cervicalgia	0.23
	M54.3	Sciatica	0.20
	F41	Other anxiety disorders	0.18
	M54.9	Dorsalgia, unspecified	0.17
	M75	Shoulder lesions	0.14
<b>Galicia</b>	M54.5	Low back pain	1.19
	J11	Influenza, virus not identified	0.94
	M54.2	Cervicalgia	0.47
	F41	Other anxiety disorders	0.44
	J20.9	Acute bronchitis, unspecified	0.42

Continued

Table 4 Continued

Autonomous community of Spain	Code	Diagnosis	SA /1000 affiliates/ per month
	M54.3	Sciatica	0.30
	J03.9	Acute tonsillitis, unspecified	0.28
	S93	Dislocation, sprain and strain of joints and ligaments at ankle and foot level	0.24
<b>Community of Madrid</b>	K52.9	Non-infective gastroenteritis and colitis, unspecified	1.51
	M54.5	Low back pain	0.90
	F41	Other anxiety disorders	0.76
	J02.9	Acute pharyngitis, unspecified	0.67
	J11	Influenza, virus not identified	0.53
	M25	Other joint disorders, not elsewhere classified	0.48
	M54.3	Sciatica	0.45
	J06.9	Acute upper respiratory infection, unspecified	0.43
<b>Region of Murcia</b>	K52.9	Non-infective gastroenteritis and colitis, unspecified	1.21
	J11	Influenza, virus not identified	1.16
	M54.5	Low back pain	1.13
	J02.9	Acute pharyngitis, unspecified	0.82
	M54.3	Sciatica	0.69
	R45	Symptoms and signs involving emotional state	0.62
	M54.2	Cervicalgia	0.55
	J06.9	Acute upper respiratory infection, unspecified	0.41
<b>Chartered Community of Navarre</b>	K52.9	Non-infective gastroenteritis and colitis, unspecified	3.08
	J11	Influenza, virus not identified	2.52
	M54.5	Low back pain	1.88
	J06.9	Acute upper respiratory infection, unspecified	1.62
	J00	Acute nasopharyngitis (common cold)	1.26
	A08.5	Other specified intestinal infections	0.98
	J20.9	Acute bronchitis, unspecified	0.95
	F41.9	Anxiety disorder, unspecified	0.89
<b>La Rioja</b>	K52.9	Non-infective gastroenteritis and colitis, unspecified	2.20
	J00	Acute nasopharyngitis (common cold)	1.42
	J11	Influenza, virus not identified	1.14
	M54.5	Low back pain	1.10
	M54.3	Sciatica	0.56
	J06.9	Acute upper respiratory infection, unspecified	0.39
	M25.5	Pain in joint	0.36
	R45.0	Nervousness	0.35
<b>Valencia</b>	M54.5	Low back pain	1.04
	J11	Influenza, virus not identified	0.85
	F41.9	Anxiety disorder, unspecified	0.56
	K52.9	Non-infective gastroenteritis and colitis, unspecified	0.55
	J00	Acute nasopharyngitis (common cold)	0.45
	M54.2	Cervicalgia	0.39
	M54.3	Sciatica	0.33

Continued

Table 4 Continued

Autonomous community of Spain	Code	Diagnosis	SA /1000 affiliates/per month
	J20.9	Acute bronchitis, unspecified	0.32
<b>Basque Country</b>	M54.5	Low back pain	1.83
	M54.2	Cervicalgia	1.68
	J00	Acute nasopharyngitis (common cold)	0.91
	K52.9	Non-infective gastroenteritis and colitis, unspecified	0.75
	J11	Influenza, virus not identified	0.63
	F43.2	Adjustment disorders	0.56
	F41.9	Anxiety disorder, unspecified	0.49
	R10	Abdominal and pelvic pain	0.35

ICD-10, International Classification of Diseases, 10<sup>th</sup> Revision; SA, sickness absence.

### SA spells by ICD-10 diagnosis

Table 4 describes the main diagnoses that generate the highest numbers of SA spells/1000 affiliates/per month. The diagnoses with the highest number of SA were: Influenza, virus not identified, lower back pain and non-infective gastroenteritis and colitis, unspecified. They highlighted the multiple SA spells per non-infective gastroenteritis and colitis diagnosis, unspecific on Catalonia, Balearic Islands and Community of Navarre.

### SA spells by ISIC Rev-4

There is an outstanding number of SA spell in general public administration activities, hospital activities, retail sale in non-specialised stores with food, beverages or tobacco predominating and general cleaning of buildings (table 5).

However, when these cases are analysed by the number of affiliates in each occupational activities, those occupations in which the most SA spells is found are activities of call centres, temporary employment agency activities and general public administration activities.

## DISCUSSION

The obtained results confirm many of the findings described by other authors at both the national<sup>17</sup> and international levels.<sup>18</sup>

The prevalence and incidence are much higher in non-work-related SA than in work-related SA, which is logical, since work-related SA only included the accidents occurred in the workplace, as well as the professional diseases described in the Royal Decree 1299/2006 of 10<sup>th</sup> November, and not all diseases, accidents and injuries that any worker can suffer from. Conversely, in the case of non-work-related SA all illness and accidents are included.

When the SA prevalence in each region is analysed, it is observed that there are few regions, such as Aragon and the Community of Madrid, below the national average. By breaking it down into non-work-related SA, the regions

that are below the average were Andalusia, Aragon, the Balearic Island, Community of Madrid, La Rioja and Valencian Community, while in work-related SA, Aragon, Catalonia, the Basque Country, the Canary Islands and Community of Madrid stand out below the average. It is difficult to know the reasons for these differences in the prevalence SA. To analyse the possible causes of these differences, it would be necessary to carry out other sorts of studies.

There are also important differences concerning incidence, with these differences being very marked in some regions. Only Castile and Leon does not reach the national average. In the case of non-work-related SA, Andalusia, Castile and Leon, Extremadura and Valencian Community are below the national average. In work-related SA, values are very approximate in all regions. The highest value is in the Balearic Islands.

There is a significant difference in the incidence of SA between the employed and self-employed which was much higher in the former. This is in line with the results obtained in other studies conducted in Spain<sup>4</sup> and at an international level.<sup>7 19 20</sup> The self-employed are only charging for the work they have done. On the other hand, if they are in SA's position, the amount they receive is lower, because it depends on their contributions to the social security system.

The average duration is shorter in all regions in the case of work-related SA because these SA are managed directly by associated insurance companies, whose network of doctors and hospital beds are exclusively for workers who had suffered occupational accidents or professional illness. In the case of non-work-related SA, healthcare is provided by the Public Health System, where other patients are also treated (children, elderly, non-working patients, and so on) and, therefore, waiting lists were longer and treatments for these patients could be delayed further. Besides, the longest duration is for oncological diseases and mental disorders, the origin of which is usually unrelated to work. This finding is in line

**Table 5** Sickness absence situations by occupational activities (International Standard Industrial Classification of all Economic Activities, ISIC Rev-4)

Autonomous community	Code	Occupational activities	SA spells	SA/1000 affiliates
<b>Andalusia</b>	8411	General public administration activities	61 457	30.84
	8610	Hospital activities	40 544	20.30
	8121	General cleaning of buildings	23 802	18.89
	5610	Restaurants and mobile food service activities	23 377	28.5
	5630	Beverage serving activities	20 659	10.74
	4100	Construction of buildings	16 608	10.22
	4711	Retail sale in non-specialised stores with food, beverages or tobacco predominating	16 253	9
	5510	Hotels and similar accommodation	16 061	20.05
	4630	Wholesale of food, beverage and tobacco	15 010	9.72
	8220	Activities of call centres	14 652	69.07
<b>Aragon</b>	8411	General public administration activities	9685	23.30
	8610	Hospital activities	8022	16.61
	7820	Temporary employment agency activities	7550	73.50
	2930	Manufacture of parts and accessories of motor vehicles	5874	11.70
	8121	General cleaning of buildings	5464	21.78
	4711	Retail sale in non-specialised stores with food, beverages or tobacco predominating	3773	5.3
	5610	Restaurants and mobile food service activities	3669	28.5
	8220	Activities of call centres	3459	43
	4923	Freight transport by road	3214	15.57
5630	Beverage serving activities	3073	10.95	
<b>Principality of Asturias</b>	8610	Hospital activities	6422	20.65
	4711	Retail sale in non-specialised stores with food, beverages or tobacco predominating	5217	9.56
	8411	General public administration activities	4000	19.21
	5630	Beverage serving activities	2560	10.46
	2410	Manufacture of basic iron and steel	2330	12.08
	8121	General cleaning of buildings	2285	13.6
	5610	Restaurants and mobile food service activities	2047	22.45
	8730	Residential care activities for the elderly and disabled	1950	20.82
	8122	Other building and industrial cleaning activities	1651	18
9700	Activities of households as employers of domestic personnel	1365	8.51	
<b>Balearic Islands</b>	5510	Hotels and similar accommodation	19 736	30.31
	5610	Restaurants and mobile food service activities	9399	13.6
	8610	Hospital activities	8059	26.49
	8411	General public administration activities	6141	27.19
	4100	Construction of buildings	6129	13
	4711	Retail sale in non-specialised stores with food, beverages or tobacco predominating	5078	8.44
	5630	Beverage serving activities	4740	8.32

Continued



Table 5 Continued

Autonomous community	Code	Occupational activities	SA spells	SA/1000 affiliates
	8121	General cleaning of buildings	4125	16.70
	5520	Short-term accommodation activities	3034	12.56
	4751	Retail sale of textiles in specialised stores	2408	21.6
<b>Canary Islands</b>	5510	Hotels and similar accommodation	26 147	43.13
	8610	Hospital activities	16 865	30.7
	8411	General public administration activities	15 899	31.59
	5610	Restaurants and mobile food service activities	11 628	18.32
	4711	Retail sale in non-specialised stores with food, beverages or tobacco predominating	10 495	7.9
	5520	Short-term accommodation activities	7221	32.30
	8121	General cleaning of buildings	7000	18.7
	5630	Beverage serving activities	5507	8.36
	4100	Construction of buildings	5414	11.70
	8521	General secondary education	5340	12.13
<b>Cantabria</b>	8411	General public administration activities	3851	28.5
	7820	Temporary employment agency activities	3612	76.53
	8610	Hospital activities	3492	20.09
	8121	General cleaning of buildings	1828	17.11
	5610	Restaurants and mobile food service activities	1616	22.5
	5630	Beverage serving activities	1383	10.97
	8220	Activities of call centres	1170	60
	8521	General secondary education	1170	8.38
	4791	Retail sale via mail order houses or via Internet	1023	16.8
	8620	Medical and dental practice activities	998	32
<b>Castile and Leon</b>	8411	General public administration activities	9940	16.89
	8610	Hospital activities	9741	12.04
	8220	Activities of call centres	8920	85.14
	8121	General cleaning of buildings	7489	17.87
	4711	Retail sale in non-specialised stores with food, beverages or tobacco predominating	5953	7.94
	8790	Other residential care activities	5089	21.95
	5630	Beverage serving activities	5023	14.59
	7820	Temporary employment agency activities	4676	45.75
	5610	Restaurants and mobile food service activities	4493	24.90
	2910	Manufacture of motor vehicles	4409	10.35
<b>Castile La Mancha</b>	8411	General public administration activities	15 003	22.17
	8610	Hospital activities	7820	14.89
	8121	General cleaning of buildings	5363	19.98
	7820	Temporary employment agency activities	5272	56.70
	5210	Warehousing and storage	5251	60
	4100	Construction of buildings	4479	8.94
	4711	Retail sale in non-specialised stores with food, beverages or tobacco predominating	4267	5.06
	5610	Restaurants and mobile food service activities	4092	32.54

Continued

Table 5 Continued

Autonomous community	Code	Occupational activities	SA spells	SA/1000 affiliates
	4923	Freight transport by road	3846	14.08
	5630	Beverage serving activities	3526	10.62
<b>Catalonia</b>	8610	Hospital activities	75 958	32.68
	8411	General public administration activities	70 569	32.11
	5610	Restaurants and mobile food service activities	45 084	47
	8121	General cleaning of buildings	44 117	22.8
	7820	Temporary employment agency activities	43 109	73.56
	8220	Activities of call centres	37 877	74.91
	4711	Retail sale in non-specialised stores with food, beverages or tobacco predominating	30 528	12.95
	4751	Retail sale of textiles in specialised stores	24 417	10.36
	8812	Social work activities without accommodation for the elderly and disabled	20 007	43.56
	8423	Public order and safety activities	19 807	65
<b>Extremadura</b>	8411	General public administration activities	10 813	23.68
	8610	Hospital activities	5921	17.95
	8121	General cleaning of buildings	2007	19.56
	8812	Social work activities without accommodation for the elderly and disabled	1643	18
	4100	Construction of buildings	1610	7.48
	5630	Beverage serving activities	1599	10.55
	4711	Retail sale in non-specialised stores with food, beverages or tobacco predominating	1136	3.98
	5610	Restaurants and mobile food service activities	1044	13.64
	4923	Freight transport by road	914	12.89
	0150	Mixed farming	902	8.79
<b>Galicia</b>	8610	Hospital activities	12 552	16.6
	8411	General public administration activities	12 137	19.12
	4711	Retail sale in non-specialised stores with food, beverages or tobacco predominating	7498	6.4
	5630	Beverage serving activities	6532	12
	8121	General cleaning of buildings	5775	
	7820	Temporary employment agency activities	5270	40.61
	9700	Activities of households as employers of domestic personnel	4830	11.45
	5610	Restaurants and mobile food service activities	4664	17.6
	8220	Activities of call centres	4558	47.19
	4100	Construction of buildings	3622	5.27
<b>Community of Madrid</b>	8610	Hospital activities	44 482	17.65
	8121	General cleaning of buildings	42 703	20.63
	5610	Restaurants and mobile food service activities	36 939	28.54
	4711	General public administration activities	35 475	21.94
	8220	Activities of call centres	29 212	67.3
	4711	Retail sale in non-specialised stores with food, beverages or tobacco predominating	28 014	7.57

Continued



Table 5 Continued

Autonomous community	Code	Occupational activities	SA spells	SA/1000 affiliates
	9700	Activities of households as employers of domestic personnel	21 385	20.93
	8299	Other business support service activities n.e.c	20 351	13
	5630	Beverage serving activities	17 608	12.05
	4751	Retail sale of textiles in specialised stores	15 735	15.31
<b>Region of Murcia</b>	8620	Medical and dental practice activities	11 008	34.8
	0113	Growing of vegetables and melons, roots and tubers	7233	28.29
	7820	Temporary employment agency activities	6037	23.35
	4711	General public administration activities	6003	24.41
	8121	General cleaning of buildings	4915	25.01
	5610	Restaurants and mobile food service activities	3672	34.02
	5630	Beverage serving activities	3635	21.63
	4630	Wholesale of food, beverage and tobacco	3514	13.62
	4711	Retail sale in non-specialised stores with food, beverages or tobacco predominating	3228	8.96
	4923	Freight transport by road	2914	14.28
<b>Chartered Community of Navarre</b>	8610	Hospital activities	14 408	46.16
	8411	General public administration activities	7408	57.01
	2930	Manufacture of parts and accessories of motor vehicles	5782	18.2
	7820	Temporary employment agency activities	5558	94.19
	8521	General secondary education	3909	19.86
	8121	General cleaning of buildings	3520	31.17
	1030	Processing and preserving of fruit and vegetables	3256	38.37
	2910	Manufacture of motor vehicles	3195	17.07
	8812	Social work activities without accommodation for the elderly and disabled	3151	76.35
	9700	Activities of households as employers of domestic personnel	2382	23.71
<b>La Rioja</b>	8610	Hospital activities	1698	18.25
	8611	General public administration activities	1612	22.76
	1520	Manufacture of footwear	1463	38.2
	8121	General cleaning of buildings	1290	29.05
	1030	Processing and preserving of fruit and vegetables	1217	27.4
	7820	Temporary employment agency activities	1060	71.12
	2930	Manufacture of parts and accessories of motor vehicles	1006	12.1
	5630	Beverage serving activities	973	14.3
	1102	Manufacture of wines	962	13.09
	0113	Growing of vegetables and melons, roots and tubers	907	21.5
<b>Valencia</b>	8610	Hospital activities	24 063	21.57
	8611	General public administration activities	23 311	24.51

Continued

Table 5 Continued

Autonomous community	Code	Occupational activities	SA spells	SA/1000 affiliates
	5610	Restaurants and mobile food service activities	16 234	20.93
	8121	General cleaning of buildings	12.758	16.04
	4711	Retail sale in non-specialised stores with food, beverages or tobacco predominating	11 239	6.14
	4630	Wholesale of food, beverage and tobacco	7300	8.81
	5630	Beverage serving activities	8732	6.49
	4923	Freight transport by road	7300	11.49
	7820	Temporary employment agency activities	7126	29.24
	4100	Construction of buildings	6663	6.21
<b>Basque Country</b>	8610	Hospital activities	22 704	30.48
	8611	General public administration activities	15 565	27.16
	8121	General cleaning of buildings	13 043	29.20
	8521	General secondary education	12 519	14.51
	8812	Social work activities without accommodation for the elderly and disabled	8760	14.75
	5610	Restaurants and mobile food service activities	8419	29.01
	4711	Retail sale in non-specialised stores with food, beverages or tobacco predominating	6625	6.6
	9700	Activities of households as employers of domestic personnel	6284	18.55
	2591	Forging, pressing, stamping and roll-forming of metal; powder metallurgy	6086	10.29
	5630	Beverage serving activities	5842	18.02

SA, sickness absence.

with that of other studies at the national<sup>4</sup> and European<sup>19</sup> level. Non-work-related SA showed a longer duration to work-related SA which has remained like this for years.<sup>14</sup> The region that showed the shortest duration as a whole is Navarre, where the health expenditure per inhabitant is also the highest in Spain. Healthcare expenditure is also higher in the Basque Country, however, the duration of the it is one of the longest in many diagnostic chapters.

The most noteworthy fact is that the number of days on SA for self-employed workers is twice as much as for employees in all of Spain's regions. In our experience, this can be caused by the fact that self-employed workers do not usually start a process of short-term SA, because cash benefits for SA are paid 30 days after the start of SA and they do not receive cash benefits in short-term SA

The incidence, prevalence and average duration increase with age. This occurs in all age ranges except for very young workers (men and women) and those over 65 years old. In young people it can be explained by the fact that they often have low-skilled jobs (they have not yet finished their education). They are often temporary and unstable jobs, and many young people work and study at the same time. This causes a double workload that could contribute to worsening their health. As it can be seen, they are short-term SA, which could indicate a low severity

of the pathologies that produce them. In the over-65s the prevalence is very low in all regions. One possible explanation is that the retirement age in Spain is around 65 and the worker who decides to continue working instead of retiring is in good health. However, the duration of these SA is very long, because at this age there is a greater prevalence of serious pathologies (neoplasms, ictus, and so on).

The differences observed in the number of employees regarding sex are in line with the patterns obtained in other studies, with higher incidence<sup>19</sup> and longer duration<sup>21</sup> in women. There is a sex breach in some European countries (Spain, Ireland, France, Belgium and UK) compared with others (Netherlands, Portugal and Italy).<sup>21 22</sup> The incidence increases with age, which is in agreement with most studies at the national<sup>4 23</sup> and international<sup>7 18 21-24</sup> level, with higher intensity according to the number of affiliates per sex and age range (table 2). Among the multiple explanations for this fact, it is worth highlighting the following: the double work women usually carry out, that is, paid work and domestic work, with greater responsibilities for the family (traditional gender role),<sup>22 24</sup> the different behaviour of women toward disease,<sup>22</sup> their greater morbidity related to maternity<sup>25</sup> and more fragile health,<sup>26</sup> as well as their lower

commitment to work.<sup>22</sup> Other authors highlight the occupational differences, which could explain more than half of the gender differences,<sup>24</sup> as well as the stress level.<sup>24</sup> However, this gender breach is not constant in the long-term in all the European countries;<sup>21 22</sup> in fact, some studies question its existence based on the occupational level<sup>27</sup> and the stress level.<sup>28</sup>

The longest duration by diagnostic chapter is oncological diseases, cardiovascular diseases and mental disorders, which is in line with other studies.<sup>29–31</sup> Moreover, this fact poses a serious problem of public health, given the accelerated increase of chronic diseases in all the countries around Spain,<sup>32</sup> with the consequent increase in the incidence and duration of SA and the cost that it implies.<sup>4 29</sup>

The diagnosis that generated the largest number of SA cases, after the influenza, is lower back pain. This finding is in line with numerous studies, being, nationally, the main diagnosis of sick leave due to its high incidence and recurrence rate,<sup>33</sup> as well as the duration<sup>23 34 35</sup> and economic costs of such SA.<sup>35</sup> This is due to the great prevalence of such pathology, regardless of whether or not it generates SA cases,<sup>33 36</sup> among other factors.

The Public Administration is in the first, second and third positions in the described ranking in almost all the regions. This can be explained by the difference between workers of the public sector, who represent a greater number of SA cases than employees in the private sector, as in other countries.<sup>19 37 38</sup> However, in previous studies carried out in Spain, the Public Administration did not represent or occupied such an important place in SA spells, being greatly surpassed by the industrial and construction sectors.<sup>16 39</sup>

When the SA spells are analysed by the number of affiliated workers in each occupational activities, a higher number of them is found in workers in call centres and temporary employment agencies. These activities have a high level of job instability, with a high worker turnover and very short-term contracts.<sup>40</sup> This could explain the high rate of absence in them.

One of the occupational activities with the highest number of SA spells is retail sale in non-specialised stores with food, beverages or tobacco predominating, but when it is analysed by the number of affiliates, this number of SA spells is one of the lowest of all occupational activities. One possible explanation is that many of these workers are self-employed and, as mentioned before, in these workers the SA incidence is very low.

## CONCLUSION

This study shows the important characteristics of SA in Spain. The most important differences are found in SA incidence and average duration between the different regions and non-work-related and work-related SA spells. There are also important differences in the number of SA spells between different occupational activities.

The regions that show the most difference SA are the Chartered Community of Navarre and the Community of Madrid. It would be interesting to carry out further studies that analyse the main factors that influence SA in Spain.

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