ORIGINAL ARTICLE

Prevalence and risk factors of pelvic pain

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KEYWORDS
Chronic pelvic pain; Prevalence; Risk factors

Abstract
Objectives: To determine the prevalence of chronic pelvic pain (CPP) symptoms in Malaga and its province and to identify associated risk factors.
Method: A cross-sectional study was carried out in Malaga and its province, involving subjects aged 18–65 years throughout a non-probability sampling by quotas (n = 887), stratified by sex, age and counties. All participants completed the QCPP-M, a self-administered questionnaire, validated tool due to its ability to discriminate patients with and without CPP.
Results: Prevalence of symptoms of CPP in subjects aged between 18 and 65 years was 22.8% in general population (30.9% women and 15.6% men) (RR = 1.974 for women versus men, 95% CI 1.53–2.55, P < 0.001). After correction by sex and age individuals who practice physical activity had a lower score in QCPP-M than others who did not (mean difference −0.65 ± 0.27). They were significantly associated with higher scores in the following factors: lifting and/or moving weights in activities of daily life (1.34 ± 0.33), laxatives intake and/or high-fiber diet (2.09 ± 0.48), and having suffered urogenital infectious disease in the past: vulvovaginitis, cystitis and prostatitis (1.77 ± 0.55), hemorrhoids/anal fissure (1.31 ± 0.40) or pelvic trauma (1.21 ± 0.61) respectively. Individuals who spend more time standing had a tendency to have higher scores on QCPP-M (coefficient of regression adjusted for sex and age of 0.078 points/h, SE = 0.04, P < 0.068).
Conclusions: High prevalence of CPP symptoms in Málaga (22.8%); this is related to several significant risk factors.

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Introduction

Chronic pelvic pain (CPP) is defined as pain that is located at the level of the lower abdomen, pelvis, or pelvic structures, which persists for at least 3–6 months and occurs continuously or intermittently, not being associated with the menstrual cycle or pregnancy. Several studies agree on the high prevalence of the syndrome, which could affect 2–16% of the world population, with an incidence of 33%. UK-specific data estimate that the annual prevalence in primary care is 38/1000 in 15–73-year-old women, rate comparable to asthma (37/1000) or back pain (41/1000), and the monthly occurrence is 1.6/1000 subjects treated. The impact of CPP on quality of life has been analyzed by several authors, estimating that 15% of women with CPP take time off work, 45% reduce their productivity, and 26% had to stay in bed (mean 2.6 ± 2.4 days in bed). About half of these women report that pain affected their activities and their social, family, and sexual sphere. Also, in males, chronic pelvic pain severely affects quality of life.

There is no consensus on the terminology used to describe the syndrome. Proof of this confusion is the use and standardization of the NIH-CPSI questionnaire not only for the disease that was designed (chronic prostatitis), but also to shed prevalence figures for the rest of CPs of diverse etiologies. In our study we defined CPP as that low or pelvic abdominal pain of at least 6 months duration, continuous or intermittent, related or not to the menstrual cycle or sexual relationship, and having a score ≥6 in the validated chronic pelvic pain questionnaire-Mohedo (CPPQ-Mohedo). The aim of this study was to determine the prevalence of CPP symptoms in the population aged between 18 and 65 years in Málaga and its province using the questionnaire and, based on these results, to identify the main risk factors associated with higher scores on the mentioned scale.

Material and method

A population-based cross-sectional study was conducted in 2011 in Málaga and its province. We calculated a necessary sample size of 850 subjects to estimate the confidence intervals for percentages with a margin of error lower than 3% in the most uncertain situation. Individuals were selected by non-probability sampling and quotas allocated to the interviewers. The study sample comprises adults supposedly healthy, non-institutionalized, aged between 18 and 65 years (n = 887; 414 women, and 473 men).

Inclusion criterion was having a minimum cognitive level that enabled proper reading and comprehension of the questionnaire as well as its correct completion. For the study of factors associated with higher scores on the CPPQ-Mohedo scale, the diagnoses and/or etiological factors considered by the European Association of Urology and other authors have been explored. A total of 148 individuals who at the time of the investigation met some of these situations for a period shorter than 6 months were excluded.

The data were collected by 154 interviewers from the University of Málaga. Depending on their place of residence and social and/or family environment, each interviewer was assigned a quota of questionnaires to complete (varying sex and age). These quotas were allocated proportionally to represent the population pyramid of Málaga by age, sex groups, and proportionally the 9 regions that make up the province (Antequera, Axarquía, Serranía de Ronda, Guadalteba, Valle del Guadalhorce, Costa del Sol, Málaga, ...
 Northeast Region, and Sierra de las Nieves). All interviewers attended a preliminary training period, after understanding the justification for the research and the aims to be met, focusing on the inclusion criteria, as well as the methodology to be carried out to ensure the accuracy of the data and the confidentiality thereof. They used the self-administered CPPQ-Mohedo questionnaire (hereinafter QCPP). The questionnaire (available at: www.salud.uma.es/cppq-mohedo/) collects through items grouped in 2 dimensions (pain and quality of life) a weighted score that is the sum of affirmative responses thereof, with a maximum score of 2716.

Additional information on personal and demographic data, educational level, occupation, pregnancy, and childbirth in the case of the female population, contraceptive methods, physical activity, posture, sexual and dietary habits was also collected. The participants also provided relevant information about their past and present medical condition, reporting their diagnosis and appropriate treatment. This information was used to study the association with risk factors.

The level of education and occupation of the respondent were classified according to the scale proposed by the working group on the measurement of the social class in health sciences of the Spanish Society of Epidemiology. To analyze the influence of these factors on the prevalence of symptoms of CPP they were regrouped in the following categories:
low (incomplete primary education or illiterate), middle (full primary, elementary post-secondary education, general basic education, or professional training), high (Senior High School, preuniversity course, graduate, and PhD). The socioeconomic situation was grouped into low, medium, or high categories. It was considered that the participants did physical activity at least 30 min a day at least 3 days a week, and it was considered that they ate a diet rich in fiber when 20–35 g of vegetable fiber were consumed per day (at least 2 pieces of fruit and 3 servings of vegetables and cereals daily).

We conducted a telephone verification of the data on the people who showed symptoms of CPP and who had facilitated contact details. The results are presented as estimated mean differences between individuals with and without risk factors, 95% confidence interval and statistical significance for the null hypothesis that this difference is zero, adjusted for sex and age. For the statistical analysis of the data, we used the R program and the bootstrap ’boot’ libraries. 20

### Results

The main epidemiological characteristics of the study population are shown in Table 1. Considering that an individual has CPP symptoms when the values on QCPP ≥ 6, the prevalence of symptoms of QCPP in subjects aged 18–65 years in Málaga and its province was 22.8% in the general population: 30.9% in women and 15.6% in men (RR = 1.974 women compared to men, 95% CI: 1.53–2.55, P < 0.001). Table 2 shows the prevalence by age groups.

The mean score obtained on QCPP for women was 4.23 ± 0.21 and for men 2.35 ± 0.15. By adjusting for age, the difference in QCPP was significantly greater for women who had an adjusted value of 1.88 (±0.27) points higher than men (95% CI: −1.36 to 2.44). The scores on QCPP were not associated with age. We detected a group (18.9%; 62 men and 78 women) that, having symptoms for more than 6 months, still had no specific diagnosis, but they had CPP symptoms and discriminant scores on the QCPP.

After correcting for sex and age the epidemiological data provided by the respondents, no significant differences were found by level of occupation, economic status, education level, having sexual relations or not, using contraception or not, or the type of contraception used (hormonal, barrier, or surgical). No significant differences were found in women by either parity, type of delivery (vaginal, instrumental, episiotomy, or cesarean), or total number of births.

Table 3 shows risk factors associated to higher values on QCPP. Individuals who do physical activity have a lower score on QCPP than those who do not (mean difference: −0.65 ± 0.27). The rest of the factors are significantly associated with a higher score on the scale: lifting and/or moving load in activities of daily living (1.34 ± 0.33), intake of laxatives and/or diet rich in fiber (2.09 ± 0.48), or having suffered in the past urogenital infectious disease – vulvovaginitis, cystitis, prostatitis – (1.77 ± 0.55), hemorrhoids/anal fissure (1.31 ± 0.40), or pelvic trauma (1.21 ± 0.61). Other diseases reported by the respondents (pelvic inflammatory disease, irritable bowel syndrome, benign cysts, fibroids, or previous surgery) did not have significantly different scores on the QCPP scores. Regarding postural habits, only the hours that the subject spends standing show a tendency to have higher scores on QCPP, the regression coefficient being 0.078 (±0.04 points/h; P = 0.068).

### Discussion

The highest incidence of CPP symptoms is confirmed in females. 21 Prevalence figures for males are also important (15.6%). 22 From what we know so far, this is the first time that the prevalence of CPP symptoms is reported in a Spanish population, which corresponds to 22.8% of the general population. This figure places Spain among the countries that have the highest prevalence, according to a recent review showing that the world prevalence of CPP ranges from 2 to 24%. 23 This high figure may also be due to the wide age range covered (18–65 years).

In all, 18.9% of the participants had discriminant scores on the QCPP; although they did not currently have a specific medical diagnosis, reflecting the difficult diagnosis of the syndrome and also a reluctance to seek medical help, which can lead to underestimation of the diagnosis by the primary care physician. 24–26

Table 2 Prevalence by sex and age groups.

<table>
<thead>
<tr>
<th>Age groups (years)</th>
<th>Men, n (%)</th>
<th>Women, n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>18–29</td>
<td>25 (16.9%)</td>
<td>37 (32.5%)</td>
</tr>
<tr>
<td>30–39</td>
<td>15 (16.3%)</td>
<td>34 (36.2%)</td>
</tr>
<tr>
<td>40–49</td>
<td>18 (16.4%)</td>
<td>23 (21.9%)</td>
</tr>
<tr>
<td>50–59</td>
<td>12 (13.8%)</td>
<td>26 (37.1%)</td>
</tr>
<tr>
<td>≥ 60</td>
<td>4 (11.1%)</td>
<td>8 (25.8%)</td>
</tr>
</tbody>
</table>

Table 3 Factors associated with high scores on CPPQ-Mohedo.

<table>
<thead>
<tr>
<th>Risk factor</th>
<th>Mean±SD</th>
<th>95% CI</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical activity</td>
<td>−0.651</td>
<td>0.274</td>
<td>−1.184 to 0.100</td>
</tr>
<tr>
<td>Moving and/or lifting load in DLA³</td>
<td>1.345</td>
<td>0.331</td>
<td>0.631−2.174</td>
</tr>
<tr>
<td>Laxatives and/or diet rich in fiber</td>
<td>2.097</td>
<td>0.482</td>
<td>0.029−3.345</td>
</tr>
<tr>
<td>Recurrent urogenital infectious disease</td>
<td>1.776</td>
<td>0.553</td>
<td>0.526−3.376</td>
</tr>
<tr>
<td>Hemorrhoids/anal fissure</td>
<td>1.312</td>
<td>0.409</td>
<td>0.403−2.363</td>
</tr>
<tr>
<td>Pelvic trauma</td>
<td>1.216</td>
<td>0.615</td>
<td>0.057−2.740</td>
</tr>
</tbody>
</table>

DLA, daily life activities.

³ Mean of the effect among people who had the risk factor and those who did not.
Our sample is consistent with other studies finding no relationship between the level of education, socioeconomic status, parity, and oral contraceptive intake, low body mass index, residence in the mountain, lack of sexual relations, cesarean delivery, or episiotomy with the CPP syndrome. 6,7,25 On the contrary, significant differences between slight alterations in dietary habits (need for intake of a diet rich in fiber and/or consumption of laxatives) and CPP are detected. We also agree with Vercellini to detect lower risk of CPP in people who do physical exercise. 30 We do not know the causal relation of this result, but it could be that the presence or absence of pain also conditions the practice of exercise.

Although we have recorded information on the involvement of the load in the activities of daily living, type of delivery (natural vaginal, episiotomy, instrumental), and type of contraception (barrier, IUD, surgery), we find no references to contrast it and discuss it. Postural habits (hours standing, sitting, and driving) have shown no significant results; only the hours that the respondents spend standing seems to be considered a possible risk factor due to the high scores obtained. On the contrary, Grace et al. found postural problems associated with the positions of standing, sitting, and inclination in 9.1% of women with CPP 10 building on the works that concern perineal myofascial dysfunction. 15,29,30 The possible role of recurrent urinary tract infections, also described by De Oliveira Gonçalves da Silva et al., 24 suggests the need to examine the etiologic role of these infectious processes on CPP, in order to determine if they are origin or consequence thereof.

In summary, our study has identified several factors as predictors of CPP symptoms. However, it is not possible to conclude on the possible causal relationship. In fact, the QCPP is not a diagnostic tool for CPP but a useful tool that can quickly lead and guide the patient with CPP symptoms from primary care to specialty care (urologist, gynecologist, and proctologist) for the objective diagnosis and early therapeutic approach of the painful process. On the contrary, we must admit that this study has important limitations. In fact, the sample selection was not random, which may be a selection bias. The questionnaire was self-administered. We had no access to the medical history of the patient and, therefore, we could not verify the information provided by respondents. Physical examination or specific medical diagnosis were not made either, so we cannot determine the degree of agreement or disagreement between the clinical findings and the score obtained in the questionnaire.

However, we found that the prevalence of symptoms of CPP is high in Málaga (22.8%) and we have established various risk factors. Unfortunately, the lack of consensus on the definition of CPP deeply prevents conducting epidemiological studies. Only a better understanding of the process will make it possible to establish multidisciplinary preventive, diagnostic, and therapeutic strategies for this type of patients.

Conflict of interest
The authors declare that they have no conflict of interest.

References
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