Evaluation of Primary Health Care Reform: Preventive Practices and Inequalities

Ferran Daban, M. Isabel Pasarín, Maica Rodríguez-Sanz, Anna García-Altés, Joan R Villalbí, Gemma Cano-Serral, and Carme Borrell

Objective. To evaluate primary care reform (PCR) in Barcelona during the year 2000 using 3 preventive practices: anti-smoking advice, blood pressure measurement, and flu vaccination. Any inequalities of gender, age, or social class in receiving these practices are also assessed.

Design. Cross-sectional, descriptive, observational study.


Participants. Non-institutionalised residents of the city of Barcelona over 15 years old in the year 2000 (N=10 000 people).

Main measurements. The indicators used were the prevalences of receiving the 3 practices. Descriptive and multivariate logistic regression analysis were performed.

Results. Receiving the preventive practices studied is greater in areas where PCR was established longer, compared to the centres that had not begun the reforms (63.7% as opposed to 53.2%, respectively). Anti-smoking advice, for women, is less frequent in the more disadvantaged classes (odds ratio [OR] = 0.72; 95% confidence interval [CI], 0.55-1).

Conclusions. PCR is a factor associated with carrying out preventive practices. No significant disparities between social class or gender were found for those who received the preventive practices.

Key words: Primary care reform. Preventive practices. Inequalities in health.
Methods

**Design, Population, and Information Sources**
A cross-sectional, descriptive, observational study was performed. The study population was made up from 10,000 non-institutionalised city of Barcelona residents over 14 years old during the year 2000. The survey sample consisted of 10,000 people.22 For this study, a different number of people were included for each preventive practice, as the age of the target population was different in each of them. Therefore, the samples studied were as follows: 2451 people for anti-smoking advice (daily smokers >14 years), 5045 people for taking blood pressure (>39 years), and 1969 people for flu vaccination (>65 years).

**Variable Studied**
The preventive practices that the people interviewed declared they had received were used as independent variables. Social class and the type of PHC centre were used as independent variables. Social class was assigned according to the proposal made by an expert group of the Spanish Epidemiological Society in 1995.23 The classification goes from “I” as the most better off class to “V” the most disadvantaged.
As regards the type of PHC service, it was classified depending on the centre where the doctor of the interviewed person belonged and was identified as a usual PHC source. The variable was stratified into 5 categories: a) users of public centres of the Catalonian Health Service (CHS) who live in basic health areas (BHA)—basic health zones in the rest of Spain—where PCR had been established between 1984 and 1993; b) users of public centres of the (CHS) who live in a BHA where PCR had been established between 1994 and 1998; c) users of public centres of the (CHS) who live in BHA where PCR has not been established or was established from 1999; d) users of obligatory or private mutual societies; and e) people that had not been attached to a family doctor as a usual health care source.

Different studies have shown that there are inequalities in health as regards age, perceived state of health (PSH) and health cover,19,24-26 a reason why they were studied as control variables. The PSH is divided into 2 categories: “very good-good” and “fair-poor-very poor.” Health cover is divided into “public” and “mixed/private” cover. In the analysis of the impact of PCR, social class is also monitored, since PCR in Barcelona was started in the most disadvantaged districts.27

Data Analysis
The relationship between PCR, health cover, and social class is described. Each preventive practice was also studied depending on the independent and control variables, and all the results were grouped by gender. The percentages of carrying out these practices were standardised for age and social class, according to the direct standardisation method, so that the whole sample is used as a reference population.

Bivariate analyses were performed between the preventive practices and differences between the independent and control variables were calculated using binary logistic regression analysis. The odds ratios (OR) and their 95% confidence interval (95% CI) were obtained.

Finally, multivariate logistic models were constructed to study the association between dependent variables and the type of PHC service and social class. These 2 variables were not included together in the multivariate models because they have a high collinearity. So only age and the PSH were included as confounding variables in all the models. Health cover was included according to the significance in the bivariate analyses. The relationship between PSH and social class was studied.

Results
The distribution of social classes according to type of PHC and type of health cover is shown in Figures 1 and 2. Among the people who had public cover only, the percentage of people with PCR was greater in the more disadvantaged classes (59.3%), and are also those who are not identified with a usual PCS (4.3%). The more advantaged classes had more centres without the reforms and used obligatory or mutual benefit societies more (12%); there were also more people (15%) who...
Differences were also observed in anti-smoking advice in men with mixed/private cover, who reported that they had received advice against tobacco more often (54.1% compared to 46.8% with public cover).

The differences in the receiving the practices according to the type of primary care after adjusting for age and perceived state of health are shown in Table 3. It is noted that people whose family doctor was in a centre where the PCR had been installed in the earlier period received the 3 preventive practices more often than those who had a family doctor in other areas or did not have a family doctor as a normal health care source.

It was observed that all the ORs are significantly <1, except for the flu vaccine in the case of women. The association between the practices and social class, also after being adjusted for age and perceived health state is shown in Figure 3. It can be seen that the ORs are significantly <1, except for the flu vaccine in the case of women.

were not identified with a usual PCS. The people with mixed or only private cover (Figure 2) generally had a lower percentage of reformed health centres. There was a higher percentage of benefit societies or private doctors (50%) in the better advantaged classes and in those less usual PCS and BHA were there were less reformed centres.

In Tables 1 and 2, it can be seen that the 3 preventive practices are more established in the older age groups. For anti-smoking advice, male smokers over 65 years were the group where a higher proportion declared that their doctor had advised them to quit smoking (66.2% compared to 56.5% in the case of women). Greater differences were observed according to age in the taking of blood pressure and receiving the flu vaccination. As regards the former, we can see that the difference between ages is from 59.1% to 82% in women and from 56% to 77.6% in men. These differences are significant in both sexes. As regards the flu vaccine, people over 75 years were vaccinated more often, and more men than women (68.5% in men compared to 58.4% in women).

In the analysis according to the type of health cover, significant differences are seen in women with only public cover, since they were vaccinated more (56.3% as opposed to mixed/private, which was 49%).

Differences were also observed in anti-smoking advice in men with mixed/private cover, who reported that they had received advice against tobacco more often (54.1% compared to 46.8% with public cover). The differences in the receiving the practices according to the type of primary care after adjusting for age and perceived state of health are shown in Table 3. It is noted that people (men and women) whose family doctor was in a centre where the PCR had been installed in the earlier period received the 3 preventive practices more often than those who had a family doctor in other areas or did not have a family doctor as a normal health care source.

It was observed that all the ORs are significantly <1, except for the flu vaccine in the case of women. The association between the practices and social class, also after being adjusted for age and perceived health state is shown in Figure 3. It can be seen that, in the case of women, anti-smoking advice is more frequent in the more advantaged social classes (OR=0.57 for social class III and OR=0.72 for social classes IV-V, as regards the better off social classes). With the taking of blood pressure, a significant difference was observed in women with the perceived state of health, as such that women...
in a poorer state of health had received this preventive practice more often than women in the more disadvantaged classes (OR=1.75 for classes IV-V).

**Discussion**

According to this study, the number of people who received the preventive practices studies in centres that had incorporated the reforms longer is greater in public health services. The mutual benefits societies also had a major role in preventive practices, since there was a higher percentage of these practices within them, with the exception of the flu vaccine, where the weight of the benefit society was less important, particularly in males. No significant inequalities in social class or gender were found in receiving these practices. Older people received the practices more, as they attended health centres.

**TABLE 2** Description of the Study Variables and the Bivariate Association between the Preventive Practices and the Independent Variables in Men, Barcelona Health Survey, 2000

<table>
<thead>
<tr>
<th>Age, y</th>
<th>Anti-Smoking Advice</th>
<th>Taking of Blood Pressure</th>
<th>Flu Vaccine</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>%</td>
<td>N</td>
<td>OR 95% CI</td>
</tr>
<tr>
<td>Smoking</td>
<td>BP</td>
<td>Flu</td>
<td></td>
</tr>
<tr>
<td>15-44</td>
<td>62.8</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>45-64</td>
<td>53.6</td>
<td>219</td>
<td>0.89</td>
</tr>
<tr>
<td>Social class</td>
<td>I-II</td>
<td>53.6</td>
<td>150</td>
</tr>
<tr>
<td>III</td>
<td>47.9</td>
<td>190</td>
<td>0.90</td>
</tr>
<tr>
<td>IV-V</td>
<td>48.8</td>
<td>327</td>
<td>0.93</td>
</tr>
<tr>
<td>Type of PCS</td>
<td>PCR 1984-1993</td>
<td>55.7</td>
<td>156</td>
</tr>
<tr>
<td>PCR 1994-1998</td>
<td>44.7</td>
<td>124</td>
<td>0.62</td>
</tr>
<tr>
<td>No PCR</td>
<td>52.2</td>
<td>129</td>
<td>0.71</td>
</tr>
<tr>
<td>Mutual or private</td>
<td>56.9</td>
<td>134</td>
<td>1.05</td>
</tr>
<tr>
<td>No usual PCS</td>
<td>47.1</td>
<td>99</td>
<td>0.89</td>
</tr>
<tr>
<td>Type of Health</td>
<td>Good</td>
<td>43.9</td>
<td>505</td>
</tr>
<tr>
<td>Fair-poor</td>
<td>71.5</td>
<td>173</td>
<td>3.02</td>
</tr>
<tr>
<td>Health centre</td>
<td>PCR</td>
<td>48.8</td>
<td>124</td>
</tr>
<tr>
<td>Mutual or private</td>
<td>54.1</td>
<td>218</td>
<td>1.14</td>
</tr>
</tbody>
</table>

**TABLE 3** Relationship Between Having Received Anti-Smoking Advice (in Smokers), Taking of Blood Pressure (in Adults Over 40 Years) and Flu Vaccination (in Greater Than 65 Year Olds), and the Type of Primary Care Service. Logistic Regression Multivariate Models (Control Variables): Age and Perceived State of Health. Barcelona Health Survey, 2000

<table>
<thead>
<tr>
<th>Anti-Smoking Advice</th>
<th>Taking of Blood Pressure</th>
<th>Flu Vaccine</th>
</tr>
</thead>
<tbody>
<tr>
<td>%</td>
<td>N</td>
<td>OR 95% CI</td>
</tr>
<tr>
<td>Age, y</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15-44</td>
<td>43.2</td>
<td>1</td>
</tr>
<tr>
<td>45-64</td>
<td>43.6</td>
<td>154</td>
</tr>
<tr>
<td>55-64</td>
<td>52.2</td>
<td>257</td>
</tr>
<tr>
<td>65-74</td>
<td>50.5</td>
<td>200</td>
</tr>
<tr>
<td>75-84</td>
<td>59.3</td>
<td>219</td>
</tr>
<tr>
<td>85+</td>
<td>66.2</td>
<td>104</td>
</tr>
</tbody>
</table>

**Note:** l Indicates primary care service; 95% CI, 95% confidence interval; N, number of cases; BP, blood pressure; OR, odds ratio; PCR, primary care reforms.

Age grouping changes for each dependent variable.

The number of cases are not the same for each independent variable due to missing values.
more often. It has been noted that an increase in preventive practices is associated with a decrease in the main medically avoidable causes of death (cerebrovascular diseases or due to hypertension causes) related to PCR. In the city of Barcelona, the reform was started in the districts with poor social and health indicators, which subsequently resulted in selective improvements in the mortality indicators.

According to the Catalonian Health Survey (ESCA), the declaration of blood pressure having been taken increased considerably between 1994 and 2002, with 26.3% of men and 29% women in 1994 to 48% and 50.8% in 2002, respectively. In our study, the prevalence was 66.8% in men and 70.5% in women, but the age range used in this case was much narrower. We have the same positive variation with anti-smoking advice: in the study presented we can see that this practice was carried out on 54.4% men and 51.8% women who smoked daily; whereas in 1992, less than one third of smokers, who received advice in 2000, were advised. The only practice that showed a disparity due to social class was that of anti-smoking advice, since, given equal need, it appears it was given more in the better off classes. An interesting point is to study the evolution of taking blood pressure in accordance with social class and gender.

No differences were observed between social classes in men in 1994, while women in social classes IV and V stated that it was taken less; curiously, in the present study women from social classes IV-V stated that it was taken more often. The fact that PCR was started in the more disadvantaged social classes may have influenced the results between classes. In 1998, it was noted that more men than women, as well as people with a higher level of education, had quit smoking. There was a decrease in the habit by women in the better off classes and an increase in the more disadvantaged classes. The results of our study show that class I-II women received more anti-smoking advice than the more disadvantaged classes. In 1998, the prevalence of ex-smokers was 31.9% in men and 27.3% in women. Other studies report that there are more ex-smokers in both sexes in classes I-II and among people with a higher level of education. Therefore, it is very important to reinforce the practice of giving advice on stopping smoking in the more disadvantaged classes.

A limitation of the study is that anti-smoking advice is only measured in smokers and not in ex-smokers. This means that it does not take into account the people in whom it is assumed the advice was effective.
PCR has clearly influenced the promotion of preventive practices in primary care in the public sector. We believe that it is positive and that encouraging and promoting the prevention from public services should continue, since its universality allows access to people of all social classes. At the same time, the changes that favoured reform must be promoted, since positive results have been obtained. We also consider that it is important to continue monitoring the impact of updating the health system, as well as the possibility of medically avoidable deaths.

What Is Known About the Subject
- In the past few years some studies have demonstrated improvements in primary care, mainly due to incorporating reforms.
- The increase in preventive practices coincides with a decrease in the main causes of medically avoidable deaths.
- Many studies have shown that there are health inequalities in age, gender, and social class.

What This Study Contributes
- The number of people who have received the three preventive practices studied has increased in the public health services in Barcelona.
- This increase has been seen to depend on the length of time of the reforms: the centres where the reforms have been in place longer perform more of these practices.
- No clear inequalities have been found in receiving these preventive practices, as regards gender and social class, but there is as regards age: the people of more advanced age received more preventive practices.

References
The study “Evaluation of primary health care reform: preventive practices and inequalities” presents very interesting results that add more knowledge to that already available on the subject of health inequalities. The authors did not find significant disparities according to social class or gender in receiving certain preventive practices, with the exception of anti-smoking advice, which was given more often to the better off classes. The study also has the virtue, from the perspective of evaluating primary health care reform, of approaching a subject that has not been analysed much in our country.

The term “inequality” refers to the differences, in terms of health, that are unnecessary, avoidable and unjust. The concept of “inequality in health” is associated with the different opportunities and resources within the reach of people depending on their social class, gender, geographic area, or ethnic group, that could improve their health. Over the last thirty years or so, many studies dedicated to inequalities have been published, mainly being based on the analysis of death rates and health surveys. In Spain, one of the pioneer groups is the very one that has produced the present article. These studies showed that the inequalities in health are enormous and in many cases cause increased mortality and a higher morbidity to the majority of risk factors of known diseases. The results also show that the inequalities are gradual, since they extend throughout the social scale and are not just a problem of the poorest people. Also, far from decreasing over time, they increase, since the more privileged classes of the population further improve their levels compared to the other social classes, probably because they benefit due to and in a greater proportion from actions directed at improving health.

In this study, substantial differences have not been found in the receiving of preventive activities. These results are promising, since several studies have demonstrated that the increase in these preventive practices is associated with a decrease in the main causes of medically avoidable mortality. However, it has to be remembered that access to quality health care does not guarantee that inequalities will be reduced. Political, economic, ecological, social, demographic, and historic factors affect our health. In fact, in the report by Acheson, 39 evidence based interventions to reduce health inequalities were analysed, only 3 of which involved the field of health care.

Currently, the challenge is in moving on from knowledge of the problem to action. Up until now, the policies carried out to reduce inequality are limited and the topic is not the object of debate in the political agenda. In this sense, note should be taken of the study which systematically reviewed 14 health plans and demonstrated the limited at