



An epidemiological comparison of pain complaints in the general population of Catalonia (Spain)

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Abstract

Epidemiological studies help to establish the health status in a country and allow a better allocation of economic resources. This survey estimated pain prevalence in Catalonia (Spain), analysed its relationship with demographic variables and evaluated pain-associated disabilities. The study was carried out in 1964 adults via phone interviews asking about any pain complaint they experienced in the last 6 months, regardless of its intensity and duration. Overall pain prevalence was 78.6%, significantly lower in men, with a trend to decrease with age. Back (50.9%), head (42%) and legs (36.8%) were the most affected locations. Less educated people reported, in general, higher prevalences. Pain described to be most annoying was related to musculoskeletal disease (26.2%) and migraines (16.5%). Pain was either very severe or unbearable in 33% of the sample, with women and older people reporting higher intensities. Personal and social activities were affected in 25.4% of cases and in 10.4% they became virtually impossible. Both the limitation of activity and the need for bed rest, which occurred in 19.6% of those who suffered pain, were more common amongst unemployed people, whereas 10.2% of workers had to take days off work due to pain, and 3.3% were fully incapacitated by it. In conclusion, the prevalence of pain was clearly higher among women, with an inverse relationship to age. Back pain and headaches were most prevalent and pain was rated as very severe to unbearable in one third of the patients. Pain-associated disabilities were a frequent finding. The present survey reports that pain is a substantial problem in the Catalan population and generally reflects the characteristics of data previously reported in Anglo-saxon and Scandinavian countries. © 1999 International Association for the Study of Pain. Published by Elsevier Science B.V.

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1. Introduction

In recent years, it has been progressively accepted that pain is a leading public health problem, as well as a source of personal and family suffering. In developed countries medical costs generated directly and indirectly by all forms of pain, could make up nearly 2.8% of the gross national product (Sternbach, 1986). Pain constitutes a problem which goes beyond the individual and becomes a social illness. Sociologic and epidemiologic studies may help to increase the knowledge on the extent of the problem and suggest measures for its solution.

Some studies have looked at the presence of pain in the general population (Crook et al., 1984; Taylor and

Morency, 1985; Sternbach, 1986; Andersen and Worm-Pedersen, 1987; Von Korff et al., 1988; Brattberg et al., 1989; Bowsher et al., 1991; James et al., 1991; Andersson et al., 1993). All the studies reported similar findings which may be considered as common characteristics in USA, Canada and North European countries. The main conclusions are very consistent in reporting that pain is highly prevalent in all countries, and that headaches, back and leg pain are the most frequently reported painful ailments. In contrast, prevalence varies greatly. For instance, James et al. (1991) found a prevalence of 82% in New Zealand when asking for the presence of pain in the last year, whereas Bowsher et al. (1991) reported a 17% prevalence in British people at the moment of the interview. The reasons of such disagreement has been discussed in detail by Crombie (1997) and are essentially related to the study design and pain definitions.

Less attention has been raised concerning the relation between sociodemographic data and pain characteristics.

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Analysis of the impairment in physical and social well being caused by pain and the consequences on work activities in employed people have also been neglected. Additionally, all pain-related aspects are strongly influenced by the cultural and socio-economic factors of each country (Turk et al., 1993). The information regarding these factors is scarce, and markedly lacking in South Europe, an area comprised of several countries whose social structures and cultural backgrounds are strongly different from Anglo-Saxon and Scandinavian countries or North Europe.

The aim of this study was to characterise the prevalence of pain in the Spanish region of Catalonia, and to distinguish its relationship with sociodemographic variables and the resulting disabilities to pain sufferers.

2. Methods

2.1. Setting

The study was carried out in Catalonia, a region in the north-east of Spain with an approximate population of 6 000 000. A representative sample of the adult population (18 years of age and older), was chosen at random and divided into age, sex and residential area groups. The figures were taken from the 1991 electoral census, which was made available by the regional statistics centre (Institut d'Estadística de Catalunya). Name, age, address and place of residence were listed on the census form. The telephone numbers were obtained by going through the phone books made available by the Spanish phone company (Compañía Telefónica Nacional de España). People excluded from the study were those without a telephone, those who lived in closed institutions (hospitals, prisons, asylums, nursing homes), the homeless, those of no fixed address, and those with mental or physical disabilities which made a telephone interview impossible. People with a telephone, but not able to be contacted after 20 trials during a month, were also excluded.

2.2. Sample size calculation

The size of the sample was obtained by considering a 95% confidence level, a 35% foreseeable pain prevalence and a degree of accuracy of 0.06, and attending eight groups of stratification (four age intervals by genders). These assumptions gave 243 individuals in each group, thereby the required number for the eight groups was 1944 individuals, although finally we collected the complete data from 1964 individuals. All calculations were based on this final figure.

The final sample was taken from a larger sample of 5000 individuals, which was used to overcome the following limitations: between 10 and 20% of the Catalan population have no telephone line (Izquierdo et al., 1988; Compañía Telefónica Nacional de España, 1990), 50% of the women are not listed in phone books, and 30% were not able to be contacted due to varying reasons. Each individual was substituted by another with the same demographic charac-

teristics to achieve the calculated number in each group and maintain the proper distribution. Each group had a predetermined number of individuals established to maintain the same proportion than in the total population of Catalonia. Letters were sent and individuals were phoned consecutively as they appeared in the census list of 5000 until every group was completed. To achieve this goal, a total number of 2835 letters were sent but only 2142 individuals were found. Among them, 1964 accepted to participate in the survey, an acceptance rate of 91.7%.

2.3. Procedure and variables

Data collection was carried out between the months of April and December of 1994, via a telephone interview. A week before the first phone call, a letter to each possible participant was sent to explain the goals of the study and its characteristics. An initial trial with 100 interviews was undertaken to establish the feasibility of conducting the survey by phone and to sort out any possible difficulties. The main sociodemographic data, pain presence and its characteristics, as well as personal, social and work associated-disabilities were obtained. All possible variables, along with different categories and subcategories, were later established. The following definitions were used across the study.

2.3.1. Pain prevalence

Patients were asked if they experienced any pain complaint in the last 6 months, regardless of its intensity and duration. The presence or absence of pain and its body location during the previous 6 months were determined. When more than one location was reported by the interviewee, he or she was asked which had been the most troublesome. All subsequent data obtained related only to this pain location for practical purposes.

2.3.2. Pain characteristics

The following features were investigated: location, etiology (as judged by the interviewee), time of evolution (the time elapsed since the pain initially appeared), frequency (number of episodes in the previous 6 months), duration of each episode (brief, intermediate, continuous or variable) and intensity. The latter was evaluated using a 5-point Likert scale (1, mild; 2, moderate; 3, severe; 4, very severe and 5, unbearable) as well as a numerical scale that ranged from 1 (mild pain) to 10 (unbearable pain).

2.3.3. Personal, social and work disabilities due to pain

The variables studied were the interference with daily and social activities (difficulty categories in carrying out certain activities appears in Table 3), the duration of the limitation of activity and the need and duration of bed rest. The study also collected information whether the pain resulted in needing time off from work (and its duration) or if the pain was part of a long illness.

Table 1
Pain prevalence and logistical analysis by socio-demographic characteristics

	Total <i>n</i>	Pain prevalence %	Crude OR		Adjusted OR	
			Value	95% CI	Value	95% CI
<i>Gender</i>						
Female	988	85.6	1.0		1.0	
Male	976	71.5	0.4	0.3–0.5*	0.4	0.3–0.6*
<i>Age (years)</i>						
20–30	430	80.5	1.0		1.0	
31–50	685	80.1	0.9	0.7–1.3	0.8	0.5–1.2
51–70	628	77.4	0.8	0.6–1.1	0.6	0.4–1.0
71–91	220	73.6	0.7	0.5–0.9*	0.5	0.3–0.9*
<i>Place of residence</i>						
Rural	115	73.9	1.0		1.0	
Intermediate	263	75.7	1.1	0.7–1.8	1.0	0.6–1.7
Urban	1586	79.4	1.4	0.9–2.1	1.3	0.8–2.1
<i>Civil status^a</i>						
Unmarried	444	78.6	1.0		1.0	
Married	1307	78.7	1.0	0.8–1.3	1.3	0.9–2.0
Widowed	150	77.3	0.9	0.6–1.5	0.9	0.5–1.6
Separated/divorced	52	80.8	1.2	0.6–2.4	1.1	0.5–2.5
<i>Education^a</i>						
Illiterate	83	86.7	1.0		1.0	
Primary	305	77.7	0.5	0.3–1.1	0.7	0.3–1.3
EGB	802	78.7	0.6	0.3–1.1	0.6	0.3–1.3
BUP	411	77.4	0.5	0.3–1.1	0.6	0.3–1.2
University	305	79.7	0.6	0.3–1.2	0.7	0.3–1.7
<i>Occupational status^a</i>						
Employed	1015	77.5	1.0		1.0	
Unemployed	130	76.2	0.9	0.6–1.4	0.9	0.5–1.4
Retired	426	75.1	0.9	0.7–1.1	1.1	0.7–1.8
Student	59	84.7	1.6	0.8–3.3	1.3	0.6–2.9
Home duties	303	86.9	1.8	1.3–2.7*	1.2	0.7–1.9
<i>Social class^a</i>						
I	91	75.8	1.0		1.0	
II	227	77.5	1.2	0.7–2.1	1.5	0.8–2.8
III	251	77.7	1.1	0.7–2.0	1.3	0.7–2.6
IV	594	80.3	1.4	0.8–2.3	1.8	1.0–3.4
V	63	85.7	2.0	0.9–4.7	2.4	0.9–6.1
VI	712	77.8	1.9	0.7–2.0	1.8	0.9–3.4

^a These data were not obtained from all the interviewees. The results that appear in the table were calculated using a lower *n* than that of the sample: civil status *n*, 1953; education *n*, 1906; occupational status *n*, 1933 and social class *n*, 1938. *Statistically significant odds ratio values.

2.3.4. Sociodemographic data of the sample

Sex, age, place of residence (rural, intermediate or urban sites), civil status, occupational status, social class and level of education were the variables studied. Social class was established according to the profession of the head of the family (Domingo and Marcos, 1989): I, directors, administrators and high-level technicians; II, middle-level managers and technicians; III, lower-level managers and administrators; IV, skilled and semi-skilled manual workers; V, unskilled manual labourers; VI, other cases, not specified. The categories of the sociodemographic variables are shown in Table 1. Education was categorised following the Spanish

school system: EGB or Educación General Básica (8 years of schooling, equivalent to the United States 8th grade and the British GSC), BUP or Bachillerato Unificado y Polivalente (12 years of schooling, equivalent to United States high school degree) and University (more than 12 years of schooling). Two other groups were included for the less educated: illiterate and primary studies (less than 8 years of schooling).

2.4. Statistical analysis

The survey data were introduced in the programme

DBASE III plus and later analysis was carried out using the statistical package SPSS/PC+. Given the exploratory epidemiological nature of the study, the data are presented as descriptive statistics (percentage, mean \pm standard deviation (SD) and intervals). Mean comparisons were calculated with the Student's *t*-test and analysis of variance (ANOVA). The χ^2 test was used for comparing percentages. A 5% significance level was accepted for all the tests.

The study tried to establish whether one of the sociodemographic variables could be considered the most important in determining the presence and absence of pain, or if one of the variables had more weight over the prevalence of a determined pain location. To this purpose, a multivariate analysis of unconditional logistic regression for the presence of pain in general and for each of the pain locations was carried out. Both the crude odds ratio (OR) as well as the adjusted OR were calculated, along with their confidence intervals of 95% (95% CI). The adjustment was made in all cases by the total of the remaining variables of the model.

3. Results

An average of 3.4 calls per telephone number were made (call attempts ranged from 1 to 20). Most people agreed to participate in the study (91.7%) and the average length of the interview was 10.5 min. Information was finally obtained relating to 1964 people, of which 50.3% were women. The age was 47.5 ± 17 years (range 20–91 years), being those in 31–50 years (34.9%) being the more numerous group. The majority of participants were from urban areas (80.7%), were married (66.9%), had been educated to the EGB (42.1%), were employed (52.5%) and belonged to the middle class (31.3% in group IV, see Section 2).

3.1. Pain prevalence and sociodemographic data

3.1.1. Pain in general

The sociodemographic characteristics and prevalence of pain are shown in Table 1, which also includes the results of the logistic regression analysis. A total 78.6% of interviewees reported having or having had pain in one or more locations. Men described suffering pain less frequently than women (OR = 0.4; 95% CI = 0.3–0.6), and furthermore the women described having pain in more locations (a mean of 3.4 in women versus 2.7 in men). People that reported pain had a significantly lower mean age (47.2 ± 17 years) than those who did not (49.7 ± 18 years; $P < 0.05$). This finding was highly significant when comparing the group of individuals over 71 year-olds with the youngest group (OR = 0.5; 95% CI = 0.3–0.9). Using the univariate analysis, differences appeared in pain prevalence according to work situation ($P < 0.01$). As Table 1 shows, the prevalence was higher for homemakers (OR = 1.8; 95%

CI = 1.3–2.7). The statistical significance for this variable, however, was lost when the multivariate analysis was used.

3.1.2. Pain by locations

More than 50% of individuals reported the back as the more common location of pain, followed by head (42.0%) and leg (36.8%) pain. Only toothaches did not produce significant differences in pain location prevalence by gender. In the other areas, pain was less common among men, especially facial pain, and prevalences more closely matched between the sexes were found in chest and neck pain. The latter site did not show any significant variation according to age. Contrary to the other pain locations, pain in the extremities increased with age, especially in the case of arm pain (OR > 2).

The study revealed a higher prevalence of neck pain in urban populations than in rural ones (OR = 1.8; 95% CI = 1.1–2.9). In regards to civil status, the only outstanding feature was a higher frequency of chest pain in married people as compared to single people (OR = 1.7; 95% CI = 1.0–3.0). There was a higher pain prevalence in all pain locations among less educated people, with the exception of dental and abdominal pain.

Retired people reported a higher level of leg (OR = 1.5; 95% CI = 1.0–2.2), neck (OR = 1.5; 95% CI = 1.0–2.3), chest (OR = 2.0; 95% CI = 1.1–3.6) and face (OR = 4.8; 95% CI = 2.0–11.7) pain than employed people. With regards to leg pain, there was also a higher prevalence among those who did home duties (OR = 1.5; 95% CI = 1.0–2.1), as compared to those who worked outside the home. Back pain was less frequent in students (OR = 0.4; 95% CI = 0.2–0.8) than in any other employed group.

3.2. Pain characteristics

3.2.1. Pain in general

The characteristics of the pain considered most troublesome were also analysed according to age and gender differences. Mean ages were significantly different for each of the characteristics considered ($P < 0.01$ in pain intensity and $P < 0.001$ for etiology, evolution, frequency, episode duration and quality). Differences according to sex were also statistically significant ($P < 0.01$ for the episode duration, and $P < 0.001$ for the rest). The most frequent etiology of pain, as described by the patients, was osteoarticular illnesses (26.2%), followed by migraine (16.5%). In brief, migraines and post-operative pain were more common among women. Stomach complaints, dental pain and heart disease were more frequent in men.

The majority of people (66.3%) expressed that their first pain episode appeared more than 3 years ago. The time during which the pain lasted varied but, most commonly, it was a matter of hours. In regards to pain episode duration, the sample showed that continuous pain was the most common (54.6%). Differences were also seen amongst the

Table 2
Age and gender distribution of the pain areas considered most disturbing^a

	Back	Head	Abdomen	Legs	Teeth	Neck	Arms	Chest	Face	Totals
Most troublesome pain <i>n</i> (%)	466 (46.6)	367 (44.5)	124 (34.6)	235 (32.5)	104 (24.2)	136 (21.8)	87 (16.4)	18 (9.5)	7 (8.4)	1544
<i>By ages</i>										
Pain ($\bar{x} \pm$ SD)	48.3 \pm 17	40.6 \pm 14	38.3 \pm 16	58.0 \pm 16	38.5 \pm 15	48.8 \pm 15	53.7 \pm 15	56.9 \pm 19	56.6 \pm 16	47.0 \pm 17
No pain ($\bar{x} \pm$ SD)	47.2 \pm 17	49.1 \pm 17	48.1 \pm 17	46.1 \pm 17	48.0 \pm 17	47.4 \pm 17	47.2 \pm 17	47.4 \pm 17	47.5 \pm 17	49.5 \pm 18
<i>P</i> value	NS	<0.001	<0.001	<0.001	<0.001	NS	<0.001	NS	NS	<0.05
<i>By intervals (%)</i>										
20–30	18.6	27.9	12.3	4.0	10.2	4.9	1.6	0.7	0.2	430
31–50	26.1	22.5	6.1	8.2	5.5	6.6	4.4	0.6	0.1	685
51–70	24.8	12.6	3.3	16.2	3.2	9.9	5.7	1.0	0.6	628
71–91	23.2	6.4	3.6	26.8	0.9	3.6	6.4	2.3	0.5	220
<i>P</i> value	<0.05	<0.001	<0.001	<0.001	<0.001	<0.01	<0.01	NS	NS	1963
<i>By gender (%)</i>										
Female-male	54.1–45.9	62.4–37.6	69.4–30.6	51.9–48.1	36.5–63.5	48.5–51.5	47.1–52.9	44.4–55.6	42.9–57.1	845–699
<i>P</i> value	NS	< 0.001	< 0.001	NS	< 0.01	NS	NS	NS	NS	

^a The number of interviewees (*n*) who reported that the particular pain area was the most disturbing; the percentage (%) has been calculated over the total pain prevalence for that area. Comparison by age was calculated by the Student's *t* test (pain versus no pain) and by the χ^2 test (age intervals). The χ^2 test was also done to find *P* values in comparisons by sex. NS, not statistically significant data.

different age groups, and it was men who suffered more frequent brief pain (67.1% versus 32.9% in women). Pain intensity was variable and the intensity rated from very severe to unbearable in 23.0% of individuals. The mean (\pm SD) pain intensity (of the pain considered most troublesome) was 6.0 ± 1.9 according to the scoring of the numerical scale. Overall, women and older people reported higher pain intensity levels ($P < 0.001$).

3.3. Pain by locations

According to the most troublesome pain sites (Table 2), the back rated the most common, followed by the head, the abdomen and legs. Among those patients with backache,

46.6% considered it the most bothersome, while the percentages were 44.5% for headaches and 34.6% for abdominal pain. Younger people complained about head, abdomen and dental pain, whilst pain in the extremities appeared to affect older age groups.

The prevalence for back pain amongst all age groups was similar and the overwhelming reason was due to osteoarticular problems (41.2%) and occupational factors (19.1%), whilst in 23.2% of cases the cause of the pain was unknown. Headache was most common amongst young women and decreased significantly in those over 50 years. Most attributed their etiology to migraine (65.5%). In general, abdominal pain also decreased with age, being most common in young women and appearing with equal frequency amongst

Table 3
Limitation of habitual personal and social activities due to pain^a

	Level I <i>n</i> (%)	Level II <i>n</i> (%)	Level III <i>n</i> (%)	Total <i>n</i>
Walking quickly	1073 (69.7)	215 (13.9)	252 (16.4)	1540
Work, study, housework	923 (60.2)	371 (24.2)	240 (15.6)	1534
Sleeping	1004 (65.1)	321 (20.0)	217 (14.1)	1542
Going up and down stairs	1115 (72.4)	220 (14.3)	206 (13.3)	1541
Laboural activity	669 (63.8)	240 (22.9)	139 (13.3)	1048
Reading, watching TV	1136 (74.5)	198 (13.0)	190 (12.5)	1524
Leaving the house	1159 (75.1)	210 (13.6)	174 (11.3)	1543
Emotional state	990 (64.3)	402 (26.1)	148 (9.6)	1540
Dressing	1387 (90.0)	95 (6.2)	59 (3.8)	1541
Moving around the home	1379 (89.4)	113 (7.3)	51 (3.3)	1543
Family relationships	1416 (92.2)	90 (5.9)	29 (1.9)	1535
Total	12251 (74.6)	2475 (15.0)	1705 (10.4)	16431

^a The degree of limitation is grouped into three levels, depending on the extent to which activities were affected. (I) slight or no extent, (II) to a moderate extent, (III) to an extreme extent. Results are expressed as *n* and percentages by type of limitation, calculated using the totals (listed in the furthest column on the right). One person was allowed to report for more than one of the habitual activities analysed.

Table 4
Pain consequences and the relationship to being employed or unemployed

	Total with pain <i>n</i> = 1544	Unemployed <i>n</i> = 757	Employed <i>n</i> = 787	Significance <i>P</i>
<i>Activity limitation</i>				
N (%) ^a	489 (31.7)	290 (38.3)	199 (25.3)	< 0.001
Average days ± SD	71.1 ± 197.6	103.7 ± 243.1	23.6 ± 78.1	< 0.001
Duration of limitation ^b				
<7 days	339 (69.3)	186 (64.1)	153 (76.9)	< 0.001
1–4 weeks	56 (11.5)	31 (10.7)	25 (12.6)	
1–6 months	43 (8.8)	29 (10.0)	14 (7.0)	
>6 months	51 (10.4)	44 (15.2)	7 (3.5)	
<i>Bed rest needed</i>				
N (%) ^a	301 (19.6)	178 (23.5)	123 (15.6)	< 0.001
Average days ± SD	13.3 ± 42.7	18.0 ± 52.7	5.7 ± 10.2	< 0.01
Duration of limitation ^b				
< 7 days	234 (77.6)	133 (74.7)	101 (82.1)	< 0.05
1–4 weeks	48 (16.0)	28 (15.7)	20 (16.3)	
1–6 months	14 (4.7)	12 (6.7)	2 (1.6)	
> 6 months	5 (1.7)	5 (2.8)	0 (0.0)	

^a Percentages calculated using the total population listed in columns.

^b Percentages calculated using the total population of activity limitation or bed rest needed.

men of all age groups. Dysmenorrhea was the cause of 71.5% of abdominal pain in women under 50 years, while amongst men stomach ailments were the most common cause of abdominal pain. Pain in the legs increased with age and was the most bothersome pain for 36.4% of those over 70 year olds. Musculoskeletal illnesses represented 49.8% of their etiologies. Nearly one quarter of those with toothaches reported to be their worst pain. Toothaches, the only pain area significantly more common in men, were found more frequently amongst younger men.

4. Pain-associated disabilities

Table 3 sums up altered habitual activities, both personal and social, due to the pain considered most annoying, along with the extent to which activities were affected. To a greater or lesser degree, pain affected all the activities analysed, interfering significantly or totally in the activities of 10.4% of sufferers. The activity least limited by pain was family relationships (7.8% seriously affected, grades II and III of Table 3), whilst those most seriously affected were the abilities to continue working, studying or carrying out household duties (39.8%), laboural activity (36.2%), state of emotional wellbeing (35.7%) and sleeping patterns (34.1%).

Data on work disabilities as a consequence of pain are shown in Table 4. Nearly one third of those who reported pain, stated that it limited their activity for, almost 2.5 months on average, and 10% of them considered that it chronically limited their activity. One fifth of those who expressed pain needed bed rest, in most cases for less than a week. Table 4 shows the important differences in activity limitations and necessary bed rest in regards to the laboural

situation. Occupational status differently affected the degree of activity limitation, necessary bed rest and pain duration. Unemployed people suffered more limitations and needed bed rest more frequently and for a greater length of time than employed individuals.

Finally, it was seen that pain resulted in time off work in 10.2% of employed individuals. In 41.2% of cases this meant less than a week away from work but 33.8% needed a week to a month off from work, with an average of 47 days in total. Pain was the cause of long illnesses or disability pension from the workforce for 3.3% of individuals.

5. Discussion

The most outstanding data uncovered by this survey, the first analysis of pain prevalence in our sociocultural area, was that almost 80% of the population experienced pain in the 6 month period previous to the interview. This figure is higher than what is reported by most studies. There are several reasons that could explain this discrepancy. First, it is worth noting the methodological difficulties of these studies; Crombie et al. (1994) have stated that wide differences in pain levels appear, at least in part, because different definitions of pain are used, and also because of the complexities of the symptoms. Raspe and Kohlmann (1994) have outlined some aspects which could explain the discrepancies: the evaluation of pain intensity, the problem of unspecific pain, the categorisation of pain, the dimensions of pain perceptions (regional distribution, intensity, temporal characteristics, sensorial-cognitive-affective qualities) and the definition of chronicity. Additionally, other surveys considered the presence of pain in different lengths or time (from weeks to a year) and only analyse

chronic pain; furthermore few studies have looked at the pain-associated disabilities in the general population. To try to overcome some of these problems, our survey has considered the presence of pain, of any nature, duration and intensity, in an intermediate period of 6 months, as well as focusing on the most worrisome pain. This approach minimises memory bias, a frequent problem in retrospective studies. Additionally a multivariate analysis was performed to overcome the limitations of the univariate analysis, the most frequently used method to analyse the data in general population epidemiological studies.

The survey showed that women reported pain more frequently than men, a finding that agrees with other studies (Crook et al., 1984; Bowsher et al., 1991; James et al., 1991). This gender difference was observed in all sites of pain, except the tooth. Women also claimed to experience pain in more areas, a fact also described by Andersson et al. (1993). Pain prevalence decreased as age increased and significant differences were obtained between the youngest and oldest groups, an unexpected finding. Although some authors have found that pain prevalence increased with age, they also reported that it decreased in elderly people (Crook et al., 1984; Andersson et al., 1993; Brattberg et al., 1996). The univariate analysis showed that prevalences were higher for people who worked at home. However, occupational status was no longer an influential factor when multivariate analysis was applied. Home duties only appeared to be related with pain prevalence in the extremities. Whether a person was retired or a student, also appeared to influence some pain sites. Other sociological variables did not significantly influence the general pain prevalence. A noteworthy finding was that less educated people experienced pain more frequently in a broad range or areas, a fact also suggested by previous studies (Taylor and Morency, 1985; Ballina et al., 1994).

One of the most common findings of epidemiological studies in the general population is that back pain, headaches and pain in the lower extremities give the highest prevalences. Andersson et al. (1993) reported a 30.2% pain prevalence in the neck and shoulders and 23.2% in the back. Bowsher et al. (1991) described a 43% prevalence of back pain and 25.5% in the legs among people with chronic pain. Von Korff et al. (1988) found a prevalence of 41% for backpain and 26% for headache. Similar results have been described by Brattberg et al. (1989); Crook et al. (1984) and James et al. (1991). In the present study the back was the most frequent pain site, which is in keeping with the studies of other countries. Walsh et al. (1992) found a 53% prevalence in the adult British population, while for Niedhammer et al. (1994) it was 58% in a sampling of French nurses. Also, Olsen et al. (1992) have found backpain in almost one third of adolescents in the United States. Our study found that the prevalence was a rough 50% in the 6 months prior to the study and almost half of them considered it the most troublesome pain they suffered. Headaches were the second most common pain, mostly related to migraines,

and 44% of sufferers said it was the most annoying type of pain. There appeared to be a high prevalence of migraines as compared to other studies that had specifically studied headaches. Rasmussen et al. (1991) established an overall headache prevalence of 96%, of which only 16% was due to migraines. It should be said that these authors used the International Headache Classification, whilst in our study the opinion of the interviewee was the only criterium used for classification. Moreover, pain studies cannot be directly extrapolated to other societies, as there could be many factors which differentiate one country from another. An example of the importance of the geographic factor is a study carried out in Indonesia on rheumatoid arthritis, in which Darmawan et al. (1993) found a much lower prevalence of rheumatoid arthritis according to the criteria of the American Rheumatology Association as compared to Western countries.

Another important finding was that a significant portion of the population surveyed reported severe pain of long evolution (first episode occurred more than 6 months prior to the survey) which appeared frequently and was often continuous. Boureau and Sahmoud (1993) also found severe pain in 44.7% of patients with chronic pain. These figures suggest that for many people pain is a frequent event and severe enough to discomfort them. Women are especially affected as they suffered more frequent, longer lasting pain. To interpret these findings, however, several psychological and sociological factors must be considered, such as the fact in the older groups women constituted the majority of those questioned. This factor may influence at least some of the above findings, such as pain duration.

One of the main goals of the study was to analyse how pain affects personal, social and working activities, and the association with acute and chronic disabilities, such as the need for bed rest, time off from work and total retirement from the workplace. Our data shows that personal daily activities and social relationships were deeply affected in 10% of sufferers. In these people, professional activities (work or study) were limited, but many important daily activities were also affected, such as carrying out household chores, climbing and descending stairs or sleeping. These figures are similar to those of Andersson et al. (1993) who described a decrease in normal activity amongst 13% of the population. Other authors have found that pain limited the daily activities of 35.4% of patients (Boureau and Sahmoud, 1993). Again, these data suggest that pain-associated limitations may be responsible for a reduced wellbeing and decreased quality of life in many people.

Social and economic points of view must be taken into account when working limitations due to pain are considered. Our study shows that the average time in which activity was affected in pain sufferers was 23.6 days among those employed and that they needed to spend an average of 5.7 days in bed. These figures are quite different from those of Crook et al. (1984) who found a mean of 4.5 days of limitation and 1 day's bed rest in people with persistent pain.

These discrepancies might be a consequence of not considering chronic pain in their study, leading to a significant decrease in both figures. Regardless of such discrepancies, these figures show that a significant number of work days are lost, which greatly increases economic costs. Furthermore, our data are in agreement with the United States where it was estimated that 4000 million laboural days (23 days per person per year) were lost, a calculated cost of 550 million dollars based on people working full-time (Sternbach, 1986).

The knowledge of the figures and the apparent needs of our population in relation to pain prevalence should allow us to improve the organisation of our health systems, as well as develop better allocation of necessary resources to fight against pain. As Crombie (1994) says 'community surveys provide important evidence on the scale of suffering from pain, but contribute less either to service planning or to understanding of the causes of pain which could lead to prevention'. At the same time, it can help to modify curricula in the university which educate health professionals, as well as to promote the information provided to the general population. A significant change, however, will be reached only when the society considers pain as a social priority and pushes the political powers to act accordingly.

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References

Andersen S, Worm-Pedersen J. The prevalence of persistent pain in a Danish population. *Pain, Suppl.* 1987;4:S332.
 Andersson HI, Ejlertsson G, Leden I, Rosenberg C. Chronic pain in a

geographically defined general population: studies of differences in age, gender, social class and pain localization. *Clin J Pain* 1993;9:174–182.
 Ballina FJ, Hernández R, Martín P, Fernández J, Cueto A. Epidemiology of musculoskeletal complaints and use of health services in Asturias. *Scand J Rheumatol* 1994;23:137–141.
 Boureau F, Sahmoud T. The prevalence of acute and chronic pain in the French general medical practice. Abstracts from 7th World Congress on Pain. Seattle: IASP Pub 1993. p. 90.
 Bowsher D, Rigge M, Sopp L. Prevalence of chronic pain in the British population: a telephone survey of 1037 households. *Pain Clinic* 1991;4:223–230.
 Brattberg G, Thorslund M, Wikman A. The prevalence of pain in general population. The results of a postal survey in a county of Sweden. *Pain* 1989;37:215–222.
 Brattberg G, Parker MG, Thorslund M. The prevalence of pain among the oldest old in Sweden. *Pain* 1996;67:29–34.
 Compañía Telefónica Nacional de España. IBLET 1989 CTNE, Barcelona, 1990.
 Crombie IK, Davies HTO, Macrae WA. The epidemiology of chronic pain: time for new directions. *Pain* 1994;57:1–3.
 Crombie IK. Epidemiological studies in pain research. *J Pain Soc* 1994;2:30–32.
 Crombie IK. Epidemiology of persistent pain. In: Jensen TS, Turner JA, Wiesenfeld-Hallin Z, editors. *Proceedings of the 8th World Congress on Pain. Progress in Pain Research and Management*, 8. Seattle: IASP, 1997. pp. 53.
 Crook J, Rideout E, Brown G. The prevalence of pain complaints in a general population. *Pain* 1984;18:299–314.
 Darmawan J, Muirden KD, Valkenburg HA, Wigley RD. The epidemiology of rheumatoid arthritis in Indonesia. *Br J Rheumatol* 1993;32:537–540.
 Domingo A, Marcos J. Propuesta de un indicador de la 'Clase Social' basado en la ocupación. *Gaceta Sanitaria* 1989;10:320–324.
 Izquierdo MJ, Miquelez F, Subirats M. Condicions de vida i hàbits de la població de l'Àrea Metropolitana de Barcelona. Barcelona: Universitat Autònoma de Barcelona, 1988.
 James FR, Large RG, Bushnell JA, Wells JE. Epidemiology of pain in New Zealand. *Pain* 1991;44:279–283.
 Niedhammer I, Lert F, Marne MJ. Back pain and associated factors in French nurses. *Int Arch Occup Environ Health* 1994;66:349–357.
 Olsen TL, Anderson RL, Dearwater SR, Kriska AM, Cauley JA, Aaron DJ, LaPorte RE. The epidemiology of low back pain in an adolescent population. *Am J Public Health* 1992;82:606–608.
 Rasmussen BK, Jensen R, Schroll M, Olesen J. Epidemiology of headache in a general population. A prevalence study. *J Clin Epidemiol* 1991;44:1147–1157.
 Raspe H, Kohlmann T. Disorders characterised by pain: a methodological review of population surveys. *J Epidemiol Community Health* 1994;48:531–537.
 Sternbach RA. Survey of pain in the United States: the nuprin pain report. *Clin J Pain* 1986;2:49–53.
 Taylor H, Morency N. The Nuprin pain report. Report No. 851017, New York, Louis Harris and Associates, 1985.
 Turk D, Rudy TE, Sorkin BA. Neglected topics in chronic pain treatment outcome studies: determination of success. *Pain* 1993;53:3–16.
 Von Korff M, Dworkin SF, Le Resche L, Kruger A. An epidemiologic comparison of pain complaints. *Pain* 1988;32:173–183.
 Walsh K, Cruddas M, Coggon D. Low back pain in eight areas of Britain. *J Epidemiol Community Health* 1992;46:227–230.