Spine

SPINE Volume 39, Number 00, pp 1-11

EPIDEMIOLOGY

The Association of Chronic Neck Pain, Low Back Pain, and Migraine With Absenteeism Due to Health Problems in Spanish Workers

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Study Design. Cross-sectional.

Objective. To examine whether 3 types of chronic pain are associated with absenteeism and with the number of days absent from work in the general population of Spain.

Summary of Background Data. Chronic pain has been associated with absenteeism, but most of the evidence is based on unadjusted analyses and on specific professional categories.

Methods. A cross-sectional analysis was performed on the basis of data of 8283 Spanish workers. Chronic pain was ascertained from self-reported information on frequent symptoms of pain in the low back and neck and/or migraine in the last 12 months. Absenteeism was defined as missing at least 1 day from work because of health problems. Multivariate regression models were adjusted for the main confounders.

Results. Health-related absenteeism was reported by 27.8% of subjects. The prevalence of chronic pain was reported 12.3% in the neck, 14.1% in the low back, and 10.3% migraine. In adjusted analyses, absenteeism was associated with chronic neck pain (odds ratio: 1.20; 95% confidence interval [CI], 1.02–1.40), low back pain (odds ratio: 1.22; 95% CI, 1.06–1.42), and migraine (odds ratio: 1.22; 95% CI, 1.04–1.44). These associations were strongest in younger (18–34 yr) rather than in older workers. Furthermore, those who reported frequent pain in the neck and low back were 44% more likely to be absent for more than 30 days in the past year than those who did not report these symptoms.

Conclusion. Spanish workers with chronic pain were more likely to be absent from work and to stay absent from work for longer. These associations are independent of sociodemographic characteristics, occupation, lifestyle, health status, and analgesics use.

Key words: absenteeism, low back pain, neck pain, migraine, chronic headache, occupational health, lifestyle, cross-sectional study, multivariate analysis, Spain. [AQ03]

Level of Evidence: N/A

Spine 2014;39:1–11

Chronic pain is an increasingly prevalent condition, with several individual and epidemiological implications. Apart from its clinical relevance on an individual's health status, autonomy, and quality of life,[1,2] chronic pain also has public health and social effects that must be addressed.[3] As an example, pain symptoms are one of the most frequent reasons for people using health care resources,[1] and pain medication for the treatment of neck and back pain represents a significant part of health care expenditure and has increased in last decade,[4] Still, the social impact of pain in the general population is not clear, and, in particular, the association between chronic pain and worker's absenteeism.

A recent systematic review in the European workplace showed evidence that chronic pain has a substantial negative impact on work-related outcomes.[5] In Spain, Langley *et al*[6] found that subjects with chronic pain were absent from work 40% more frequently and were 30% more likely to report a lack of productivity than those without this symptom. However, that study was based on an Internet sample and, therefore, the conclusions may not be applicable to all work categories of the general population of Spain.

Furthermore, many sociodemographic, lifestyle and health status variables may act as intermediate or confounding factors on the association between absenteeism and chronic pain, and these have not been controlled for in most previous analyses. Chronic pain is more frequent in females, older adults, and manual workers, and people who are obese, smoke, and/or

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Acknowledgment date: August 2, 2013. First revision date: November 6, 2013. Second revision date: February 20, 2014. Acceptance date: March 18, 2014.

The manuscript submitted does not contain information about medical device(s)/drug(s).

Grünhental Foundation, Spain, funds were received, in part, to support this work.

Relevant financial activities outside the submitted work: employment, grants/ [AQ01] grants pending and travel/accommodations/meeting expenses.

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DOI: 10.1097/BRS.0000000000000387

lead a sedentary lifestyle as well as in individuals with poorer overall health.[7–11] On the contrary, absenteeism is more frequently associated with younger age, higher income, higher education, and worse self-reported health status.[10,12,13]

This study examined the relationship between 3 prevalent types of chronic pain, the occurrence of absenteeism, and the number of days absent from work in the last year in a nationwide representative sample of Spanish workers. The 3 types of pain examined were chronic neck pain (CNP), chronic low back pain (CLBP), and migraine (or chronic headache). Although pain characteristics are different between migraine and chronic neck and back pain, migraine was included in the present analyses because of its chronic manifestation (painful, frequent, and recurrent episodic events), and, moreover, migraine is especially prevalent in working populations and, thus, it is reasonable to assume that it could be associated with absenteeism. Furthermore, stratified analyses were performed to explore whether these associations change with age.

MATERIALS AND METHODS

Study Design and Participants

The present study is a cross-sectional analysis based on data obtained from the European Health Interview Survey in Spain—2009. The survey was conducted by the National Statistics Institute under the aegis of the Spanish Ministry of Health, Social Policy and Equality.[14] The European Health Interview Survey in Spain is a computer-aided home-based personal interview. It examines a nationwide representative sample of the noninstitutionalized population, aged 16 years or older, who reside in primary family dwellings (households) in Spain. Study subjects were selected by means of probabilistic multistage sampling, with the first-stage units being census sections and the second-stage units being primary family dwellings. Data were collected between April 2009 and March 2010.

A total of 22,188 participants were interviewed. For the study purposes, 11,488 (51.8%) currently employed people aged between the ages of 18 and 70 were selected. Among them, 2720 were excluded from analysis for lack of occupation information, 39 for absenteeism, and 446 for other confounding variables. A total of 8283 (72.1%) individuals were, therefore, included in the final analyses.

This study was conducted using public-domain databases following European regulations and principles regarding ethics and data protection. The interviews were carried out at the household level of the general population by qualified [AQ04] interviewers from the Spanish National Statistics Institute. It was, therefore, not necessary to submit the project to an ethics committee for review.

Study Variables

The main independent variables, that is, frequent symptoms of CNP, CLBP, and migraine or chronic headache (MIG) in the last 12 months, were self-reported (yes, no) by answering the question: "Have you suffered (chronic neck pain; chronic back pain; migraine or frequent headaches) in the past 12 months?" Absenteeism due to a health problem was the dependent variable and was assessed with the single question "In the last 12 months, were you absent from work due to a health problem? Consider all disease classes, health problems and/or injuries because of which you had to lose a day of work." The self-reported total number of days absent from work due to health problems in the last 12 months was also used as a dependent variable.

Sociodemographic information was obtained for sex, age, education level (primary and lower, secondary or university), and marital status (single, married, separated or divorced, and widowed). The participant's main occupations were grouped in the following categories: (a) executive, scientific and intellectual, (b) technical, office, and service professionals, (c) agricultural, operator and mechanical, and (d) unskilled workers.

Smoking (never smoked, ex-smoker, or current smoker) and alcohol intake in the last 12 months (never, 1 time per month or less, 2 times per month to 3 times per week, or 4 times per week or more) were also assessed. Physical activity at work, at home, and in leisure time was reported in hours per week for intensive and moderate activities. To differentiate more active and less active workers, we took into consideration at least 150 minutes of moderate or 60 minutes of intensive physical activity per week on the basis of the World Health Organization recommendation for European Union countries. Self-rated health status was ascertained with the question "In general, how would you describe your health status?," with 5 possible answers grouped as optimal (very good, good) or suboptimal (regular, poor, very poor) health. Two conditions related to mental health (stroke and depression or antidepressants use) and 8 other chronic conditions or comorbidities (hypertension, ischemic heart disease, diabetes, cancer, arthritis, osteoporosis, gastric or duodenal ulcer, and asthma), as diagnosed by a physician, were registered. The participants were also asked to report whether they used medication specifically to treat back pain and/or headache in the last 2 weeks, that is, analgesics prescribed by a physician (yes, no).

Statistical Analysis

We compared the frequency of all sociodemographic, lifestyle, and health status characteristics of the participants according to the occurrence of absenteeism in last year using the χ^2 test. As the variable "number of days absent from work" presented a non-normal distribution among the participants (Kolmogorov-Smirnov test result: $Z = 19.6$; $P < 0.001$), the time absent from work was compared throughout the categories with the nonparametric Mann-Whitney and [AQ05] Kruskal-Wallis tests (according to the number of categories, for comparison).

Binary logistic regressions were performed to determine the association between each type of chronic pain (CNP, CLBP, and MIG) and absenteeism. In addition, another variable reporting "at least one type of chronic pain" was also tested. To explore whether the number of days absent from work varied according to the presence of each chronic pain

or at least 1 chronic pain, multinomial logistic regression models were performed. With this in mind, the dependent variable "number of days absent from work" was divided into 4 categories: none (reference category), 1 to 7, 8 to 30, and more than 30 days absent from work. Four models were used to thoroughly explore the effect of possible confounders. The first model adjusted the association for sex, age, and body mass index, and lifestyle variables, that is, smoking, alcohol intake, occupation, and physical activity. In the second model, 8 chronic medical conditions were included. In the third model, indicators of mental health status (self-rated health, stroke, and depression) were added to examine their confounding effects on the associations. The last model adjusted for all the previous variables and also for using prescribed analgesics in the last 2 weeks.

Interaction between each type of chronic pain, age, and sex was additionally tested using likelihood ratio tests, which compare the models with and without interaction terms.

Although the absenteeism questions asked specifically about absences from work due to health problems, we repeated all analyses after excluding health conditions that could raise absenteeism rates and periods because of reasons not directly related to chronic pain, such as females hospitalized for pregnancy-related reasons in the past 12 months (n = 286), and participants who reported an accident causing injuries or lesions in the past 12 months (n = 804).

Statistical significance was set at P value of less than 0.05. Analyses were performed with SAS, version 9.0 for Windows (SAS Institute, Inc., Cary, NC).

RESULTS

The study population comprised 8283 participants, with 57% males and a mean (±SE) age of 41.1 (±0.1) years. Almost a third (27.8%) were absent from work in the past 12 months due to health problems. Among the absentees, the median number of days absent from work in this subsample was 7 days.

Table 1 presents the characteristics of the participants. Younger age and higher levels of education were associated with absenteeism, whereas older age and less education were associated with longer duration of absenteeism. Absenteeism was more frequent in females, in those with poorer self-rated health, with at least 1 chronic disease or 1 type of chronic pain, as well as in those who used prescribed analgesics in the last 2 weeks. The median time absent from work was higher in females and in those with body mass index of 25 kg/m^2 or greater. Also, those separated, divorced or widowed, unskilled or manual workers, nondrinkers (in the last 12 mo), less physically active, and with suboptimal health status, chronic pain, or using prescribed analgesics were absent from work for more days due to health problems (Table 1).

Absenteeism is also described according to chronic diseases diagnosed by a physician (Table 2). Of note is that, in general, those with chronic diseases were absent from work more frequently and for a longer time. As exceptions, no differences in absenteeism frequency were observed between those with diagnosed stroke and ischemic heart disease and those without these conditions. Moreover, the number of days absent from work was not statistically different in relation to the presence or absence of stroke, gastric or duodenal ulcer, and asthma (Table 2).

CNP affected 12.3%, CLBP affected 14.1%, and MIG affected 10.3% of the participants. The prevalence of at least 1 chronic pain in the back (only CNP, only CLBP, or both) was 19.4%, and 1 out of each 4 workers (25.5%) reported at least 1 of the 3 types of chronic pains studied. The association between chronic pain and absenteeism (yes/no) is presented in Table 3. In analyses adjusted for sociodemographic (sex, age, and body mass index) and lifestyle variables (smoking, alcohol intake, occupation, and physical activity), and also for occupation, absenteeism was 84%, 82%, 78%, and 85% more frequent in those with CNP, CLBP, migraine, and at least 1 chronic pain, respectively. These results remained significant after further adjustments for variables related to chronic diseases and mental health (self-rated health, stroke, and depression), despite a reduction of the estimators. Finally, the participants with CNP, CLBP, or migraine were absent from work about 20% more frequently than those without these pains, regardless of the main confounders, including the use of prescribed analgesics. The presence of at least 1 chronic pain was associated to a 30% increased likelihood of absenteeism in the fully adjusted model (Table 3).

The participants with CNP and CLBP were, respectively, 44% and 45% more likely to be absent from work for more than 30 days than those without these pains. The higher chance of increased number of days absent from work (1–7 d and >30 d *vs* none) was also observed on the presence of migraine, although the association was no longer significant after adjustment for the intake of prescribed analgesics. Having "at least 1 chronic pain" was associated to higher odds of 8 and more days absent from work, independently of all studied confounders (Table 4).

In analyses stratified by age group, absenteeism was associated with CNP and CLBP only for those aged between 18 and 34 years, whereas migraine showed a greater frequency of absenteeism only for those aged 35 to 54 years (Table 5). In fact, the interaction test was statistically significant for age and CNP (P = 0.018) but not for age and CLBP or MIG. Those aged up to 54 years who had experienced migraine had a significant higher likelihood of being absent 1 to 7 days from work (Table 6). In addition, younger participants (aged 18–34 yr) with CNP or CLBP were more likely to be absent 30 days and more than younger participants without these pains. In workers aged 55 years and older, the single significant association was the increased likelihood of more than 30 days absent from work and CLBP (Table 6).

No interactions with sex were found in these analyses.

Finally, in additional analyses, excluding females hospitalized for pregnancy-related reasons and participants who reported accidents in last year, the main results remained similar and statistically equivalent (data not shown).

TABLE 1. Characteristics of Participants According to Absenteeism (N = 8283)

Characteristic, %	Absenteeism			Number of Days Absent From Work	
	No (n = 5984)	Yes (n = 2299)	*P**	Median (25th; 75th Percentiles) (n = 2299)	*P*†
Total	72.2	27.8		7 (2; 4)	
Sex					
Men	74.1	25.9	<0.001	6 (2; 30)	<0.001
Females	69.7	30.3		8 (2; 42)	
Age, yr					
18–34	68.7	31.3	<0.001	4 (2; 15)	<0.001
35–54	72.9	27.1		7 (2; 30)	
55–70	77.9	22.1		30 (7; 80)	
Body mass index (kg/m^2)					
<25	72.2	27.8	0.97	5 (2; 25)	<0.001
25–29.9	72.3	27.7		8 (3; 30)	
≥30	72.5	27.5		15 (3; 60)	
Marital status					
Single	70.6	29.4	0.008	5 (2; 15)	<0.001
Married	73.1	26.9		7 (2; 30)	
Separated or divorced	72.9	27.1		12 (3; 45)	
Widowed	61.7	38.3		26 (4; 90)	
Education level					
Primary or lower	77.2	22.8	<0.001	15 (3; 45)	<0.001
Secondary	70.9	29.1		7 (2; 40)	
University	71.3	28.7		5 (2; 20)	
Occupation					
Executive, scientific, and intellectual	73.2	26.8	0.041	5 (2; 20)	<0.001
Technical, office, and service professionals	70.7	29.3		7 (2; 30)	
Agricultural, operator, and mechanical	74.0	26.0		7 (2; 30)	
Unskilled	72.9	27.1		14 (3; 45)	
Tobacco					
Never smoked	73.6	26.4	0.048	7 (2; 30)	0.014
Ex-smoker	70.7	29.3		10 (3; 31)	
Smoker	71.6	28.4		7 (2; 30)	
Alcohol intake in last 12 mo					
Never	75.0	25.0	<0.001	15 (3; 60)	<0.001
1 time per month or less	69.7	30.3		7 (2; 30)	
2 time per month to 3 times per week	69.3	30.7		5 (2; 21)	
4 times per week or more	77.0	23.0		7 (2; 30)	

(*Continued*)

TABLE 1. (*Continued*)

Characteristic, %	Absenteeism			Number of Days Absent From Work	
	No (n = 5984)	Yes (n = 2299)	*P**	Median (25th; 75th Percentiles) (n = 2299)	*P*†
Physical activity					
Yes	72.0	28.0	0.68	6 (2; 30)	<0.001
No	72.4	27.6		10 (3; 45)	
Self-rated health					
Optimal	75.2	24.8	<0.001	5 (2; 21)	<0.001
Suboptimal	52.6	47.4		30 (7; 90)	
Chronic pain‡					
None	75.5	24.5	<0.001	5 (2; 21)	<0.001
≥1 chronic pain	62.7	37.3		15 (3; 60)	
Analgesics use prescribed by a physician					
No	74.1	25.9	<0.001	7 (2; 30)	<0.001
Yes	54.6	45.4		15 (3; 60)	

**Chi-square test.*

†Kruskal-Wallis test, except when binary variables, in which case, the Mann-Whitney test was used.

‡Chronic neck pain, chronic low back pain, migraine, or chronic headaches.

DISCUSSION

In the present study, Spanish workers of the general population who experience CNP, CLBP, and MIG are more likely to be absent from work independent of sociodemographic characteristics and lifestyle. Chronic conditions, worse self-rated health status, and analgesic use decreased the magnitude of the risk estimators (odds ratio), although absenteeism remained significantly more frequent in those with chronic pain, even after controlling for these conditions.

In the present study, CNP or CLBP affected 1 in 5 workers, increasing the likelihood of absenteeism by about 20%. Those who had experienced chronic pain were also 44% more likely to be absent from work for more than 30 days per year [AQ07]than those who did not. Some individual characteristics were associated with the frequency of these chronic pains, such as age, sex, education, work-related factors, and lifestyle.[8,15,16] Although a higher prevalence of back pain could be related to these factors, the present analysis suggests that the impact of CLBP on absenteeism is not confounded by these aspects, because the estimator remained practically unchanged after adjustment.

We confirmed that comorbidities are important confounders in the relationship between CLBP and absenteeism,[17] although, in our analyses, the results remained significant even after controlling for 8 chronic conditions. In the same direction, adjustment for the use of prescribed analgesics moderately (but not significantly) reduced the likelihood of being absent from work due to these conditions.

Age influence presented in our analysis agrees with a previous study. In Ontario, Canada, workers between 20 and 39 years of age were more likely to experience an episode of work absenteeism involving neck pain than older adults.[18] MIG also increased the likelihood of absenteeism, although this was associated with a short period (1–7 d) away from work and only in younger workers (aged 18–54 yr). Unfortunately, information on pain characteristics was not available on the European Health Interview Survey in Spain database, and we could, therefore, not explore the relationship between pain intensity, duration, and time of occurrence of the days absent from work. Finally, the likelihood of absenteeism in those with CNP or CLBP (compared with those without each of these pains) was higher only in younger adults (aged 18–34 yr). In those with MIG (compared with those without MIG), only middle-aged workers (aged 35–54 yr) had a higher likelihood of absenteeism. All these age differences found warrant further research in future studies.

As observed for CNP and CLBP, worse self-rated health status and mental diseases were important factors in explaining the higher likelihood of longer absenteeism (>30 d) in those experiencing migraine. Indeed, pain-related anxiety does contribute to disability in those experiencing headache,[19] and major depression is associated with a 3-fold increased risk of absenteeism.[12] Besides controlling for health status, the adjustment for analgesic use was also useful to clarify the association between chronic pains and absenteeism.

TABLE 2. Absenteeism According to Chronic Diseases Diagnosed by a Physician (N = 8283)

Chronic Disease Diagnosed by a Physician, %	Absenteeism			Number of Days Absent From Work	
	No (n = 5984)	Yes (n = 2299)	*P**	Median (25th; 75th Percentiles) (n = 2299)	*P*†
Number of chronic diseases					
None	75.5	24.5	<0.001	5 (2; 21)	<0.001
1–10	63.0	37.0		14 (3; 60)	
Stroke					
No	99.8	0.2	0.53	7 (2; 30)	0.49
Yes	99.7	0.3		14 (2; 360)	
Depression					
No	97.4	2.6	<0.001	7 (2; 30)	<0.001
Yes	94.0	6.0		30 (6; 180)	
Hypertension					
No	90.6	9.4	<0.001	7 (2; 30)	<0.001
Yes	88.1	11.9		21 (4; 60)	
Ischemic heart disease					
No	99.3	0.7	0.55	7 (2; 30)	0.006
Yes	99.4	0.6		15 (3; 120)	
Diabetes					
No	97.8	2.2	0.014	7 (2; 30)	<0.001
Yes	96.9	3.1		30 (7; 60)	
Cancer					
No	98.9	1.1	<0.001	7 (2; 30)	<0.001
Yes	97.9	2.1		75 (20; 180)	
Arthritis					
No	97.1	2.9	<0.001	7 (2; 30)	<0.001
Yes	94.2	5.8		30 (8; 90)	
Osteoporosis					
No	98.6	1.4	<0.001	7 (2; 30)	<0.001
Yes	97.5	2.5		30 (8; 90)	
Gastric or duodenal ulcer					
No	96.9	3.1	<0.001	7 (2; 30)	0.47
Yes	95.2	4.8		10 (2; 31)	
Asthma					
No	94.9	5.1	<0.001	7 (2; 30)	0.15
Yes	90.2	9.8		5 (2; 30)	

**Chi-square test.*

†Mann-Whitney test.

TABLE 3. Association Between Absenteeism and Chronic Neck Pain, Chronic Low Back Pain, Migraine, and/or Least 1 Chronic Pain (N = 8,283)

	Absenteeism	
Dependent Variable	**No (n = 5984)**	**Yes (n = 2299)**
Chronic neck pain		
n (%)	619 (10.3)	401 (17.5)
OR (95% CI) adjusted for sex, age, BMI, marital status, education, tobacco, alcohol intake, physical activity, and occupation	Reference	1.84 (1.60–2.12)*
OR (95% CI) plus adjusted for hypertension, ischemic heart disease, diabetes, cancer, arthritis, osteoporosis, gastric or duodenal ulcer, and asthma	Reference	1.63 (1.41–1.89)*
OR (95% CI) plus adjusted for self-rated health, stroke, and depression	Reference	1.35 (1.16–1.57)*
OR (95% CI) plus adjusted for prescribed analgesics use	Reference	1.20 (1.02–1.40)†
Chronic low back pain		
n (%)	722 (12.1)	448 (19.5)
OR (95% CI) adjusted for sex, age, BMI, marital status, education, tobacco, alcohol intake, physical activity, and occupation	Reference	1.82 (1.60–2.08)*
OR (95% CI) plus adjusted for hypertension, ischemic heart disease, diabetes, cancer, arthritis, osteoporosis, gastric or duodenal ulcer, and asthma	Reference	1.65 (1.44–1.89) *
OR (95% CI) plus adjusted for self-rated health, stroke, and depression	Reference	1.35 (1.18–1.56)*
OR (95% CI) plus adjusted for prescribed analgesics use	Reference	1.22 (1.06–1.42)‡
Migraine or chronic headache		
n (%)	514 (8.6)	343 (14.9)
OR (95% CI) adjusted for sex, age, BMI, marital status, education, tobacco, alcohol intake, physical activity, and occupation	Reference	1.78 (1.53–2.07)‡
OR (95% CI) plus adjusted for hypertension, ischemic heart disease, diabetes, cancer, arthritis, osteoporosis, gastric or duodenal ulcer, and asthma	Reference	1.63 (1.40–1.90)*
OR (95% CI) plus adjusted for self-rated health, stroke, and depression	Reference	1.41 (1.20–1.64)*
OR (95% CI) plus adjusted for prescribed analgesics use	Reference	1.22 (1.04–1.44)†
At least 1 chronic pain		
n (%)	1326 (22.2)	790 (34.4)
OR (95% CI) adjusted for sex, age, BMI, marital status, education, tobacco, alcohol intake, physical activity, and occupation	Reference	1.85 (1.66–2.06)*
OR (95% CI) plus adjusted for hypertension, ischemic heart disease, diabetes, cancer, arthritis, osteoporosis, gastric or duodenal ulcer, and asthma	Reference	1.69 (1.51–1.89)*
OR (95% CI) plus adjusted for self-rated health, stroke, and depression	Reference	1.44 (1.28–1.62)*
OR (95% CI) plus adjusted for prescribed analgesics use	Reference	1.30 (1.15–1.47)*

**P < 0.001.*

†P < 0.05.

‡P < 0.01.

BMI indicates body mass index; CI, confidence interval; OR, odds ratio.

In our analyses, neither occupation, lifestyle, and health status, nor analgesic use was sufficient to explain increased absenteeism of those experiencing chronic pain. This suggests that factors not addressed by this study could contribute to the decision not to go to work. This may possibly be attributed to work process peculiarities, the relationship between employees, and/or work environment conditions. Future studies should examine whether the association between chronic pain and absenteeism remains statistically significant after further control for the confounding effect of these other specific work variables.

TABLE 4. Association Between Number of Days Absent From Work and Chronic Neck Pain, Chronic Low Back Pain, Migraine, or at Least 1 Chronic Pain (N = 8283)

	Number of Days Absent From Work Due to Health Problems in the Past 12 mo			
Dependent Variable	**None**	**1–7 d**	**8–30 d**	**>30 d**
Chronic neck pain				
n (%)	619 (10.3)	151 (12.3)	103 (18.9)	147 (27.9)
OR (95% CI) adjusted for sex, age, BMI, marital status, education, tobacco, alcohol intake, physical activity, and occupation	Reference	1.36 (1.07–1.72)*	1.83 (1.41–2.40)†	2.89 (2.25–3.72)†
OR (95% CI) plus adjusted for hypertension, ischemic heart disease, diabetes, cancer, arthritis, osteoporosis, gastric or duodenal ulcer, and asthma	Reference	1.28 (1.01–1.64)*	1.62 (1.22–2.15)‡	2.37 (1.82–3.10)†
OR (95% CI) plus adjusted for self-rated health, stroke, and depression	Reference	1.19 (0.93–1.52)	1.32 (0.99–1.78)	1.70 (1.27–2.28)†
OR (95% CI) plus adjusted for prescribed analgesics use	Reference	1.09 (0.85–1.41)	1.15 (0.84–1.57)	1.44 (1.05–1.98)*
Chronic low back pain				
n (%)	722 (12.1)	170 (13.8)	119 (21.9)	159 (30.2)
OR (95% CI) adjusted for sex, age, BMI, marital status, education, tobacco, alcohol intake, physical activity, and occupation	Reference	1.31 (1.05–1.64)*	1.95 (1.52–2.50)†	2.86 (2.23–3.66)†
OR (95% CI) plus adjusted for hypertension, ischemic heart disease, diabetes, cancer, arthritis, osteoporosis, gastric or duodenal ulcer, and asthma	Reference	1.26 (1.01–1.58)*	1.75 (1.34–2.29)†	2.38 (1.83–3.10)†
OR (95% CI) plus adjusted for self-rated health, stroke, and depression	Reference	1.16 (0.92–1.46)	1.42 (1.07–1.90)*	1.68 (1.27–2.26)†
OR (95% CI) plus adjusted for prescribed analgesics use	Reference	1.08 (0.85–1.37)	1.27 (0.95–1.71)	1.45 (1.07–1.98)*
Migraine or chronic headache				
n (%)	514 (8.6)	159 (13.0)	79 (14.5)	104 (19.7)
OR (95% CI) adjusted for sex, age, BMI, marital status, education, tobacco, alcohol intake, physical activity, and occupation	Reference	1.55 (1.23–1.97)†	1.71 (1.26–2.32)‡	2.39 (1.79–3.18)†
OR (95% CI) plus adjusted for hypertension, ischemic heart disease, diabetes, cancer, arthritis, osteoporosis, gastric or duodenal ulcer, and asthma	Reference	1.48 (1.16–1.87)‡	1.56 (14–2.14)‡	2.07 (1.54–2.79)†
OR (95% CI) plus adjusted for self-rated health, stroke, and depression	Reference	1.39 (1.09–1.77)‡	1.32 (0.96–1.82)	1.54 (1.13–2.10)‡
OR (95% CI) plus adjusted for prescribed analgesics use	Reference	1.57 (0.98–1.64)	1.12 (0.81–1.55)	1.26 (0.91–1.75)
At least 1 chronic pain				
n (%)	1326 (22.2)	337 (27.5)	198 (36.5)	255 (48.2)
OR (95% CI) adjusted for sex, age, BMI, marital status, education, tobacco, alcohol intake, physical activity, and occupation	Reference	1.41 (1.18–1.68)†	1.91 (1.54–2.38)†	3.00 (2.41–3.75)†

(*Continued*)

TABLE 4. (*Continued*)

Dependent Variable	Number of Days Absent From Work Due to Health Problems in the Past 12 mo			
	None	1–7 d	8–30 d	>30 d
OR (95% CI) plus adjusted for hypertension, ischemic heart disease, diabetes, cancer, arthritis, osteoporosis, gastric or duodenal ulcer, and asthma	Reference	1.34 (1.13–1.61)‡	1.74 (1.38–2.19)†	2.61 (2.07–3.29)†
OR (95% CI) plus adjusted for self-rated health, stroke, and depression	Reference	1.26 (1.05–1.52)*	1.46 (1.15–1.86)‡	1.94 (1.51–2.48)†
OR (95% CI) plus adjusted for prescribed analgesics use	Reference	1.17 (0.96–1.43)	1.29 (1.00–1.66)*	1.70 (1.30–2.22)†

**P < 0.05.*

†P < 0.001.

‡P < 0.01.

BMI indicates body mass index; CI, confidence interval; OR, odds ratio.

Several limitations should be considered for the correct interpretation of these results. First, given the cross-sectional nature of the present analysis and the wide range of causes for absenteeism (*e.g.*, any "health problems"), we are not able to confirm that the reported absenteeism was due to the types of chronic pain examined. A more powerful design would have been to assess the presence of neck and back pain or migraine at baseline and then to assess work absence during a follow-up period. However, a significant number of chronic conditions that could potentially lead to absence from work,

TABLE 5. Association Between Absenteeism and Chronic Pain by Age Group (N = 8283)

Age Group, yr	Absenteeism	
	No (n = 5984)	Yes (n = 2299)
18–34		
Chronic neck pain	Reference	1.81 (1.32; 2.47)* [AQ09]
Chronic low back pain	Reference	1.51 (1.14; 2.02)†
Migraine or chronic headache	Reference	1.15 (0.85; 1.55)
At least 1 chronic pain	Reference	1.34 (1.07; 1.68)‡
35–54		
Chronic neck pain	Reference	1.02 (0.83; 1.25)
Chronic low back pain	Reference	1.12 (0.93; 1.37)
Migraine or chronic headache	Reference	1.37 (1.11; 1.69)†
At least 1 chronic pain	Reference	1.29 (1.09; 1.51)‡
55–70		
Chronic neck pain	Reference	1.24 (0.77; 2.00)
Chronic low back pain	Reference	1.46 (0.93; 2.29)
Migraine or chronic headache	Reference	0.68 (0.33; 1.37)
At least 1 chronic pain	Reference	1.48 (0.98; 2.25)

All associations were adjusted for sex, body mass index, marital status, education, tobacco, alcohol consumption, physical activity, occupation, self-rated health, stroke, depression, hypertension, ischemic heart disease, diabetes, cancer, arthritis, osteoporosis, gastric or duodenal ulcer, asthma, and prescribed analgesics use.

**P < 0.001.*

†P < 0.01.

‡P < 0.05.

TABLE 6. Association Between Number of Days Absent From Work and Chronic Pain by Age Group (N = 8283)

	Number of Days Absent From Work Due to Health Problems in the Past 12 mo			
Age Group, yr	None	1–7 d	8–30 d	>30 d
18–34				
Chronic neck pain	Reference	1.39 (0.91; 2.13)	1.75 (0.94; 3.27)	2.56 (1.46; 4.50)*
Chronic low back pain	Reference	1.47 (0.99; 2.17)	1.66 (0.92; 3.01)	2.27 (1.31; 3.94)*
Migraine or chronic headache	Reference	1.55 (1.03; 2.25)†	0.78 (0.37; 1.60)	1.04 (0.56; 1.94)
At least 1 chronic pain	Reference	1.32 (0.97; 1.79)	1.32 (0.80; 2.17)	2.28 (1.42; 3.66)*
35–54				
Chronic neck pain	Reference	0.99 (0.76; 1.31)	1.01 (0.73; 1.40)	1.05 (0.76; 1.48)
Chronic low back pain	Reference	1.14 (0.89; 1.47)	1.36 (1.01; 1.83)†	1.11 (0.80; 1.53)
Migraine or chronic headache	Reference	1.43 (1.09; 1.87)*	1.17 (0.84; 1.65)	1.44 (1.02; 2.03)
At least 1 chronic pain	Reference	1.33 (1.08; 1.63)*	1.30 (0.99; 1.71)	1.40 (1.05; 1.87)†
55–70				
Chronic neck pain	Reference	1.70 (0.83; 3.53)	0.75 (0.38; 1.48)	1.51 (0.82; 2.79)
Chronic low back pain	Reference	1.50 (0.75; 3.02)	1.11 (0.59; 2.11)	2.17 (1.23; 3.84)*
Migraine or chronic headache	Reference	0.44 (0.12; 1.64)	0.74 (0.31; 1.77)	1.03 (0.48; 2.20)
At least 1 chronic pain	Reference	1.30 (0.68; 2.50)	1.14 (0.62; 2.10)	2.42 (1.38; 4.25)*

All results indicate the odds ratio (95% confidence interval) obtained throughout multinomial logistic regression models adjusted for sex, body mass index, marital status, education, tobacco, alcohol consumption, physical activity, occupation, hypertension, ischemic heart disease, diabetes, cancer, arthritis, osteoporosis, gastric or duodenal ulcer, asthma, self-rated health, stroke, depression, and prescribed analgesics use.

**P < 0.01.*

†P < 0.05.

‡P < 0.001.

such as depression and acute cardiovascular events, were controlled for. In addition, further analyses excluding those who reported hospitalization because of pregnancy-related reasons or accidents were performed and the results remained similar. Second, although a query of "being absent from work at least 1 day in last year" is probably simple to answer, asking for the total estimated number of days absent in the past year, specifically due to health-related issues, was more likely to generate inexact answers. Thus, the frequency of chronic pain could be underestimated, and the number of absent days may not be accurate due to a recall bias. It is possible that this limitation explains some differences in the direction of covariates when considering any absenteeism and number of days absent from work. These findings are limited to Spanish workers and should be confirmed in working populations of other countries. Finally, as this survey occurred during a period of turbulent employment markets in Spain and in other developed countries, the present analyses should be repeated over other time periods to verify that they are stable.

In this study, 3 prevalent types of chronic pain were associated with absenteeism in a working population. Indeed, an important strength of this study is that a large representative sample of workers in the general Spanish population was assessed. These findings are age-specific, because chronic back pain is clearly associated with absenteeism in young workers (aged 18–34 yr) and time absent from work is longer in older workers (aged 55–70 yr). Furthermore, MIG raised the frequency of absenteeism only in those between 35 and 54 years of age. As reduced work effectiveness on days worked with pain could account for the majority of the cost of lost productivity associated with chronic pain,[20] future studies should explore age differences in the relationship between chronic pain and presenteeism. Health status and analgesic use should be considered confounders in future analyses on the impact of chronic pain on presenteeism and on absenteeism.

➢ Key Points

- ❑ At present, most of the available evidence relating chronic pain and absenteeism is based on unadjusted analyses and in specific professional categories.

- In this population-based study with a large sample of workers of Spain, low back pain, neck pain, and migraine are associated with absenteeism. The associations were clearer in younger rather than in older workers.
- These associations are not dependent on sociodemographic characteristics, occupation, lifestyle, health status, and prescribed analgesic use.

Acknowledgment

Data were taken from the European Health Interview Survey for Spain, available at the Web page of the National Statistics Institute, from the Ministry of Health, Social Politics and Equality of the Spanish Government.

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AUTHOR QUERIES

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AUTHORS: Arthur Eumann Mesas, Alberto Durán González, Cézar Eumann Mesas, Selma Maffei de Andrade, Isabel Sánchez Magro, and Juan del Llano

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