Prevalence of chronic pain in adult general population within Oporto area

Workgroup by class 17

School Year 2006/2007
Introduction to Medicine
1st School Year

Annual assignment

Subject’s Main Teacher: Prof. Dr. Altamiro Costa Pereira
Instructor: Dr. Luis Azevedo
1. Research question

What is chronic pain (CP) prevalence in adult general population within Oporto area?

1.1 Context of question

Chronic pain is a contemporaneous issue. According to Tulder (1995, referred by Chrubasik et al [1]) we can even say, that “Chronic pain is a burden to individuals and a challenge to society.”. Therefore, this study expects to be an interesting and attractive way of learning about this matter.

Murray [2] says that:

“Chronic pain is an important and social problem for three major reasons. It is distressing to patients, as it alters their lives and sometimes their employment, and it responds poorly to treatment. Chronic pain is a common condition that has huge financial costs to society. Finally, despite its frequency and large costs, it is difficult to understand and manage, and eventually becomes a source of stress and misunderstanding to all concerned”.

First challenge seems to be the very definition of chronic pain. Literature studied shows that there is no established pattern about this subject.

Basically, International Association for the Study of Pain (IASP) [3] defines pain as

"An unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage."

Which defines the subjective character of the definition to any kind of pain.

And more precisely,

“The International Association for the Study of Pain (IASP) provides a widely used definition of CP that takes into account duration and “appropriateness”. IASP defines CP as pain without apparent biological value that has persisted beyond the normal tissue healing time (usually taken to be 3 months).” [3]

Thus, accordingly to the definition of IASP and studied literature of CP, we can accept in practice for this study an endurance further than 6 months.

2. **Primary goal:**

Estimate the period prevalence of chronic pain in adult general population within Oporto area.

2.1. Context of primary goal:

“Yet access to reliable data on prevalence – the proportion of a defined population that has CP at some specified time – is an important prerequisite for efficient planning of health services. Understanding factors that underlie variation in prevalence estimates of CP can advance our understanding of its public health impact.” [3]

Specifically, for this study, it will be considered as a primary objective the estimate of the period prevalence of CP in general adult population of Oporto\(^1\) area. This is, the prevalence of CP in the last year (referring to the date of the answer).

\(^1\) This region includes the following councils: Arouca, Espinho, Gondomar, Maia, Matosinhos, Oliveira de Azeméis, Ovar, Paredes, Porto, Póvoa de Varzim, Sta. Maria da Feira, Sto. Tirso, São João da Madeira, Trofa, Vale de Cambra, Valongo, Vila do Conde and Vila Nova de Gaia. Defined, using the call list: Oporto area and South of the Douro.
“Efforts to determine the prevalence of CP in the general population have been faced with challenges such as variations according to the population sampled, the methods used to collect data, and the criteria used to define CP. (...) Differences in the definitions of CP are one reason why prevalence estimates differ greatly from one research study to another. [3] 

<table>
<thead>
<tr>
<th>Reference, Country</th>
<th>Pooled Prevalence Estimate (Male and Female)</th>
<th>Definition of CP: Duration and Criteria</th>
<th>Sample Size (N)</th>
<th>Setting</th>
<th>Method of Data Collection</th>
<th>Pain Outcome (Type)</th>
<th>Valid and Reliable Instrument</th>
<th>Response Rate (%)</th>
<th>Quality Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Andersson et al. 1993; Sweden</td>
<td>49.8% (95% CI: 47.4–52.2%) (801/1698)</td>
<td>Dysfunctional CP &gt; 6 months</td>
<td>1,608</td>
<td>General population</td>
<td>Postal questionnaire</td>
<td>Primary</td>
<td>Yes</td>
<td>89</td>
<td>86/90</td>
</tr>
<tr>
<td>Bedi et al. 2001; Australia</td>
<td>18.5% (95% CI: 17.8–19.3%)</td>
<td>Pain most days for 3 months (IASP criteria)</td>
<td>17,496</td>
<td>General population</td>
<td>Computer-assisted telephone interview</td>
<td>Secondary</td>
<td>N/A</td>
<td>70.8</td>
<td>80/90</td>
</tr>
<tr>
<td>Bowsher et al. 1991; United Kingdom</td>
<td>11.5% (119/1037)</td>
<td>Pain &gt; 3 months (IASP criteria)</td>
<td>1,037</td>
<td>General population</td>
<td>Telephone interview</td>
<td>Primary</td>
<td>N/A</td>
<td>70/9</td>
<td></td>
</tr>
<tr>
<td>Catala et al. 2002; Spain</td>
<td>23.4% (1170/5000)</td>
<td>Pain &gt; 3 months (IASP criteria)</td>
<td>5,000</td>
<td>General population</td>
<td>Telephone interview</td>
<td>Primary</td>
<td>Unclear</td>
<td>54.6</td>
<td>76/90</td>
</tr>
<tr>
<td>Elliot et al. 1999; Scotland</td>
<td>50.4% (1817/3635) (range: 38.4–61.2%)</td>
<td>Pain or discomfort continuously or intermittently &gt; 3 months (IASP criteria)</td>
<td>3,605</td>
<td>Primary care</td>
<td>Postal questionnaire</td>
<td>Primary</td>
<td>Yes</td>
<td>82.3</td>
<td>76/90</td>
</tr>
<tr>
<td>Mepquin et al. 2000; Netherlands</td>
<td>25% (1358/5423)</td>
<td>Recurrent or continuous pain &gt; 3 months (IASP criteria)</td>
<td>5,423</td>
<td>General population</td>
<td>Postal questionnaire and self-completed questionnaire</td>
<td>Primary</td>
<td>Unclear</td>
<td>82</td>
<td>82/90</td>
</tr>
<tr>
<td>Helme and Gibson 1997; Australia</td>
<td>50.2% (487/980)</td>
<td>Pain &gt; 3 months (IASP criteria)</td>
<td>980</td>
<td>General population</td>
<td>Face-to-face interview</td>
<td>Secondary</td>
<td>N/A</td>
<td>70</td>
<td>63/90</td>
</tr>
<tr>
<td>MacFarlane et al. 1997; United Kingdom</td>
<td>13% (252/1935)</td>
<td>Pain &gt; 3 months (IASP criteria)</td>
<td>1,953</td>
<td>General population</td>
<td>Postal questionnaire</td>
<td>Primary</td>
<td>N/A</td>
<td>75</td>
<td>66/90</td>
</tr>
<tr>
<td>Croft et al. 1993; United Kingdom</td>
<td>13% (164/1340)</td>
<td>CWP &gt; 3 months (ACR criteria)</td>
<td>1,340</td>
<td>General population</td>
<td>Postal questionnaire</td>
<td>Primary</td>
<td>N/A</td>
<td>66</td>
<td>72/90</td>
</tr>
<tr>
<td>Buskila et al. 2000; Israel</td>
<td>10.1% (532/2210)</td>
<td>Current widespread or regional pain for at least 3 months (ACR criteria)</td>
<td>2,210</td>
<td>General population</td>
<td>Face-to-face interview</td>
<td>Primary</td>
<td>N/A</td>
<td>95.2</td>
<td>84/90</td>
</tr>
<tr>
<td>Binse and Lander 1998; Canada</td>
<td>44.4% (95% CI: 41.8–45.4%) (128/410)</td>
<td>Continuous or intermittent pain for at least 6 months</td>
<td>410</td>
<td>General population</td>
<td>Telephone interview</td>
<td>Primary</td>
<td>Unclear</td>
<td>69</td>
<td>76/90</td>
</tr>
<tr>
<td>Brochet et al. 1998; France</td>
<td>32.8% (244/741)</td>
<td>Persistent pain: daily pain &gt; 5 months</td>
<td>741</td>
<td>General population</td>
<td>Face-to-face interview</td>
<td>Secondary</td>
<td>Incomplete data</td>
<td>100</td>
<td>77/90</td>
</tr>
<tr>
<td>Gureje et al. 1998; World Health Organization</td>
<td>21.5% (1169/5438)</td>
<td>Current and persistent pain most of the time for 6 months or more during the prior year</td>
<td>5,438</td>
<td>Primary care</td>
<td>Face-to-face interview</td>
<td>Secondary</td>
<td>Yes</td>
<td>62</td>
<td>58/90</td>
</tr>
</tbody>
</table>
3. **Secondary goals:**

3.1. Estimate prevalence of CP relatively to sex;

3.2. Relate prevalence of chronic pain with age;

3.3. Estimate location of pain;

3.4. Inventory potential causes/origins of pain;

3.5. Scale grade of pain (without loss due to subjectivity);

3.6. Estimate prevalence of chronic pain in different social levels (interesting: employment and schooling);

3.7. Register in which ways chronic pain interferes the subject’s familiar and social life;

3.8. Estimate the number of individuals with clinical confirmation of chronic pain;

3.9. Estimate lifetime prevalence;
1. Study design

“Cross sectional studies
These are primarily used to determine prevalence. Prevalence equals the number of cases in a population at a given point in time. All the measurements on each person are made at one point in time.” [4]

Like Newman [et al] [5] says, in a cross-sectional study the investigator makes all measurements on a single occasion, there is no follow up period. And in fact, the cross sectional design is the only one that gives the prevalence of a disease or risk factor.

### Methods

#### Table 1: adapted of [4]

<table>
<thead>
<tr>
<th>Objective</th>
<th>Common design</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prevalence</td>
<td>Cross sectional</td>
</tr>
<tr>
<td>Incidence</td>
<td>Cohort</td>
</tr>
<tr>
<td>Cause (in order of reliability)</td>
<td>Cohort, case-control, cross sectional</td>
</tr>
<tr>
<td>Prognosis</td>
<td>Cohort</td>
</tr>
<tr>
<td>Treatment effect</td>
<td>Controlled trial</td>
</tr>
</tbody>
</table>

As key points we would like to distinguish:

“The most important advantage of cross sectional studies is that in general they are quick and cheap. As there is no follow up, less resources are required to run the study. Cross sectional studies are the best way to determine prevalence and are useful at identifying associations that can then be more rigorously studied using a cohort study or randomised controlled study.

The most important problem with this type of study is differentiating cause and effect from simple association.” [4]

2. Data collection

In order to achieve answers for primary and secondary goals, data collection of this study will describe the followings steps:

- Send on a **postal questionnaire** to 400 individuals, residents within Oporto area, registered in **Phone book “Região do Porto e Sul do Douro”**;

- The questionnaires, will be send in 2\(^{nd}\) January of 2007;

- To improve response rates, it will be send a second correspondence to the individuals who won’t respond in 2 weeks: 16\(^{th}\) January of 2007.
2.1 Pilot study

After selection of 20 persons, using the software: SuperCool Random Number Generator 1.04, it was sent a pre-test questionnaire.

Sent on 11th December 2006. There is a prevision of a reminder correspondence in two weeks to non-respondents: 26th December 2006.
“Many cross sectional studies are done using questionnaires. Alternatively each of the subjects may be interviewed.” [4]

<table>
<thead>
<tr>
<th>Questionnaire</th>
<th>Interview</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cheap</td>
<td>Expensive</td>
</tr>
<tr>
<td>Low response rate</td>
<td>High response rate</td>
</tr>
<tr>
<td>Large sample size</td>
<td>Small sample size</td>
</tr>
</tbody>
</table>

Table 2: adapted of [4]

In addition, the guarantee of anonymity, which can eventually give a major authenticity to the answers, make the questionnaire the best method to collect data.

On the other hand, the questionnaire is not applicable to illiterate individuals, or those with difficult to understanding questions.

Therefore, it is not an immediate method, once it is dependent of the fulfillment of the services: Correios.
3. Sample selection

According to precedent references it will be used the **Phone book “Região do Porto e Sul do Douro”**. Specifically, relation with this “data register”, it will be important to point some practical aspects:

- It is a register of simple use and easy access;

- However, the sample is reduced to the residents within Oporto area, registered in **Phone book “Região do Porto e Sul do Douro**. The signatures can be on behalf of an already deceased individual or a person that has changed of habitation;
3.1. **Selection of participants - drawing**

Random draw of:

- page: [89, 1429], x ∈ ℕ
- column: [1, 4], x ∈ ℕ
- line: [1, 133], x ∈ ℕ

For the **Phone book “Região do Porto e Sul do Douro”**

Using the software program: **SuperCool Random Number Generator 1.04**
Methods

SuperCool Random Number Generator

This software facilitates our sampling selection: Sample randomized in groups.

Through the indication of the behind described interval, this software will randomly generate the numbers corresponding to page, column and line; where we will find the address of the participants.

It guarantees a randomly choice (on age, sex and other social-demographic aspects). But, in the other hand, the software does not guarantee a valid address with the combination page/column/line. To resolve this limitation, it was created a Standard Operation Procedures.
4. **Sample dimension**

Sample dimension, will be determine in function of the appropriate calculation of algorithm to permit describe confidence intervals for proportions with error margin of 7 %, for a level of confidence of 95%.

Allowing for an anticipated failure to respond of about 50%, the sample size defined includes 400 individuals.
<table>
<thead>
<tr>
<th>ME</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.02</td>
<td>2400.9</td>
</tr>
<tr>
<td>0.03</td>
<td>1067.1</td>
</tr>
<tr>
<td>0.04</td>
<td>600.23</td>
</tr>
<tr>
<td>0.05</td>
<td>384.15</td>
</tr>
<tr>
<td>0.06</td>
<td>266.77</td>
</tr>
<tr>
<td>0.07</td>
<td>195.99</td>
</tr>
<tr>
<td>0.08</td>
<td>150.06</td>
</tr>
<tr>
<td>0.09</td>
<td>118.56</td>
</tr>
<tr>
<td>0.10</td>
<td>96.036</td>
</tr>
<tr>
<td>0.11</td>
<td>79.369</td>
</tr>
<tr>
<td>0.12</td>
<td>66.692</td>
</tr>
<tr>
<td>0.13</td>
<td>56.826</td>
</tr>
<tr>
<td>0.14</td>
<td>48.998</td>
</tr>
<tr>
<td>0.15</td>
<td>42.683</td>
</tr>
</tbody>
</table>

Methods

# Curve number 1

# n vs. Margin of Error

# Worst case: true

# \( \pi = 0.5 \)

# Confidence level = 0.95
Methods
References


