Inequalities in access to medical care by income in developed countries

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Abstract

Background: Most of the member countries of the Organization for Economic Cooperation and Development (OECD) aim to ensure equitable access to health care. This is often interpreted as requiring that care be available on the basis of need and not willingness or ability to pay. We sought to examine equity in physician utilization in 21 OECD countries for the year 2000.

Methods: Using data from national surveys or from the European Community Household Panel, we extracted the number of visits to a general practitioner or medical specialist over the previous 12 months. Visits were standardized for need differences using age, sex and reported health levels as proxies. We measured inequity in doctor utilization by income using concentration indices of the need-standardized use.

Results: We found inequity in physician utilization favouring patients who are better off in about half of the OECD countries studied. The degree of pro-rich inequity in doctor use is highest in the United States and Mexico, followed by Finland, Portugal and Sweden. In most countries, we found no evidence of inequity in the distribution of general practitioner visits across income groups, and where it does occur, it often indicates a pro-poor distribution. However, in all countries for which data are available, after controlling for need differences, people with higher incomes are significantly more likely to see a specialist than people with lower incomes and, in most countries, also more frequently. Pro-rich inequity is especially large in Portugal, Finland and Ireland.

Interpretation: Although in most OECD countries general practitioner care is distributed fairly equally and is often even pro-poor, the very pro-rich distribution of specialist care tends to make total doctor utilization somewhat pro-rich. This phenomenon appears to be universal, but it is reinforced when private insurance or private care options are offered.

In the member states of the Organization for Economic Cooperation and Development (OECD) represent the wealthiest and healthiest countries in the world. Most of them achieved nearly universal coverage of their populations for a fairly comprehensive package of medical services decades ago. Their governments are committed not only to pursuing the efficient delivery of high-quality medical care but also to ensuring equitable access to that care. In most OECD countries, access to good-quality physician services is ensured at relatively low and sometimes zero financial cost at the point of delivery. This is mainly the result of a variety of public insurance arrangements aimed at ensuring equitable access. The increasing tension between affordability and equity has spurred a number of countries to reconsider their public–private mix and to study reforms that may enhance efficiency while maintaining equity.

Like the World Health Organization, the OECD is committed to a watchful monitoring and comparison of the performance of its members’ health care systems, and equity in access is regarded as a key objective. In 2002, the OECD Health Project commissioned a cross-country comparative study to assess how the very diverse health care delivery systems of its members fare in terms of equitable access. This article summarizes some of the main results of this study, and full details of the data and methods used can be found in the study published by the OECD.
(1999), the surveys refer to 2000 or a more recent year, and all are nationally representative of the free-living adult population. They were selected on the basis of their suitability for this analysis and their comparability to the ECHP data.

Measurement of annual health care utilization was based on the ECHP question “During the past 12 months, about how many times have you consulted a general practitioner or a medical specialist?” Similar 12-month reference-period questions were used for the other countries, although not all surveys had all information. Some countries’ surveys (Australia, Germany, Mexico, Sweden and the United States) did not distinguish between general practitioner (GP) and specialist visits.

Variation in the number of physician visits is explained using health, income and other factors. As predictors of need for care, we used age, sex, self-reported general health and the presence and degree of limitation of any chronic physical or mental health problem, illness or disability. Income was measured by disposable (i.e., after-tax) household income per equivalent adult. Some surveys (e.g., for Australia, Canada) provided only categorical income data. Other explanatory variables used in the analysis were education and activity status. Where available, 2 more policy-relevant variables were used: (private) health insurance coverage for medical care expenditures, and region of residence (as a proxy for availability of care) or urban–rural division. For most ECHP-based coun-
tries, no health insurance information and only very limited regional identifier information were available.

For all types of care, we computed need-expected use — or use adjusted according to expected need — by running a linear regression for all people in the sample on the full set of explanatory variables. For need predictors, we used indicator variables for 9 age–sex groups, 4 self-assessed health groups, and 2 groups indicating the extent to which a person is hampered in his or her usual activities by a chronic condition or handicap. Need for care is then defined as a person’s expected use of medical care on the basis of actual need characteristics, with the effects of all other variables “neutralized” by their being set at their sample means in the prediction stage. Need then indicates the amount of medical care a person would have received had that person been treated the same as others with the same need characteristics, on average. We have used sample weighted least squares estimation, since the inequality indices and quintile distributions obtained are very similar to those obtained using more sophisticated nonlinear models.2,6

To measure the degree of horizontal inequity in health care use we compared the actual observed distribution of medical care by income with the need-expected distribution of use. As such, the method assumes that the average treatment rates for each country, and the average treatment differences between people in unequal need, reflect the accepted overall “norm” for that country. In other words, this method looks only at relative inequalities in mean use levels by income after any need differences have been standardized for.

The degree of inequality in health care utilization can be measured using the concept of a concentration curve7,8 (Fig. 1). This plots the cumulative distribution of use as a function of the cumulative distribution of the population ranked by its income. A distribution is equal if its concentration curve coincides with the diagonal. A curve that lies above the diagonal indicates that use is more concentrated among the poor. A concentration index measures the degree of inequality in actual use as the area between the curve and the diagonal. Our index of horizontal inequity (HI) is simply a concentration index of inequality in need-standardized use. Robust estimates of the concentration index and HI index and its standard error can easily be obtained by running a convenient (weighted least squares) regression of a transformation of the variable on relative rank.

The index of horizontal inequity (HI) is given by the formula:

\[
HI = \frac{2}{n^2} \sum_{i=1}^{n} \sum_{j=1}^{n} w_{ij} \left( X_i - X_j \right) \left( N_i - N_j \right)
\]

where \(w_{ij}\) is the weight assigned to each pair of individuals, \(X_i\) and \(X_j\) are the values of the variable for individuals \(i\) and \(j\), and \(N_i\) and \(N_j\) are the ranks of the individuals in the population.

The index is calculated at each income quintile and divided by the proportion of the population at each quintile. The HI index is 0 when the distribution is equal, and ranges from 0 to 1, with higher values indicating greater horizontal inequity.

Table 1: Surveys used for OECD countries to obtain study data

| Country      | Survey                                      | Year | Sample size | Age limit, yr |
|--------------|---------------------------------------------|------|-------------|---------------|
| Australia    | National Health Survey                       | 2001 | 15 516      | ≥ 16          |
| Austria      | ECHP                                        | 2000 | 5 610       | ≥ 16          |
| Belgium      | ECHP                                        | 2000 | 4 483       | ≥ 16          |
| Canada       | Community Health Survey                     | 2001 | 107 613     | ≥ 16          |
| Denmark      | ECHP                                        | 2000 | 3 738       | ≥ 16          |
| Finland      | ECHP                                        | 2000 | 5 587       | ≥ 16          |
| France       | Health and Insurance Survey linked to social insurance records | 2000 | 4 381 | ≥ 16 |
| Germany      | Socio-Economic Panel                        | 2001 | 12 961      | ≥ 16          |
| Greece       | ECHP                                        | 2000 | 8 983       | ≥ 16          |
| Hungary      | National Health Monitoring Survey           | 2000 | 4 404       | ≥ 16          |
| Ireland      | ECHP                                        | 2000 | 4 601       | ≥ 16          |
| Italy        | ECHP                                        | 2000 | 14 155      | ≥ 16          |
| Mexico       | National Health Survey                      | 2001 | 153 865     | ≥ 16          |
| Netherlands  | ECHP                                        | 2000 | 8 706       | ≥ 16          |
| Norway       | Level of living survey - panel              | 2000 | 3 709       | 16–80         |
| Portugal     | ECHP                                        | 2000 | 10 276      | ≥ 16          |
| Sweden       | Survey of living conditions                 | 2001 | 5 054       | 16–80         |
| Spain        | ECHP                                        | 2000 | 12 182      | ≥ 16          |
| Switzerland  | National Health Survey                      | 2002 | 9 827       | ≥ 18          |
| United Kingdom | British Household Panel Survey              | 2001 | 13 712      | ≥ 16          |
| United States | Medical Expenditure Panel Survey            | 1999 | 16 557      | ≥ 16          |

Note: OECD = Organization for Economic Cooperation and Development, ECHP = European Community Household Panel.
Differences in remuneration types

Sample of a concentration curve of medical care use. Distribution of use is equal

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80
60
Cumulative % of medical care
100
40
20
0
Cumulative % of population, ranked by income

20
100
80
60
40
0
Cumulative % of population, ranked by income

advice or care may play some role here.

and cultural differences in seeking medical
care. These differences vary by country,
with higher income groups being more intensive users of
doctor services than higher income
income groups are more intensive users of
doctor services than higher income
groups. The differences vary by country,
ng a GP appears to be distributed according to need, and is not much influenced by income.

The pattern is very different for specialist visits: in all countries, we found significant pro-rich inequity in the likelihood of contacting a specialist. Although there are important differences between countries in the degree to which this occurs, it is clear that, on the whole, access to specialist services does not appear to be equal across income groups. The pattern seen in non-ECHP countries (Canada, France, Hungary, Norway and Switzerland) does not differ much from that of ECHP countries in this respect. Everywhere, given need, higher-income people are more likely to seek specialist care than lower-income people. This is particularly true in countries that offer options to “go private” (e.g., Finland, Portugal, Ireland, Italy and Spain), but it also holds true in countries without such private options and with GP gatekeepers (e.g., Denmark, Norway and Sweden). The finding is much weaker in both the Netherlands, which has no private health care options, and the UK, which does.

Inequalities in mean number of visits

On the whole, fewer countries show pro-rich inequity indices for the mean doctor visit frequency than for the mean visit fraction (Fig. 5). The HI index is significantly positive (pro-rich) only in Finland, Portugal, United States, Sweden and Austria, and even significantly negative (pro-poor) for Belgium and Ireland. This means that the conditional number of (nonzero) visits (i.e., given at least one) must favour the poor. Indeed, we found (data not shown) that in several countries, notably Belgium, Canada, Ireland, the Netherlands and Switzerland, HI indices for conditional number of visits are significantly negative, which indicates inequity favouring the poor. But in another 4 countries, Austria, Finland, Portugal and the United States, the index is still significantly positive. This explains why these countries are among those showing significant positive inequity in all visits. It is, however, important to differentiate between GP and specialist visits, as can be seen for the 17 countries for which this was possible. The need-standardized distributions of GP visits are significantly pro-poor in 10 countries. In only one country, Finland, is the HI index significantly positive (see further discussion of this result below). But given that the GP visit probability was equally distributed, this must mean that most of the pro-poor distributional pattern in mean visits is generated by a pro-poor conditional use — in other words, among those with at least one visit per year. In almost every OECD country, the probability of seeing a GP is fairly equally distributed across income, but lower-income patients, once they do see a GP, are more likely to consult more often.

The distributions of visits to a medical specialist show a very different picture. After need standardization, virtually all distributions are significantly in favour of the higher-income groups. The only exceptions are Norway, the Netherlands and the UK, where the HI indices are positive but not significantly different from zero. In most countries, the degree of inequity is somewhat higher in total specialist visits than in the probability of a visit, which suggests that here — in contrast to GP visits — the conditional use (given at least one visit) generally
reinforces the patterns induced by the inequitable distribution of the probability of any visit.

**Interpretation**

In this article we summarize findings from the largest and most comparable analysis of between-country differences and within-country differences by income in doctor visit rates in OECD countries to date. Some of the findings corroborate those obtained in smaller, earlier studies, but they shed further light on the sources of cross-country differences. The results show that people in OECD countries differ tremendously in their average doctor consultation behaviour, but in all of the countries, observed relative distributions around these means tend to favour the lower-income groups. This is because services tend to be distributed according to needs that are likewise concentrated among those who are worse off. Nonetheless, need-standardized distributions tend to favour those who are better off in about half of the countries, for both contact probability and total number of visits, but the degree of this measured inequity is fairly small. The degree of pro-rich inequity in doctor use is found to be highest in the United States and Mexico, the 2 countries without universal coverage of their populations, followed by Finland, Portugal and Sweden.

Breaking down total physician utilization into primary care (GP) and secondary care (specialist) physician visits reveals very divergent patterns. In most countries, GP visits are equitably distributed across income groups, and any significant inequity that emerges is often pro-poor. Pro-poor discrimination through copayment exemptions (as in Ireland) or reduced rates (as in Belgium) seems to play some role here. The only country with a significant pro-rich GP visit distribution is Finland, where some occupational health and private doctor visits were reported as GP visits; primary care visits to doctors in public health centres only have also been found to be pro-poor in Finland. The picture is very different for medical specialist consultations. The most striking finding is that in all countries, despite the often very different system characteristics, after controlling for need differences, the rich are significantly more likely to see a specialist than the poor and, in most countries, more frequently. Pro-rich inequity is large, and the gradients seem particularly steep in Portugal, Finland, Ireland and Italy, 4 countries where private insurance and direct private payments play some role in the access to specialist services. Surprisingly, this is not the case in countries like the UK. The UK results (which are based on a categorical measure of outpatient rather than specialist visits in the 2001 wave of the British Household Panel Survey) are puzzling and in sharp contrast to the strong pro-rich inequity in specialist use found earlier using the 1996 ECHP. But the results are consistent with recent findings for 1998–2000 from the Health Survey of England, which also suggest a pro-poor distribution of outpatient visits.

Although our study adds considerably to the body of comparative knowledge on the equity achievements of health care systems, it is not without limitations. The available survey data do not allow us to go beyond comparisons of reported quantities of use to examine potential differences in quality of care. Inequities in quality may exacerbate inequities in quantity. It is well-known that in many countries, especially those in which private health services are offered alongside public services, not

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**Fig. 3:** Annual adult population mean numbers of consultations with any doctor, general practitioner (GP) and specialist in 18 OECD countries in 2000. Countries are ranked by mean number of doctor visits. UK and German results reflect data obtained in the 1996 ECHP.
**Fig. 4:** Horizontal inequity (HI) indices for the annual probability of visiting a doctor in 21 OECD countries. Countries are ranked by HI for doctor visits. German general practitioner (GP) and specialist indices reflect data obtained in the 1996 ECHP.

**Fig. 5:** Horizontal inequity (HI) indices for the annual mean number of visits to a doctor in 19 OECD countries. Countries are ranked by HI index for doctor visits. German general practitioner (GP) and specialist indices reflect data obtained in the 1996 ECHP.
all doctor visits can be assumed to be of the same quality. The results of a number of recent studies show that higher-income groups are more likely to use private services.\textsuperscript{5,10} The other obvious area to look into to improve current estimates of inequity is the “needs” adjustment. Clearly, some of the surveys used offer greater potential to measure the care needs of respondents than the common set of simple (though powerful) self-assessed health indicators used in this study. Sensitivity analyses have shown that inclusion of a much larger battery of health measures into the needs adjustment does not change the main thrust of these findings very much, and tends to find more pro-rich (or less pro-poor) inequity. Alternatively, greater need comparability could be obtained by focusing attention on specific treatments for specific subpopulations (e.g., pregnant women, chronically ill patients), but this would come at the price of losing the system-wide perspective.

Finally, an important question is whether and to what extent any inequities in health care usage reported here are not only statistically significant but also policy-relevant. This depends a lot on the extent to which they also translate into inequalities in health outcomes. Evidence of socioeconomic inequities in access to cardiology\textsuperscript{11} and stroke\textsuperscript{12} treatment in Ontario suggests that socioeconomic differences in diagnostic and therapeutic utilization are not trivial and do appear to translate into differential outcomes by income. It seems therefore justified to hypothesize that at least some of the income-related patterns of health care documented here may lead to similar differences in health outcomes.

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Editor’s take

- Member countries of the Organization for Economic Cooperation and Development (OECD) include the world’s wealthiest nations. However, access to health care may not be equitable across income groups in these countries.

- The authors report the results of a survey study of the general public living in OECD countries. They found that although care from general practitioners was distributed equally, specialist care was biased to patients with higher incomes.

Implications for practice: Richer patients may be more likely to request specialist care; however, it is unknown whether their access to specialist care represents the meeting of a genuine need. Conversely, poorer (and possibly less educated) patients may not advocate for their own health needs as effectively as do patients with higher incomes.