Gender inequalities in self-rated health

Perception or real illness? How chronic conditions contribute to gender inequalities in self-rated health

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Background: In Spain, as in many countries, women report poorer general health and more daily activity limitations due to health reasons when compared with men. This study aims to examine whether these poorer indicators are due to a greater prevalence of health problems and to identify the types of problems that contribute most to gender inequalities. Methods: Cross-sectional study on the population aged >15 years and residing in Spain, with data from the 2006 National Health Survey (n = 29,139). The sex prevalence ratios (PR) of poor self-rated health and chronic limitation of activity are sequentially adjusted by age and the presence of 27 chronic conditions by means of robust Poisson regression. Results: At equal number of disorders, women reported equal or even better health than men. The excess of poor health in women (age-adjusted PR and 95% CI: self-rated health = 1.36, 1.29–1.41; chronic limitation = 1.25, 1.18–1.32) disappeared when adjusting for the number of chronic diseases (self-rated health = 1.00, 0.96–1.04; chronic limitation = 0.90, 0.85–0.96). Musculoskeletal, mental and other pain disorders accounted for most of the association. The results were consistent in different strata of age, social class, and type of country of birth. Conclusion: These results suggest that the poorer self-rated health of women is a reflection of the higher burden of disease they suffer. A health system responsive to gender inequalities should increase its efforts in addressing and resolving musculoskeletal, mental and other pain disorders, usually less considered in favour of disorders with greater impact on mortality.
Introduction

The health of women and men is different and inequitable. The paradox is described that in most countries of the world women have longer life expectancy but poorer health status,1,2 although this latter finding is more consistent for indicators of mental health, chronic illness or disability than in the case of self-rated health.3–5 Most of these differences are unfair and avoidable inequalities derived from the unequal hazards of social positions, roles and expectations of men and women in society because of the gender system.6,7 While men’s shorter life expectancy can be attributed to both biological disadvantages and gendered patterns of health-related behaviours and risk-taking,8 the poorer health status of women has been interpreted as a result of patriarchy, the systematic domination of women by men, which restricts women’s access to social privileges, paid work and economic resources, while allocating them the majority of domestic and family responsibilities.9–11

It has been argued that differences in symptoms perception, evaluation and reporting may account for sex differences in illness reports.12 This view transends into practice where studies conducted in the USA found that women are more likely than men to be told by physicians that their problems are ‘in their heads’ and to have their symptoms attributed to ‘over-anxiousness’, even when results indicated an organic disorder.13 However, it has been shown that women are not more prone to report illness,14,15 and that their higher expressiveness does not account for their increased distress.16 In some studies, it is possible to appreciate that, once adjusted for other measures of morbidity or functional capacity, gender differences in self-rated health are eliminated or reversed.17–19 Nevertheless, no studies have been conducted focusing on this specific issue and particularly exploring the individual and joint contribution of different chronic conditions to the disadvantage of women in general health status. We hypothesize that inequalities in general indicators of health status, quality of life or activity limitation, shall reflect the differences in the burden of disease that women and men experience. This information could be useful to introduce gender equity as a criterion for prioritizing health problems in the health system as well as for implementing policies related to the social determinants of these conditions.

Therefore, the objectives of this study are (i) to assess whether, within the Spanish population, poorer general health outcomes in women compared with men are attributable to a higher prevalence of chronic conditions and (ii) to identify the type of conditions that contribute most to these inequalities.

Methods

Study population and data source

The study population consisted of all persons living in Spain in 2006, aged >15 years and not institutionalized. The data source is the 2006 Spanish National Health Survey, representative of the whole population living in households. Data were collected through face-to-face interviews at home between June 2006 and June 2007. A stratified multistage sampling was applied; the units being census tracts at first stage, main family dwellings at second stage and individuals at third stage.20 The total number of people interviewed was 29 476. Analyses were performed on subjects with valid answers to all general health and chronic conditions variables (N = 29 139).

Variables

Dependent Variables. The following health indicators were used as the main dependent variables:

- Chronic limitation of activity: It was determined from the question ‘During the last 6 months, to what extent have you been limited due to a health problem in the activities people usually do?’ Answers ‘severely limited’ and ‘limited but not seriously’ were considered as having a chronic limitation.

Self-rated health was the main study variable, while activity limitation was used to test the robustness of the findings.

Sex. The sex of the respondent (man or woman) was used as the main stratification variable or independent variable depending on the analysis.

Specific chronic conditions. These were used as dependent, stratification and adjustment variables depending on the analysis. The 27 conditions included in the survey were used, which ranged from risk factors (high cholesterol) to chronic pain (e.g. back pain or headache) or diseases with high mortality (e.g. stroke); for each, respondents stated whether they have ever suffered from the condition; during the last 12 months; a physician has diagnosed them; and have taken medication for it. The following variables were used:

- Number of prevalent conditions (suffered in the last 12 months).
- Number of diagnosed conditions (suffered in the past 12 months and diagnosed by a physician at any time).
- Each prevalent condition individually.
- Groups of conditions: Starting from those conditions that individually reduced the association between sex and self-rated health >10% (see Table 2), two groups were created.
  - musculoskeletal disorders: (i) arthritis, arthritis or rheumatism; (ii) neck pain; (iii) back pain and (iv) osteoporosis.
  - mental disorders: (i) reporting the disorders themselves, identified by a single question (depression, anxiety or other); or (ii) having poor mental health (score higher than two on the 12-item version of General Health Questionnaire, GHQ-12).23

These variables were included in the models separately.

Stratification variables. As a way to test the consistency of results in different population groups, some analyses were repeated in the following strata.

- Age: 16–44 years, 45–64 years and ≥65 years (representing respectively the younger active age, adults in active age but who experience increasing health limitations, and the legal inactive age in Spain).
- Social class: It was assigned according to the current or last occupation of the respondent, or of the household reference person for those never engaged in paid work, and classified following the recommendations of the Spanish Society of Epidemiology.24 The five original classes were collapsed into two groups: non-manual (I–III) and manual (IV–V).
- Type of country of birth: It was categorized as ‘Spanish-born’, ‘born in another high-income country’ (countries with human development indexes >0.9 in 2006, year of the survey) and ‘born in middle- or low-income countries’ (all other countries).

Due to the small sample size in some categories, the stratified analysis of social class and type of country of birth was simplified in three categories: non-manual social classes (any origin), Spanish-born manual social classes or manual class born in midlle- or low-income countries (excluding from this analysis people of manual social classes from other high-income countries).

Statistical analysis

All the analyses included weights derived from the complex sample design. The sample distribution is described, as well as crude prevalence by sex of the general health indicators and the 27 chronic conditions. Sex differences are tested with Pearson’s chi-square. To analyse the contribution of specific chronic conditions to gender inequalities in general health indicators (self-rated health and limitation of activity), we first described these indicators by sex and the number of chronic conditions. Then, we calculated the prevalence ratios (PR), with their confidence intervals at 95%, of the health indicators by sex by means of robust Poisson regression models,26 first entering age as the only
The contribution of chronic conditions to gender inequalities in general health

Figure 1 describes the distribution of the number of chronic conditions, with more men than women reporting no condition (37 vs. 22%) or one condition (23 vs. 17%) and more women reporting three or more (46 vs. 25%). Furthermore, it shows the proportion of men and women reporting poor health or chronic limitation for each category of the number of conditions. It is quite evident that in this case, women did not report poorer health than men with the same number of conditions; on the contrary, men appeared to report poorer health and more chronic limitations than women with the same number of conditions, especially from three conditions on.

Table 2 shows the same phenomenon in terms of multivariate analysis. Adjusted only by age, women reported significantly poorer health (PR = 1.36, 95% CI = 1.29–1.41) and more activity limitation (PR = 1.24, 1.18–1.32). Once further adjusted by the number of conditions, there were no differences between women and men in the likelihood to report poor self-rated health (PR adjusted by age and number of prevalent conditions = 1.00, 0.96–1.04), while women had a lower risk of reporting activity limitation compared with men (PR adjusted by age and number of prevalent conditions = 0.90, 0.85–0.96).

Table 2 also displays the conditions that reduced 10% or more, on their contribution size. The regression analysis with and without adjustment for the number of chronic conditions was repeated with stratification by age group, social class and type of country of birth.

Results

A total of 14,249 men and 14,746 women had valid answers for general health indicators and chronic conditions. Of the participants, 52.4% were aged 16–44 years, 58.5% were in manual social class and 87.6% were born in Spain.

Inequalities in health indicators and in chronic conditions

Prevalences by sex of poor self-rated health, chronic activity limitation and the 27 chronic conditions included are shown in Table 1. Women reported poorer health (38.8 vs. 27%, P<0.001) and more activity limitation (25.7 vs. 19.3%, P<0.001) than men. Women also had higher prevalence for most specific chronic conditions. The prevalence was higher in women within the 11 most common conditions (all P<0.001), and in six of these conditions, prevalence in women was more than double that of men. These results were consistent when the criterion was restricted to conditions diagnosed by a physician.

Table 1 Presence of chronic conditions and poor health indicators by sex (%). Population aged 16 years or more

<table>
<thead>
<tr>
<th>Chronic disordersb</th>
<th>Men (n = 14,249)</th>
<th>Women (n = 14,746)</th>
<th>Men (n = 14,249)</th>
<th>Women (n = 14,746)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chronic back pain</td>
<td>18.9</td>
<td>28.6**</td>
<td>15.1</td>
<td>24.5**</td>
</tr>
<tr>
<td>Chronic neck pain</td>
<td>15.5</td>
<td>31.3**</td>
<td>12.3</td>
<td>26.5**</td>
</tr>
<tr>
<td>Arthrosis. arthritis or rheumatism</td>
<td>13.9</td>
<td>28.8**</td>
<td>12.5</td>
<td>27.0**</td>
</tr>
<tr>
<td>Hypertension</td>
<td>17.1</td>
<td>20.4**</td>
<td>16.5</td>
<td>20.1**</td>
</tr>
<tr>
<td>Varicose veins in the legs</td>
<td>7.0</td>
<td>26.1**</td>
<td>4.5</td>
<td>18.2**</td>
</tr>
<tr>
<td>Migraine or frequent headaches</td>
<td>8.2</td>
<td>20.4**</td>
<td>5.9</td>
<td>16.0**</td>
</tr>
<tr>
<td>High cholesterol level</td>
<td>13.8</td>
<td>14.5**</td>
<td>13.6</td>
<td>14.3**</td>
</tr>
<tr>
<td>Depression, anxiety or other mental disorders</td>
<td>8.2</td>
<td>18.9**</td>
<td>6.6</td>
<td>16.2**</td>
</tr>
<tr>
<td>Chronic allergies</td>
<td>10.0</td>
<td>13.1**</td>
<td>8.9</td>
<td>12.1**</td>
</tr>
<tr>
<td>Haemorrhoids</td>
<td>6.0</td>
<td>10.2**</td>
<td>4.3</td>
<td>7.4**</td>
</tr>
<tr>
<td>Chronic constipation</td>
<td>3.1</td>
<td>11.3**</td>
<td>2.5</td>
<td>8.2**</td>
</tr>
<tr>
<td>Diabetes</td>
<td>6.2</td>
<td>5.7</td>
<td>6.2</td>
<td>5.7</td>
</tr>
<tr>
<td>Chronic skin problems</td>
<td>5.4</td>
<td>6.3**</td>
<td>5.0</td>
<td>6.0**</td>
</tr>
<tr>
<td>Prostate problems</td>
<td>5.8</td>
<td>–</td>
<td>5.6</td>
<td>–</td>
</tr>
<tr>
<td>Menopausal period problems</td>
<td>–</td>
<td>5.6</td>
<td>–</td>
<td>4.9</td>
</tr>
<tr>
<td>Cataracts</td>
<td>3.8</td>
<td>6.2**</td>
<td>3.5</td>
<td>6.1**</td>
</tr>
<tr>
<td>Osteoporosis</td>
<td>1.3</td>
<td>8.2**</td>
<td>1.2</td>
<td>7.9**</td>
</tr>
<tr>
<td>Anaemia</td>
<td>1.3</td>
<td>7.7**</td>
<td>1.2</td>
<td>7.6**</td>
</tr>
<tr>
<td>Asthma</td>
<td>4.1</td>
<td>5.0**</td>
<td>3.9</td>
<td>4.9**</td>
</tr>
<tr>
<td>Urinary incontinence</td>
<td>3.0</td>
<td>5.6**</td>
<td>2.6</td>
<td>4.4**</td>
</tr>
<tr>
<td>Heart diseases other than infarction</td>
<td>3.6</td>
<td>4.8**</td>
<td>3.5</td>
<td>4.7**</td>
</tr>
<tr>
<td>Chronic bronchitis</td>
<td>4.3**</td>
<td>3.6</td>
<td>4.2**</td>
<td>3.5</td>
</tr>
<tr>
<td>Stomach or duodenal ulcer</td>
<td>3.6</td>
<td>3.5</td>
<td>3.3</td>
<td>3.4</td>
</tr>
<tr>
<td>Thyroid problems</td>
<td>0.7</td>
<td>5.8**</td>
<td>0.7</td>
<td>5.7**</td>
</tr>
<tr>
<td>Malignant neoplasms</td>
<td>1.2</td>
<td>1.2</td>
<td>1.2</td>
<td>1.2</td>
</tr>
<tr>
<td>Myocardial infarction</td>
<td>1.4**</td>
<td>0.6</td>
<td>1.4**</td>
<td>0.6</td>
</tr>
<tr>
<td>Stroke</td>
<td>0.7</td>
<td>0.7</td>
<td>0.7</td>
<td>0.7</td>
</tr>
<tr>
<td>Mean number (SD)</td>
<td>1.7 (2.1)</td>
<td>2.9** (2.8)</td>
<td>1.5 (2)</td>
<td>2.6** (2.7)</td>
</tr>
</tbody>
</table>

General health indicators

| Poor general self-rated health | 27.0 | 38.8** |
| Chronic limitation of activity | 19.3 | 25.7** |

Source: Spanish National Health Survey. 2006.

a: Prevalent, having had the disorder in the last 12 months; diagnosed, having had the disorder in the last 12 months and having had it diagnosed by a physician at any time.
b: Conditions are ordered by prevalence in the whole study population.

**Pearson’s chi-square P<0.001.

adjustment variable, and then adding to the model one or more variables of specific chronic conditions. An approach to the contribution size was obtained by calculating the percentage reduction in the strength of association between sex and the health indicator while adjustment variables were added with the formula 100 × (PRmodel 1–PRmodel 2)/(PRmodel 1–1)²7

The regression analysis with and without adjustment for the number of chronic conditions was repeated with stratification by age group, social class and type of country of birth.

The contribution of chronic conditions to gender inequalities in general health

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importance was consistent but reductions were more emphasized. The same table shows the result of adjusting simultaneously for groups of variables that accounted for similar health problems: musculoskeletal disorders alone accounted for most of the association (71% with self-rated health and 102% with chronic limitation), and so did the available mental disorder variables (58 and 91%).

Stratification by age, social class and type of country of birth

Figure 2 shows that the findings of Table 2 are substantially similar in all subgroups: that is, the probability of poorer health of women versus men disappears when adjusting for the number of prevalent chronic conditions. For self-rated health, this was the case for younger than 45 years and the three groups by social class and type of country of birth; for those aged 45–64 years, the association was even reversed (PR 0.89, 95% CI 0.83–0.95), while for those >64 years, it was reduced but still minimally significant (PR 1.07, 1.02–1.13). In the case of activity limitation, the association was significantly reversed, as in the whole population, in the 16–44 years and 45–64 years age groups and in the manual Spanish-born; disappeared in non-manual; and was reduced while losing significance in those >64 years and in manual from low-income countries.

Table 2 Association between sex and general health indicators, adjusted sequentially for age, number of diagnosed and prevalent chronic conditions, and single chronic conditions. Population aged 16 years or more

<table>
<thead>
<tr>
<th></th>
<th>Poor self-rated health</th>
<th>Activity limitation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>PR (Women vs. Men)</td>
<td>Change (%)</td>
</tr>
<tr>
<td>Adjusting by age and…</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of chronic conditions (diagnosed)</td>
<td>1.36**</td>
<td>1.24**</td>
</tr>
<tr>
<td>Number of chronic conditions (prevalent)</td>
<td>1.04</td>
<td>0.93*</td>
</tr>
<tr>
<td>Single chronic conditions*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Arthrosis, arthritis or rheumatism</td>
<td>1.18**</td>
<td>1.08*</td>
</tr>
<tr>
<td>Depression, anxiety or other mental disorders</td>
<td>1.20**</td>
<td>1.10*</td>
</tr>
<tr>
<td>Chronic neck pain</td>
<td>1.20**</td>
<td>1.14**</td>
</tr>
<tr>
<td>Migraine or frequent headaches</td>
<td>1.25**</td>
<td>1.14**</td>
</tr>
<tr>
<td>Chronic back pain</td>
<td>1.25**</td>
<td>1.15**</td>
</tr>
<tr>
<td>Varicose veins in the legs</td>
<td>1.27**</td>
<td>1.16**</td>
</tr>
<tr>
<td>Osteoporosis</td>
<td>1.29**</td>
<td>1.18**</td>
</tr>
<tr>
<td>Anaemia</td>
<td>1.30**</td>
<td>1.19**</td>
</tr>
<tr>
<td>Chronic constipation</td>
<td>1.30**</td>
<td></td>
</tr>
<tr>
<td>Groups of conditions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Musculoskeletal disordersb</td>
<td>1.10**</td>
<td>1.00</td>
</tr>
<tr>
<td>Mental disorders*</td>
<td>1.15**</td>
<td>1.02</td>
</tr>
</tbody>
</table>


PR: Prevalence ratio calculated by means of robust Poisson regression.
Change (%): Percent reduction in the strength of association between the variable sex and the health indicator, compared with age-adjusted model only.

a: Ordered from higher to lower reduction in the strength of association. Only those conditions reducing the association >10% are shown.
b: Musculoskeletal disorders: arthritis, back pain, neck pain and osteoporosis.
c: Mental disorders: depression, anxiety or other mental disorders (self-reported); mental health according to GHQ-12 (good, poor and non-response).

*P of the sex coefficient < 0.01; **P of the sex coefficient < 0.001
Discussion

In Spain, women reported poorer general health status and more chronic limitations of activity than men. This article shows that these reports reflect or even underestimate the fact that women suffer more often from a wide range of chronic conditions, where women reported equal health and less activity limitation compared with men with the same number of conditions. Musculoskeletal and other pain disorders, as well as mental health, account for most of the excess of poor health of women.

Major strengths of the study include the use of a large population sample, and the consistency of results with more than one health indicator, and in the various population subgroups analyzed. In all the subgroups, sex differences disappeared when adjusting for the number of reported conditions, except in the oldest group where a significant but very slight excess persisted. This latter finding deserves replication, though it might be attributed to residual confounding such as the severity of conditions.

Musculoskeletal, mental and other pain disorders were the primary causes of the excess of poor health of women. Many other studies have shown that these groups of conditions are also the ones with the strongest impact on well-being, disability and burden of ill health of the entire population. In spite of their relevance, and the existence of effective interventions for their management in primary care, they have been largely overlooked in favour of other chronic diseases or cardiovascular risk factors. Previous studies have pointed out the strict relation between physical and mental disorders, and argued that gender inequalities in mental illness may contribute to the gap in chronic physical conditions, although both may also share a common cause, and women’s higher rates of depression themselves reflect real health differences rooted in disadvantages rather than artifacts.

The main finding of this study—gender differences in self-rated health disappear when adjusting for number of chronic conditions—has also been observed in other studies in Southern European cities such as Florence and Barcelona. However, results could be different in countries such as the UK and Finland where several studies have shown higher morbidity in women but equal or poorer self-rated health in men. These contradictory findings point out to the importance of examining social determinants of health status in different contexts in order to tailor policies to reduce gender inequalities in health, which are rooted in large inequities in socialization, power, and exposures to determinants such as employment status and working conditions, income or the burden of unpaid work.

The study has some potential limitations. One may arise from the use of self-reporting for both the general health and chronic conditions variables that may therefore share a common variance. Nevertheless, checklists of conditions have been shown to encourage reporting by the genuinely ill and give an accurate reflection of health needs. Results were also consistent when using the number of physician diagnosed disorders: although the same diagnosis is self-reported, and often dependent on having posed the problem to a health professional, we found no sex differences in the ratio between diagnosed and prevalent disorders. Finally, other studies using different approaches have ruled out reporting bias as a cause of gender differences in health indicators.

The results can also be influenced by the use of a concrete checklist of conditions, which despite being large, does not include all possible conditions. For example, externalizing mental disorders, such as those related with substance abuse, which are usually more frequent in men, were not included. However, their impact on quality of life (not mortality) at the population level is generally lower than that of internalizing disorders.

Due to the high level of correlation between different chronic conditions, the percentages of contribution to gender inequalities of single conditions could be overestimated. However, despite that, they are useful to approximate the relative importance of one disorder over the other. For the same reason, the joint contribution of chronic conditions was examined with summary variables such as the total number of conditions. The alternative option of including each condition separately produces nearly identical results (data not shown).

This study adds to the literature demonstrating that reporting bias is not an explanation for gender differences in self-rated general health, whereas musculoskeletal and mental disorders emerge as major contributors, a finding that also has new implications for both health policy and research. A health-care system responsive to gender inequalities should...
increase its efforts in addressing and resolving these groups of disorders, which, despite their limited impact on mortality, have a strong impact on everyday health and well-being of not only women but also the entire population,28 and are usually insufficiently addressed by health systems vis-à-vis potentially fatal conditions with similar impacts.13,36 At the same time, research and policy on gender equity in health care have mainly focused so far on inequalities in the quality of care provided for certain conditions, such as coronary heart disease, or on women’s specific issues such as reproductive health. However, these policies should go beyond to include the prioritization of health problems according to their impact on gender inequalities, and the study of dimensions such as somatic pain or mental distress from a gender perspective.

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Conflicts of interest: None declared.

Key points
- Women’s disadvantage in general health reports can be explained by their higher prevalence of chronic conditions.
- Musculoskeletal, mental and other pain disorders account for most of this disadvantage.
- A health-care system responsive to gender inequalities should increase its efforts in addressing and resolving these groups of disorders while considering their social determinants.

References
28. Saarni SI, Härkanen T, Sintonen H, et al. The impact of 29 chronic conditions on women’s disadvantage in general health reports can be explained most of this disadvantage.