Observational study

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Survey of chronic pain in Chile — prevalence and treatment, impact on mood, daily activities and quality of life

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Abstract

Background and aims: The prevalence of chronic noncancer pain has not been specifically reported in Chile. **Methods:** In order to assess its prevalence and impact, we designed a tool based on previously published survey studies. We analyzed a sample of 784 subjects to determine the prevalence of chronic non-cancer pain, with a maximum variability of 50%, a confidence interval (CI) of 95%, and an estimation error of 3.5%. Finally, a cross-sectional cell phone survey was conducted on a nationally representative probability sample of 865 subjects of over 18 years, in November 2013. The prevalence of chronic non-cancer pain was estimated by using expansion factors according to national projections by age group and gender, from the Chilean National Institute of Statistics for the year 2010.

Results: The estimated prevalence of chronic non-cancer pain was 32.1% (95% CI: 26.5–36.0). The respondents with chronic non-cancer pain presented the following results: 65.7% had moderate pain, and 20.8%, severe pain; 65.6% had somatic pain, 31.7% neuropathic pain, and 2.7% visceral pain. Approximately 70% reported they were receiving some kind of pharmacological treatment with certain frequency. In 64.9%, medication was prescribed by a physician. The prevalence of sick leave in workers was

30.22%, with a median duration of 14 days (interquartile range: 14; range: 1–60).

Conclusions: Chronic non-oncological pain occurs in 32% of Chilean adults. These figures provide the first measurement of chronic non-cancer pain in the Chilean population.

Implications: Chronic non-oncological pain impact as a public health problem is revealed, given the high prevalence found, and the elevated private and social costs involved.

Keywords: chronic pain; prevalence; impact; treatment; opioids; non-opioids; epidemiology.

1 Introduction

In Chile, as well as in Latin America as a whole, there are very few published studies about the epidemiology of chronic pain and the methodology of such studies and their relevant outcomes differ to a large extent [1, 2].

In 2013, a systematic review analyzed the studies published between January 1992 and May 2013 in Chile that reported the prevalence of chronic pain, and from which it was possible to extract some information about the epidemiology of chronic non-oncological pain [2]. Although two national health surveys were found, both of them have reported the presence of pain measured over a period of seven days [3, 4], but there are no previous large-scale studies that specifically register the prevalence, characteristics, and impact of chronic non-oncological pain as a primary outcome in Chile.

Therefore, we considered it would be of clinical interest to conduct a study that focuses on the prevalence of chronic non-oncological pain in our country, in order to support medical and public health actions, and to raise awareness and optimize pain management, with the aim to improve quality of life and healthcare of patients with chronic pain in our country.

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The main objectives of this study are as follows: (a) to estimate the prevalence of chronic non-oncological pain; (b) to characterize the epidemiological, social, and demographic aspects of pain reported by the studied population; and (c) to explore the impact of pain on the subject's daily living.

2 Methods

A telephone interview study was performed during the summer months of 2013 in the city of Santiago, Chile. The study was conducted in accordance with the Declaration of the World Medical Association (www.wma.net) and all verbal informed consents were obtained as required.

2.1 Subjects and methods

A cell phone interview was carried out among residents of the Metropolitan Region of Santiago, all of them of over 18 years of age. The study was conducted in the Metropolitan Region only, because according to reports by the Chilean National Institute of Statistics Instituto Nacional de Estadísticas (INE) [5], the age distribution of men and women was comparable to the national average. The inclusion criteria used in order to select the target population were: (a) 18-year-old or older residents; (b) voluntary willingness to answer the telephone-assisted interview and a structured, previously drafted questionnaire (see Online Appendix for details). The exclusion criteria were: (a) residency outside the Metropolitan Region boundaries; (b) below 18 years of age on the day of the interview; (c) prior history of oncological disease or if currently being studied due to suspicion of neoplastic disease in any area of the body; or (d) patient refusal to answer the full survey. Chronic non-oncological pain was defined as pain that lasted for three months or longer [6], and that was not related with previously-diagnosed cancer.

2.2 Sample size calculation

The number of people required to estimate the prevalence of chronic non-oncological pain was calculated by simple random sampling, assuming a confidence interval (CI) of 95% and an estimation error of 3.5%. Due to the fact that, at the time of the study, there were no previous studies that explored the prevalence of chronic non-oncological pain in our national population, a total maximum

variance was assumed, which resulted in an estimation of the minimum sample required at 784 people. Finally, 865 individuals that met the inclusion criteria were surveyed in November 2013.

Using population projections by gender, age, and the 2010 INE estimated nationwide population of 12,394,813 inhabitants over 18 years of age [5], the corresponding spreading factor was estimated.

The diagnosis and the characterization of chronic non-oncological pain were established through an instrument that had been previously validated in Chile [1], and that was based on the following international studies: Survey of Chronic Pain in Europe [7], Population-Based Survey of Pain in the United States [8], Canadian Chronic Pain Survey [9], and not validated-not published Survey Study of Prevalence of Pain of the Latin American Pain Federation (FEDELAT). A company specialized in healthrelated surveys carried out the telephone-assisted survey. This generated a data bank that collected the information of a total of 865 subjects, which was further analyzed. All participants previously agreed to respond to the survey.

2.3 Statistical analysis

The results do not report absolute frequencies, but the point estimates and CIs were estimated taking into account the weight of a subject by their respective spreading factor, based on the INE 2010 report [5]. Comparisons and correlations of continuous variables were performed using linear regression models, while logistic regression models were used for dichotomous variables. All CIs were of 95%, and an estimation error of 3.5% was used. The data was processed using the "Survey" module of the STATA statistical package, version 13.0.

3 Results

3.1 Prevalence of chronic non-oncological pain

The weighted prevalence of this condition was 32.1% (95% CI: 26.5–36.0); the mean duration of chronic pain was 4.1 months (4.0-4.3). Among men, the prevalence of chronic pain was 30.0% (95% CI: 26.4-34.7), whereas in women it was 32.9% (95% CI: 29.3-38.5), with no significant differences between genders (p = not significant). Though no significant association was found between chronic pain and age [odds ratio (OR) = 0.99 (0.98-1.01)], the highest prevalence was observed in the age group

Table 1: Prevalence of chronic non-oncological pain by age range.

Age range	Prevalence of chronic non-oncological pain (%	
18-29	22.6	
30-49	38.6	
50-64	45.3	
≥65	17.3	

Table 2: Chronic pain distribution according to gender and employment status.

Employment status	Male (%)	Female (%)	Total (%)
Unemployeda	71.0	22.4	44.7
Full time	34.5	44.3	39.5
Homemaker ^b	39.4	34.3	35.0
Retired ^c	53.9	25.6	28.0
Student	20.2	18.9	19.6

^aPerson who is of working age and does not work.

between 50 and 64 years (Table 1). Respondents that were unemployed showed the highest proportion of pain (almost 45%), followed by full-time workers and homemakers (Table 2).

3.2 Characterization of chronic pain

We evaluated the perception of chronic pain according to a Numeric Rating Scale (NRS), classifying the sample in three groups: mild (1–3), moderate (4–6), and severe (7–10) pain, obtaining a proportion of 11.8%, 65.7% and 20.8%, respectively. There were no differences in the pain intensity reported for men and women. The details of the distribution of each point of the scale are presented in Fig. 1.

Importantly, pain lasted for more than 12 months in 44.6% of participants, and was referred to as daily pain by 40.5% of individuals; moreover, it was reported as being present around 3–4 times a week by 37.3% of the subjects.

When exploring the pain characteristics, i.e. somatic, neuropathic, and visceral, the following prevalence was found: 65.6% (56.2–74.9), 31.7% (23.9–42.2), and 2.7% (0.0– 5.5), respectively (Table 3). Regarding the most commonly affected body parts, the following results were observed: upper limbs, lower back, and lower limbs with frequencies of 29.4%, 28.7%, and 24.3%, respectively (Fig. 2).

When asked about the etiology of pain, 24.1% of the subjects with chronic non-oncological pain said they did not have a diagnosis. The most frequently self-reported

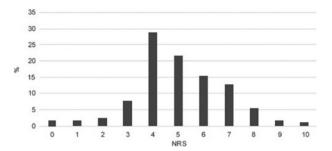


Fig. 1: Pain distribution by NRS. NRS = numeric rating scale.

Table 3: Prevalence of pain characteristics.

Pain characteristics ^a	% (CI 95%)		
Somatic	65.6 (56.2–74.9)		
Neuropathic	33.0 (23.9-42.2)		
Visceral	2.7 (0.0-5.5)		

^aPain characteristics were extracted from questions 15 and 16 of the survey (based on DN4 Questionnaire), as detailed:

Somatic-like: Sharp (pointed), extended (non-specific area), an specific area (as related to movements), a squeeze.

Neuropathic-like: burning, cold-aching, electrical, crawling, pricking, itching, needle-like, numbness.

CI = confidence interval.

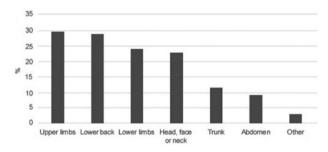


Fig. 2: Pain sites reported.

causes of pain were low back pain (22.1%) and osteoarticular diseases (16.1%) (Table 4). Of all participants, 4.7% reported more than one diagnosis as their source of pain.

3.3 Use of healthcare resources to manage chronic pain

Approximately 66.5% of respondents affirmed having visited a physician at least once due to their pain, but another 28% had never made a consultation with a healthcare professional. The most frequently visited specialists were: traumatologists (28.1%), general practitioners

^bPerson who runs a household (either male or female).

^cPerson who jubilates and is not longer working.

Table 4: Distribution of pain etiology.

Etiology	Proportion (%)
Low back pain	22.1
Osteoarthritis	16.1
Rheumatoid arthritis	8.8
Neurological disorders	6.7
Digestive problems	4.4
Circulatory system diseases	3.6
Psychiatric disorders	3.0
Fibromyalgia	2.6
Respiratory tract disorders	1.1
Other	13.3
No diagnosis	24.1

(9.6%), rheumatologists (8.6%), neurologists (6.9%), and pain specialists (5.7%), followed by other specialists. In almost 65% of the cases, the treatment was prescribed by a healthcare professional, while 13.3% of respondents resorted to self-medication, and almost 16% of them responded "don't know/don't answer" (DK/DA).

Regarding treatment of pain, 35% and 18.5% of respondents respectively reported that they always and almost always use drugs, 12.8% said they use them sometimes, 15.6% rarely use them, and 16.6% have never used drugs. Nonsteroidal anti-inflammatory drugs (NSAIDs) were the most commonly used symptomatic medication, taken by 70.0% of pain sufferers, followed by acetaminophen with 20.6%, and opioids with 7.6% (Fig. 3). Although cannabinoids were included in the survey, no patient reported using them. A total of 20.9% of patients did not know which medication they were taking or did not answer the question. Combination of treatment drugs was common, representing 45.7% of the sample. Median use of medications was 3, with a range of 1–6.

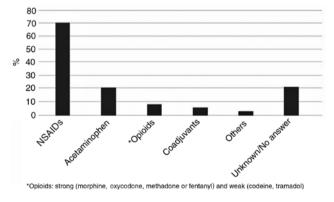


Fig. 3: Use of drugs for pain management. NSAIDs = nonsteroidal anti-inflammatory drugs.

Table 5: Detailed distribution of leave of absence from work by gender and age range.

Days of medical leave	Median	25th percentile- 75th percentile	Range
Total	14	7-21	1-60
By gender			
Female	14	7-30	1-60
Male	14	4-14	1-28
By age range			
18–29 years old	5	3-14	1-42
30-49 years old	14	10-30	1-60
50-64 years old	11	7-14	7-14
65 years or older	14	-	_

3.4 Social impact of chronic pain

Regarding the medical prescription of rest, 24.4% of participants required medical leave from work, which, in most cases, was granted to workers (30.2%). Women presented a higher prevalence of medical leave request with 60.7% vs. 39.3% for men. Based on the age group, patients within the age ranges of 30–49 years old required medical leave in 45.7% of the cases. Table 5 shows the distribution of days of leave from work by gender and age range.

3.5 Impact on activities of daily living

A NRS (0–10 points) was used in order to further explore the impact of pain on different aspects of the subjects' activities of daily living, including mood, social functioning, selfcare, ability to walk, sleeping, and sexual life. Respondents assigned \geq 4 points (moderate-to-severe impact) to the following items: irritability (76.9%), everyday activities (74.5%), self-care (72.1%), social activities (70.1%), work (69.4%), depressed mood (68.6%), ability to walk (66.6%), sleeping (65.3%), and sexual activity (56.8%).

4 Discussion

The value of the present work resides on the fact that it is the first large-scale study in Chile that was specifically designed to evaluate epidemiological aspects of chronic non-oncological pain with an instrument used through a cell phone interview that had previously been validated [1]. Nowadays, the computer-assisted surveys of cell phones are becoming a frequent option, replacing face-to-face and fixed-line telephone surveys [10], specially, in countries like ours where have a great penetration of cell phones (134.18 per 100 inhabitants, December 2013) [11].

This study found a 32.1% prevalence of chronic nononcological pain in a representative sample of the Chilean population of 865 adults. The first National Health Survey carried out in 2003 assessed the presence or absence of "musculoskeletal symptoms", including pain, for a period of 7 days and considering a pain intensity of ≥4 (moderateto-severe) [12]. The results indicated a general prevalence of 34.3%; 41.1% of respondents were on the 25-44 age range, the most economically active population [2, 3].

The second National Health Survey carried out in 2009-2010 [4] updated those figures based on a new definition of the category, which was unfolded as follows: musculoskeletal symptoms (MSS) of non-traumatic origin for the last 7 days, regardless of their intensity (MSS1), or with an intensity ≥4 (MSS2). Symptoms included pain, rigidity, sensitivity, or swelling. A prevalence of 37.6% and 34.2% was observed for the MSS1 and MSS2 definitions, respectively [4].

Other Latin American countries reported that the prevalence of chronic pain was 16.8-25.9% in Mexico, 40.3% in Cuba, 41.4% in Salvador (Brazil), 31% in Rio de Janeiro (Brazil), 42% in a segment of the population of Sao Paulo (Brazil), 28.1% in other study in Sao Paulo [1, 2, 13–15], and a 31% was reported in the DOLCA ("DOLor en Caldas") Study in Colombia [16]. Other international publications were consulted, and prevalence figures available for the European Union are as follows: 19% on average; with the highest prevalence (12%-40%) observed in Norway, Poland, Italy, and France; and the lowest prevalence figures were the ones observed in Spain, Ireland and the UK [7, 17, 18]. Moreover, Canada presented a prevalence of 29% [9] and the United States showed a prevalence of 30.7% [8, 19]. Variation across different countries is likely to be multifactorial, e.g. related to methodological aspects such as the definition of chronic pain according to its duration, the means by which data were collected or the questions asked, as well as the perception of pain ("pain experience"), age stratification of the population, and other sociodemographic and cultural variables [16, 19, 20].

It is worth mentioning that this study found no significant differences concerning the prevalence of pain based on gender. Many international publications report a higher prevalence of chronic pain among women [8, 16, 19, 21]. It is possible that such discrepancy between our study and other reports is due to differences in the methodology.

The prevalence of more intense symptoms years old at the present work was 45.26% for the 50-64 age group. At the global level, the increase in pain prevalence with advancing age is consistent, with its usual peak on the 41-60 age group [7, 19, 22]. In this study, unemployed

subjects represented the highest proportion of chronic pain sufferers (44.7%), followed by full time workers and homemakers. Other authors found an association between chronic pain and lower socioeconomic level indicators, unemployment or unemployment benefit and the need for social assistance [18, 19, 22, 23].

According to the findings of this survey, osteoarticular disorders were responsible for the highest proportion of chronic pain patients. Similarly, the systematic review published in 2013 found that the most common causes of pain reported in the revised literature were lumbar disc pathology, arthrosis, and fibromyalgia [2]. Other authors also pointed out the high prevalence of pain associated with osteoarticular diseases [19, 20, 22]. However, it should be highlighted that 24% of the surveyed subjects from the present study lacked any previous diagnoses. Lack of diagnostic precision has been referred to as one of the barriers to adequate chronic pain treatment and follow-up [19, 24], and the association between pain chronicity and psychological distress should not be underestimated [20].

Forty-four percent of the surveyed subjects in this study and 62% of those participating in the DOLCA Study in Colombia also experienced pain for a period of over 1 year [16]. Therefore, it can be asserted that a more effective approach of the problem is needed in order to offer short term solutions. The magnitude of the problem is quite important if we consider that 20.86% of the surveyed individuals said that pain was severe and approximately 60% overall said they feel pain daily or several times a week.

Moreover, the impact of chronic pain on the respondent's daily life was explored. The authors found that many aspects of the emotional, social and work-related spheres are affected by the presence of symptoms, thus revealing the real importance of this health issue. Such aspects of pain burden were not previously documented in Chile. This survey confirms the negative impact of pain on activities of daily living, including self-care, sleeping, and sexual life of those who suffer chronic pain, which has also been documented by other international studies [17, 18, 22]. Furthermore, the effect of pain on mood, the general wellbeing and the quality of life of people with chronic pain is well known [17, 18, 22], and this study confirms, for the first time, that symptoms moderately affect the mood (irritability and/or depression) and they also have an impact on social activities of the Chilean population. In a similar cross-sectional study carried out in Portugal, Azevedo et al. [23], reported that the presence of pain was associated with a significant individual, familiar and social burden that was reflected on household responsibilities, leisure time activities, work, and resting and sleeping behaviors. In Latin America, the survey carried out in Colombia revealed that the activities of daily living were partially or completely limited because of pain in 62% and 13% of the respondents, respectively. Respondents were mostly affected on their household activities, sleeping and work [16].

The monetary consequences are also significant for the individuals and the society. Job loss, medical leave, and a decrease in productivity are closely related to chronic pain [17, 18, 22]. In this study, 30.2% of the workers required medical leave at some point, which presented a median duration of 14 days, and was more frequently observed in the most productive age range (30–49 years old). The socioeconomic burden associated with chronic pain is partly due to productivity loss, work absenteeism and early retirement, which in the long term, cause an impact on the social security system [17, 18].

Regarding quality of healthcare and use of resources, approximately 53% of respondents said they have always used drugs of some kind, and 65% reported they had received a medical prescription, mainly from a traumatologist, a general practitioner or a rheumatologist, with much less involvement of pain specialists. With regard to the higher frequency of somatic pain, the most commonly used drugs were NSAIDs and acetaminophen (almost 91% altogether), while the intake of opioid analgesics was low. Such findings are consistent with the report arising from the Colombian survey, where 59% of respondents used NSAIDs and only 3% of them used opioids [16]. The side effects of NSAIDs are well known and should be discussed and balanced against those associated with opioids [7]. Despite the evidence supporting the efficacy and the safety of opioids when prescribed by a physician for chronic non-oncological pain, many studies have reported their underuse [9, 16]. However, since Chile has not been affected by the spreading opioid epidemic described in some developed countries, it seems the right time to develop national guidelines for pharmacological treatment and properly train physicians about chronic non-cancer pain and the correct use of opioids. Additionally, a combined treatment must be considered like a rehabilitation and including alternative or complementary therapies (acupuncture, massage, etc.) as they are beneficial to some patients and could contribute to reducing the use of drugs [18, 16].

Interestingly, almost 30% of respondents said they experienced no pain relief at all, and treatment response was only moderate for 51% of them. Because pain is frequently associated with psychological and cognitive effects, such as depression and anxiety, interdisciplinary, biopsychosocial and comprehensive approaches may produce best results for the patients [24].

This study has the following strengths: (a) the use of a validated survey which provides a reliable and reproducible instrument; the survey was based on models that were previously applied in other countries and that count with a demonstrated utility; (b) the detailed characterization of chronic non-oncological pain regarding its intensity, associated pathology, use of healthcare resources and, in particular, the impact on activities of daily living and the quality of life of the respondents, and; (c) the selection of an adequately-sized sample that was representative of the Chilean population. Concerning self-report of pain, it was regarded as a valid measure, considering the subjective nature of the symptom. The results of this survey reveal the insufficient treatment response and the remarkable perpetuation of symptoms, thus putting in evidence the need to adopt more effective measures.

This population study is cross-sectional, of descriptive nature, and its limitations are those inherent to this type of design. Even though the demographic characteristics of the Metropolitan Region were comparable to those observed at the national level, a sample selection bias cannot be ruled out, considering the sociodemographic characteristics of those individuals who completed the whole survey. The data collection method is another limitation because the survey was carried out only by telephone. Besides, some missing data about the complete number of responders, partial responders and non-responders (individuals who refused to participate in the survey) are drawbacks of our study; such lack of data did not allow us to generate a proper flow chart of interviewed participants. However, the inclusion of a high number of individuals helps overcome this limitation. Due to the variability observed in the methodology and the definition of chronic pain among the published international studies, the findings of this study can only be partially compared to the results reported by other authors.

5 Conclusions

Chronic non-oncological pain is highly prevalent in Chile and has a significant impact on the quality of life of those experiencing it. Furthermore, it is directly related with work absenteeism, it has an impact on individual and social economy, and it also represents an important public health problem. Due to the consequences of chronic pain on activities of daily living, physical abilities, socioeconomic burden and quality of life, chronic non-oncological pain should be regarded as a disease. Pain management should receive as much consideration

and be regarded as relevant as the treatment of any underlying disease. The extension on the duration of symptoms, the insufficient response to medical treatment, the high usage of anti-inflammatory drugs, and the low utilization of services specialized in pain management put in evidence the need to address the symptoms in a more effective and comprehensive manner. The results could potentially be optimized through a multidisciplinary approach, such as the one employed for the management of oncological pain. A more effective etiological diagnosis and a better knowledge of the accompanying factors and of the social consequences of chronic pain can contribute to optimizing the allocation and the use of healthcare resources, in order to satisfy this highly unmet need that represents a burden to the community.

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Ethical approval: The study was conducted in accordance with the Declaration of the World Medical Association (www.wma.net).

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