

Income-related inequalities and inequities in health care utilisation: Belgium and the Netherlands compared

by

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Abstract

The Belgian Health Interview Survey held in 1997 is very comparable to the Netherlands Health Interview Survey 1997. We use data from both surveys to compare levels and distributions of health care utilization in both countries. In addition to testing for differences in level and distribution of medical care utilization, this study also examines whether any of these differences are attributable to differences in health care system characteristics. Need-standardised concentration indices are used to measure the degree of income-related inequality and inequity. The findings are that, in general, Belgians are more intensive users of the health care system, with a higher use of the GP, the specialist, the hospital and prescribed

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medicines. The Dutch, on the other hand, report more frequent contacts with the dentist. No significant inequity is found for the utilization of GP or hospital inpatient care. Significant inequity is observed in both countries with respect to the number of specialist contacts only: higher income individuals make more use of specialist services than expected on the basis of predicted need. The degree of such inequitable specialist use is remarkably similar given the substantial differences in referral systems, copayments and doctor availability between both countries. Neither the abundant supply and direct accessibility of medical specialists in Belgium, nor the private insurance status of higher income individuals in the Netherlands can account for this finding.

Conclusion: *Despite substantial system differences, there are also remarkable similarities in utilisation patterns by income in both countries. For GP and inpatient hospital use, equal access for equal need, irrespective of income, appears to hold, but not for the specialist. Other factors than delivery system characteristics, like, for instance, differential care preferences or quality perceptions between rich and poor, may be responsible for the higher-than-expected use of medical specialist services by higher income individuals.*

1. Introduction

Belgium and The Netherlands are two small countries which have a lot in common but nevertheless differ in some subtle respects. Solidarity in financing and equity in access to and utilisation of health care has been an important consideration in shaping the countries' systems of financing and delivering health care. Both countries have long achieved virtually universal coverage for a fairly comprehensive package of services by requiring citizens to have either public health insurance coverage through membership of sickness funds, or private cover as for high-income groups in the Netherlands. This ensures access to high-quality medical services at heavily subsidised or even zero prices for most of the population, and especially the low-income and vulnerable groups. Although in many ways very comparable countries, some interesting differences in health care system characteristics remain. In this paper we address the following questions. First, to what extent have both countries' health care systems managed to achieve the objective of horizontal equity, i.e. equal treatment for equal need, irrespective of income status, for general practitioner, medical specialist and hospital care utilisation? Second, to what extent can

any inequities found be attributed to differences in country system characteristics?

Previous international comparative work (e.g. Van Doorslaer *et al.*, (1)) has shown that these two countries differ substantially in terms of horizontal equity in health care delivery. In Belgium GP and hospital care utilisation was found to be distributed pro-poor and no inequity was found for the utilisation of specialist care. In The Netherlands, on the other hand, no significant inequity was observed for the distribution of GP and hospital care across income groups, but significant pro-rich inequity was detected with respect to specialist care use. The Dutch results were more in line with results obtained for other countries included in the international comparison. Despite great efforts spent at ensuring data comparability, the comparison was still hampered by the fact that country-specific surveys were used which differed in a number of respects and which may have affected the results. In particular, the wording of some of the questions and the recall periods for health care utilisation were different between the 1995 Panel Study of Belgian Households and the 1992 Netherlands Health Interview Survey.

The availability of the 1997 Belgian Health Interview Survey (BHIS) generated improved prospects for a more adequate comparison because its conception was very much inspired by the annual Netherlands Health Interview Survey (NHIS). In this paper, we have attempted to exploit the high degree of comparability between both datasets by assessing the degree of horizontal equity in health care utilisation using the 1997 versions of both surveys. We use essentially the same methods and the same types of utilisation (GP, specialist and hospital care) as those used in Van Doorslaer *et al.* (1) but we go beyond the measurement of inequity by exploring the potential role of two factors which may influence the extent of income-related inequalities in medical care utilisation: (a) the effect of out-of-pocket prices for medical services as reflected in the type of health insurance coverage and (b) the effect of availability of care services as reflected in the density of medical supply, i.e. by the number of GPs, specialists and hospital beds per 1000 population in the region of residence of the respondent.

The paper is organised as follows. In the next section we briefly describe the main features of the health care system in NL and B which may help to explain any differentials in utilisation patterns. Section 3 outlines the methods used for the measurement and explanation of horizontal inequity in health care use, followed by the results in section 4. Conclusions are presented in section 5.

2. Comparison of relevant health care system features in Belgium and The Netherlands

As indicated above, both countries have achieved a fairly high degree of health insurance coverage, both in terms of population and in terms of services covered. In Belgium, virtually the entire population is covered by compulsory sickness fund membership for so-called major risks and 85% (all except the self-employed) is covered for so-called minor risks as well (2). Coverage does not, however, mean that health care is provided for free as for most types of service some proportional copayment is required. In general, insured pay about 25-40% of the agreed official fee schedules but certain groups (the so-called WOPI, or widows, orphans, pensioners and invalids with an income below a certain threshold) only pay a reduced copayment rate of 10%. Both GPs and specialist services are remunerated on a fee-for-service basis and generally insured obtain reimbursement of the non-copayment share through their sickness fund. Patients have free choice of provider, and have direct access to specialist care without referral from a GP (no gatekeeper system). Belgium is renowned for its abundant medical supply, in particular the number of GPs per 1000 population is amongst the highest in Europe. In addition, there are wide-ranging regional differences in medical supply with on average the south of the country (Wallonia) having higher medical supply densities than the north (Flanders).

In The Netherlands, there are basically three types of *health insurance coverage*. About 55% of the population (those with wages or social security benefits below a certain threshold level) are compulsory insured with sickness funds. Most of their care received is essentially free of charge at the point of usage but they have to be registered with one GP practice who receives an annual capitation fee per patient on its list and no fee-for-service. There are no copayments and sickness fund patients need a GP referral before being able to see a medical specialist. The other two groups of insured have either purchased private insurance coverage (about 40%) or are entitled to statutory coverage as civil servants (about 6%). For these two groups, care is generally not free at the point of usage since most private insurance policies have substantial deductibles and there are also some copayments (up to an income-related annual maximum amount) in the civil servants insurance (IZA). It is well known that in Belgium the WOPIs with the lower copayment rates have higher rates of physician utilisation (cf e.g. (3)) and that in the Netherlands the privately and IZA insured have lower rates of medical care utilisation than the sickness fund insured (cf [4]). For both countries, several authors have investigated to what extent the differential use patterns between the various groups of insured can

be attributed to the degree of insurance coverage. After controlling for differences in health status and other relevant background characteristics of these various groups, Van Vliet *et al* (4) find that there is no statistically significant difference in the utilisation of six different types of health care between the sickness fund and the IZA insured in the Netherlands. On the other hand, they do find a substantial and significant negative effect of the presence of deductibles in the privately insured group. For Belgium, using the 1997 Health Interview Survey and after controlling for a large number of background characteristics of respondents, Adriaenssen and De Graeve (5) find that the WOPIs with a reduced rate of copayment have higher GP and physiotherapy utilisation and that those with a supplementary private insurance coverage have higher rates of specialist and hospital utilisation. These findings suggest that out-of-pocket payments do seem to have an independent effect on medical care utilisation, at least for the Belgian sickness fund patients and for the Dutch privately insured.

System differences between both countries in medical supply include the provider remuneration arrangement and the availability and distribution of the supply of medical services. Belgium has a much higher density of medical care providers than the Netherlands with three times as many GPs and specialists and 70% more hospital beds per 1000 population (see Table 1). In addition, these higher numbers of doctors and hospital

TABLE 1
Comparison of health care system characteristics

	Belgium	Netherlands
Health insurance coverage	Comprehensive and universal cover (except self-employed) but substantial rates of cost sharing Reduced level of cost sharing for low-income WOPI GPs: fee-for-service (FFS)	Free care for public patients (approxim. bottom 60%) Privately insured with incomplete cover (approxim. top 40%) GPs: Public: capitation; Private: FFS
Provider remuneration	Specialists: FFS	Specialists: FFS
Number of GPs (*)	13,7	4,4
Number of medical specialists (*)	10,7	3,9
Acute hospital beds (*)	50,8	32,9
Access to secondary care	Direct access	GP referral required ("gatekeeper")

(*) per 10 000 inhabitants, Sources: NIS (1998), CBS (1998).

beds are much more unevenly distributed across the country than in The Netherlands. Not only the mean provider densities but also the standard deviations around these are much higher in Belgium than in Holland. For instance, the physician densities in Belgium range across the 38 *arrondissements* (represented in the survey) from 10 to 25 for GP and from 1.4 to 36 for specialists per 10000 inhabitants. The corresponding extreme values across the 59 "WGR regions" range from 3.9 to 5.5 for GPs and from 0 to 6.5 for specialists per 10 000 inhabitants in The Netherlands. There is also the well-known language difference between north and south in Belgium which leads to separate medical education and training circuits and as a result potentially different practice styles. This implies that within-country differences in geographical access to medical services are probably higher in Belgium than in the Netherlands. Finally, there are some differences in remuneration methods in both countries. Whereas virtually all doctor services in Belgium are provided fee-for-service, implying that patients pay the full fee first out-of-pocket and obtain partial reimbursement later from their sickness fund, in The Netherlands sickness fund patients do not have to pay anything to see a doctor. Their GP is paid an annual capitation fee for the patients on his/her list and specialists receive the fee for their services directly from the third party, the sickness fund. Privately insured generally do have to pay the fees per visit or item of service to any doctor and obtain reimbursement later only if the annual deductible limit of their (household level) insurance policy is exceeded. Last but not least, Belgian patients have free access to medical specialists who often operate private practices at their own offices (alongside the hospital outpatient department) without prior GP referral. In the Dutch GP gatekeeper controlled health system, public patients (and usually also those with private cover) need a referral from their GP "gatekeeper" before being able to see a specialist in the hospital ambulatory patients department.

All of the above suggests that there may be counterbalancing powers at work with respect to the *level* of medical use. On the one hand, Belgian patients seem to have more direct access to a more abundant supply of medical services, all remunerated fee-for-service, which might drive up the level of supplier-induced demand. On the other hand, most Belgian patients face much higher levels of copayment than Dutch public patients, which might have a dampening effect on medical care utilisation. After all, the copayments are called "*ticket modérateur*" or "*remgeld*" because they are assumed to have a negative effect on "frivolous" use of subsidized health care. With respect to the *distribution* of medical care use, the outcome of differentials across income groups is less predictable. In both countries, lower income groups enjoy more generous public coverage which may provide a "pro-poor" treatment incentive, though the share of

the “low income” group with lower cost sharing is much higher in the Netherlands (about 60%) than in Belgium (about 10%). Moreover, in Belgium even these groups are in principle required to prepay before obtaining reimbursement whereas care is free of any charge in the Netherlands. In the Netherlands, higher income privately insured groups face higher out-of-pocket costs but their GPs are paid fee-for-service which makes private patients financially more attractive and generates a disincentive for referral. Finally, to the extent that the geographical distribution of medical supply in Belgium is more unequal and related to regional income differences, it is possible that regional access differences may be able to explain a greater part of any income-related use differences in Belgium than in the Netherlands.

In what follows we will aim to test some of the above hypotheses/speculations in the analysis of income-related patterns of health care utilisation.

3. Defining and measuring equity in medical care utilisation

In this paper we follow the now standard definition of horizontal equity in health care delivery as proposed in the health economics literature. Van Doorslaer *et al* (6) and Wagstaff and van Doorslaer (7) argue that the analysis of health policy documents of Western European countries suggests that the egalitarian principle of horizontal equity commands great support. It is defined as the equal treatment of individuals with equal needs, irrespective of characteristics such as ability to pay (or income). It can be measured empirically by comparing the *observed* distribution of health care use across income with the *expected* distribution on the basis of need. An individual’s health care need can be operationalized as the predicted use of health care on the basis of the individual’s need characteristics as indicated by need proxies such as health status indicators, age and sex and if it can be assumed that the average relationship between these characteristics and use (as embodied, for instance, in a regression equation for an entire population) is an acceptable “norm” for what care is “needed” in certain circumstances.

Wagstaff and van Doorslaer (8) recently proposed a new approach to measuring inequity in the delivery of health care, that has several advantages over the methods employed in earlier work (e.g (9, 10)). Basically, the method proceeds as follows. It compares the concentration curve of the actual observed medical care utilisation $L_M(p)$ to the concentration

curve of the medical care utilisation that can be *expected on the basis of need*, $L_N(p)$. The concentration curve of utilisation $L_M(p)$ is defined as the cumulative proportion of utilisation as a function of the cumulative proportion of the population ranked by their income. As health care utilisation is usually more heavily concentrated amongst the more deprived groups in society, such curves tend to lie above the diagonal. If it were equally distributed across income, it would be the diagonal. Need-expected utilisation is defined as the indirectly standardised value of medical care utilisation for the individual or group and can be obtained as the predicted value from running a regression of medical care utilisation on a set of need indicator variables. The degree of horizontal (in)equity can be determined by comparing the location of both curves. If the $L_N(p)$ lies *above* (below) the $L_M(p)$, as shown in Fig. 1, the lower income groups receive less care than would be expected on the basis of their need and there is horizontal inequity *favouring the better-off* (worse-off).

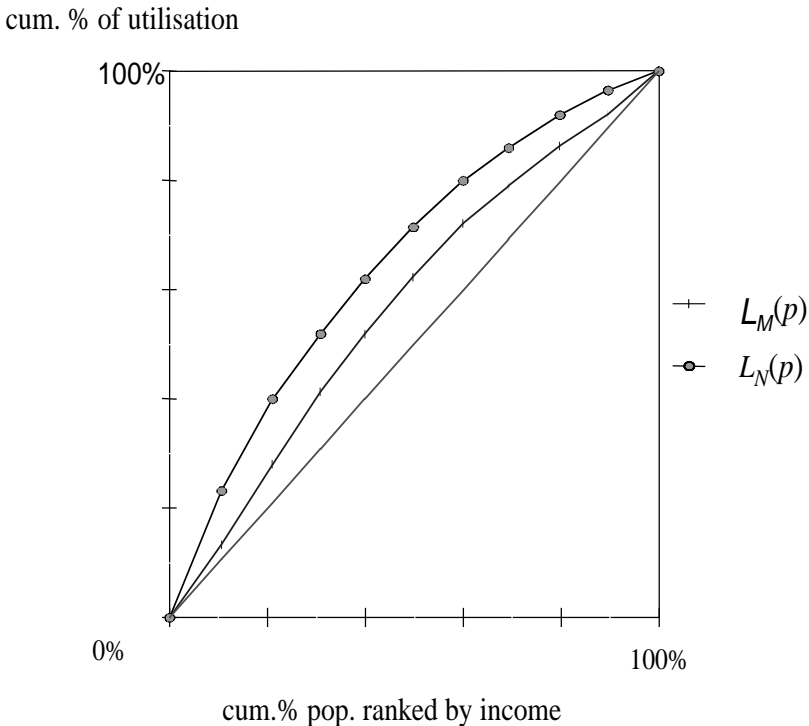


Fig. 1: Concentration curves for actual and need-expected medical care.

The Wagstaff-Van Doorslaer Index of Horizontal Inequity HI_{WV} is defined as twice the area between the need and medical care concentration curves, or equivalently as

$$(1) \quad HI_{WV} = 2 \int_0^1 [L_N(R) - L_M(R)] dR = C_M - C_N$$

where C_M is the concentration index for medical care and C_N is the concentration index for need (i.e. indirectly standardised – or expected – medical care consumption). A positive (negative) value of HI_{WV} indicates horizontal inequity favouring the better-off (worse-off), whilst a zero value indicates that the factor of proportionality (between medical care and need) is the same irrespective of income. It is worth pointing out that it is possible that HI_{WV} can be equal to zero even when the two concentration curves $L_M(p)$ and $L_N(p)$ do *not* coincide. This could be the case, for instance, when inequity favouring the poor at the bottom end of the income distribution compensates inequity favouring the rich at the high end of the distribution. In other words, coinciding concentration curves is a sufficient but not a necessary condition for the index value to be zero.

4. Data and methods

Data

The data for this analysis are taken from the Belgian and Dutch National Health Interview surveys for 1997. The comparability between both surveys is very high, as can be verified from Table 2, which summarizes some of the main characteristics. The main differences are in the income and the self-assessed health variable. In Belgium, the five response categories to the question “How is your health status in general?” are “very good, good, fair, poor and very poor” whereas the five response categories in the Netherlands are “very good, good, fair, sometimes good and sometimes poor, and poor”. This means that the two bottom categories are not identical and therefore not fully comparable. The income differences are larger. In Belgium, income is recorded as the total *disposable monthly* household income. The Dutch survey records the total *annual net* household income which has been corrected for taxes. For both countries, a *per-equivalent-adult* income measure was constructed by dividing the total income through by a conventional equivalence factor equal to the (the square root of) the number of adults plus half the number of children. After deletion of cases with either missing or implausible income values (i.e. incomes below 100 or above 10 000 euros per month) we retained a usable sample size of 18+ adults of 7297 for Belgium and 6741 for the Netherlands.

TABLE 2
Health Interview Survey comparability

	Belgium	Netherlands
Year	1997	1997
Sample size	10 221	10 898
Non-response	39,5%	40,6%
Income	Household disposable income per month	Household net income per year
Self-assessed health	5 levels: Very good to very poor	5 levels: Very good to poor
Chronic ill-health	Hampered by long-standing illness, condition or handicap (yes/no)	Idem

The empirical analysis focuses on three types of care which are identically measured in both surveys as the dependent variables in the regression equations: (a) the number GP visits in the last 2 months, (b) the number of specialist visits in the last 2 months and (c) the number of hospital stays in the last year. It is well-known that Ordinary Least Squares (OLS) regression is not the most appropriate method for estimating models for the use of medical care, which typically come as count data with a large number of zero observations. However, Van Doorslaer *et al* (1) and Wagstaff and van Doorslaer (8) illustrate that the results (for the Netherlands) of more complicated two-part count models hardly differ from the simple OLS-based results in terms of HI_{WV} . The simple linear OLS equation used to estimate need-expected utilisation includes as explanatory variables: (i) a series of nine dummy (0/1) variables to indicate differences across ten age-sex categories, (ii) a series of 4 dummies derived from the five responses to the self-assessed health (SAH) question, (iii) a dummy variable indicating the presence of a chronic condition. In the exploratory stage we add two sets of variables to this equation. In order to account for differences in medical supply we add variables indicating the density of GPs, specialists and hospital beds in the arrondissement (B) or WGR region (NL) according to the respondent's region of residence. To account for differences in health insurance coverage, we add for Belgium (i) a dummy for reduced copayment rate for WOPs and (ii) a dummy for a hospitalisation insurance for copayments, and for the Netherlands a dummy variable indicating the presence of an annual deductible of at least 500 guilders.

Methods

There are several ways in which the indices can be computed. If m is the sample mean of medical care use m_i of individual i , then C_M can be computed as

$$(2) \quad C_M = \frac{2}{N \cdot m} \sum_{i=1}^N m_i R_i - 1,$$

where N is the sample size and R_i is the relative rank of the i th person. C_N can be calculated analogously by replacing m_i and m with m_i^* and m^* , the OLS-predicted medical care use of individual i and its mean, respectively. Alternatively, C_M and C_N can be computed by means of "convenient" regressions (cf. [11]). Thus, for example, C_M can be computed using:

$$(3) \quad 2\sigma_R^2 [m_i / m] = \gamma_1 + \delta_1 R_i + u_1$$

where σ_R^2 denotes the variance of the relative rank. The OLS estimator of δ_1 is equal to

$$(4) \quad \hat{\delta}_1 = \frac{2}{N \cdot m} \sum_{i=1}^N (m_i - m) (R_i - \frac{1}{2}),$$

which, from eqn. (2), makes $\hat{\delta}_1$ equal to C_M .

Application of OLS to eqn. (5) automatically provides a standard error for C_M and, when using indirectly standardized values, for C_N . Obtaining a standard error for HI_{WV} is not so straightforward, though, since C_M and C_N are not independently distributed. A standard error for HI_{WV} could be obtained using the following convenient regression:

$$(5) \quad 2\sigma_R^2 \left[\frac{m_i}{m} - \frac{m_i^*}{m^*} \right] = \gamma_2 + \delta_2 R_i + u_i,$$

where m^* is the mean of m_i^* . The OLS estimate of δ_2 will be equal to HI_{WV} and from the regression one obtains a standard error of HI_{WV} .

A simple test of the influence of health system characteristics on the degree of horizontal inequity can be performed by including among the X variables used to predict also some non-need variables, like health insurance coverage or medical supply densities. The question to be answered

then is: does the observed degree of inequity (or HI_{WV}) change if we “pretend” that need is also determined by these “other” determinants of health care use, i.e. if we include non-need variables in the set of X’s? It is quite possible that observed inequities or differential treatment at high and low incomes is due to some extent to systematic differences in insurance coverage or availability of medical supply if higher income groups, for instance, have better (or worse) cover or if they tend to live in areas with more (or less) doctors or hospitals. This is the final, exploratory stage of the analysis where we are looking for potential explanations for our initial findings.

5. Results

We first present a simple comparison of mean medical care utilisation in both countries in Table 3. All data have been weighted by the relevant sample weights in order to obtain figures representative of the entire population. We can see that utilisation is generally significantly higher in Belgium than in the Netherlands but the differences are not anywhere near the differences corresponding to the medical supply densities reported in Table 1. The differences are also smaller than those corresponding to the published annual mean consumption levels on the basis of both surveys (CBS (12); Bietlot *et al* (13)). Especially our Belgian GP and specialist utilisation rates appear to be lower than those in (13), probably because of sample differences. Interestingly but surprisingly, the difference is largest with respect to hospital admissions, for which the density difference is smallest between the two countries. This finding suggests that the factors contributing to a higher level of demand in Belgium, like the direct access to an abundant medical supply coupled with fee-for-service remuneration dominate the factors which may deter from using medical services, like the much higher level of copayments.

TABLE 3
Differences in mean health care use

	Belgium	Netherlands	Belgium/ Netherlands
Number of GP contacts in last 2 months	0.76	0.69	1.11
Number of specialist contacts in last 2 months	0.33	0.29	1.15
Number of hospital admissions in last 12 months	0.146	0.076	1.92

These utilisation differentials were analysed further by Oranje (14). He found that the probability of seeing a GP, a medical specialist, of the use of prescribed medicines and of the use of unprescribed medicines was higher in Belgium than in the Netherlands. For only one type of care utilisation the reverse was true: whereas 75% of Dutch adults had a contact with their dentist, only 50% of Belgian adults reported such a contact in 1997. However, for those with at least one contact with a GP, the probability of a referral to a specialist was somewhat higher in the Netherlands. Similarly, of all specialist contacts in Belgium, 52% was at the patient's own initiative (i.e. without a referral) whereas the same figure was only 20% in the Netherlands where 64% of all specialist contacts was on referral from a GP. This illustrates the impact of the gatekeeper system on utilisation behaviour.

TABLE 4
Inequality indices (C_M) and inequity indices (HI_{WV}) for medical care utilisation (*)

	Belgium		Netherlands	
	C_M	HI_{WV}	C_M	HI_{WV}
GP visits	- 0,0879 (0,010)	0,0144 (0,009)	- 0,0994 (0,019)	- 0,0011 (0,020)
Specialist visits	0,0188 (0,015)	0,0867 (0,015)	- 0,0543 (0,032)	0,0673 (0,032)
Hospital stays	- 0,1290 (0,021)	0,0004 (0,021)	- 0,1650 (0,030)	- 0,0172 (0,031)

(*) Standard errors in parentheses, indices in bold if stat signif diff from zero, i.e. if its (absolute) t-value exceeds 1.96.

We then turn to Table 4 which provides the estimated C_M and HI_{WV} indices. It is interesting to see that the results are very similar in both countries. In both countries, lower income groups are much more intensive users of the GP and especially the hospital, as indicated by the negative C_M indices. This is not true for specialist care: although its C_M is negative in the NL and positive in B, it is never significantly different from zero, indicating that on average, all income groups are equally intensive users of specialist services. However, after controlling for need differences, we see that all HI_{WV} indices become much more positive (or less negative) than the C_M indices. This obviously reflects the fact that need also tends to be much more concentrated among the bottom income groups. We see that all HI_{WV} indices are slightly higher in Belgium than in the Netherlands, but only the indices for medical specialist visits are statistically significantly different from zero (though not from each other). This means that we find

significant pro-rich inequity in the use of specialist services in both countries or, equivalently, that higher income groups seem to be using more specialist services than we would expect on the basis of their estimated needs for such care. We do not find a significant degree of inequity in the two other types of care use, nor in the difference between countries, indicating that “equal treatment for equal need” appears, on average, to have been obtained for these care types in both countries.

Table 5 provides further detail of the estimated regression equations used to produce the need-expected utilisation. There are some striking differences between the countries. For example, if we look at the dummy indicating the “excess” utilisation of females of fertile age (F18-35) over males in the same age group, we see that Dutch women have many more GP contacts, whereas Belgian women have many more specialist contacts and hospital admissions. This reflects the common knowledge that deliveries in Belgium tend to be much more “medicalized” through gynaecologist supervision and hospital delivery than in the Netherlands where GPs and midwives play a much greater role. The effects of other demographic dummies and of the health indicators are much more similar between the two countries, although it is notable that, for instance, the presence of a chronic condition seems to have a much larger effect on utilisation in Belgium than in the Netherlands. This may be related to the fact that the Dutch report such chronic problems 4.5% more frequently but may be more inclined to include more minor conditions (like eczema, migraine, etc) when answering this question.

In the final step, two additional types of variables are included in the “need specification”: health insurance coverage and level of medical supply in the region of residence. Although these variables clearly do *not* represent indicators of medical need for care, the intention is to examine to what extent the observed degree of inequity is affected by this adjustment. In other words: to what extent is, for instance, the pro-rich inequity in specialist use due to differences in insurance coverage or supply availability between income groups? The regression results are presented in the bottom of Table 5 and the inequality and inequity indices in Table 6. The estimated health insurance effects in the regression may be biased because factors like income and education have not been controlled for. We can see that the reduced rate of copayment for low-income WOPI insured does have a significantly positive effect but only on the number of GP visits. No significant effect is found for the voluntary supplementary insurance coverage for copayments for hospital utilisation. Neither do we find any significant influence for the presence of an annual deductible amount exceeding 500 guilders of privately insured in the Netherlands. It is, there-

TABLE 5
OLS regression results (*)

	Belgium						Netherlands					
	GP visits		Specialist visits		Hospital admissions		GP visits		Specialist visits		Hospital admissions	
	β	t	β	t	β	t	β	t	β	t	β	t
Constant	0,0431	4,54	0,0200	1,29	0,0555	2,60	0,0487	2,53	-0,0281	-0,92	0,0325	1,10
Demographic variables:												
M36- 45	-0,0304	-2,84	-0,0254	-1,45	-0,0169	-0,70	-0,0251	-1,19	0,0405	1,20	-0,0194	-0,60
M46- 65	0,0187	1,92	0,0011	0,07	0,0148	0,67	-0,0214	-1,10	0,0122	0,39	0,0479	1,61
M66- 75	0,0769	4,89	0,0553	2,16	0,1395	3,94	0,0147	0,49	0,1969	4,16	0,2287	5,03
M75+	0,1246	5,07	0,0083	0,21	0,0739	1,34	0,0333	0,81	0,0552	0,99	0,2925	4,64
F18- 35	0,0472	4,93	0,1204	7,70	0,0454	2,11	0,0945	5,08	0,0775	2,62	0,0341	1,20
F36- 45	0,0349	3,19	0,0727	4,08	0,0562	2,29	0,0555	2,54	0,0568	1,63	-0,0333	-0,99
F46- 65	0,0496	4,92	0,0758	4,61	-0,0040	-0,18	0,0588	2,87	0,0562	1,72	0,0469	1,50
F66- 75	0,1561	10,75	0,0627	2,65	0,2077	6,36	0,0742	2,64	0,1168	2,61	0,1088	2,53
F75+	0,2262	12,50	-0,0583	-1,97	0,0934	2,29	0,1495	4,39	0,0872	1,61	0,0196	0,38
Self-assessed Health: (**)												
Good	0,0246	3,77	0,0109	1,02	-0,0383	-2,61	0,0483	3,46	0,0447	2,01	0,0323	1,51
Fair	0,1090	11,92	0,0893	5,99	0,0367	1,78	0,1679	7,91	0,2129	6,29	0,1390	4,27
Poor	0,3180	17,30	0,2792	9,24	0,4251	10,28	0,1884	6,76	0,1900	4,28	0,3110	7,29
Very poor	0,3280	8,78	0,2472	4,00	0,7264	8,64	0,3313	8,79	0,4621	7,69	0,7412	12,81
Chronic condition	0,1254	17,79	0,1133	9,84	0,2424	15,28	0,0513	3,78	0,0993	4,59	0,0844	4,06
Health insurance												
Deductible > dfl 500												
WOPI with lower copayment	0,0478	4,34	-0,0047	-0,26	0,0363	1,46						
Hospitalisation insurance	0,0060	1,05	0,0013	0,14	0,0178	1,38						
Medical supply												
GP/10 000	-0,0035	-4,98	0,0031	2,39	-0,0037	-2,34	-0,0153	-0,78	0,0263	0,85	-0,0416	-1,40
Spec/10 000	0,0035	3,66	0,0011	0,69	0,0001	0,07	0,0052	0,82	0,0215	2,12	0,0039	0,40
Hosp beds/10 000	0,0005	2,44	-0,0005	-1,69	-0,0009	-1,86	0,0004	0,55	0,0024	2,49	0,0006	0,62

Notes:

(*) Regression coefficients for need variables were obtained from the regression excluding supply and insurance variables, while coefficients for health insurance and medical supply estimates were obtained from separate equations.
(**) For NL, two bottom categories are "sometimes good, sometimes poor" and "poor".

fore, no surprise that the inequity indices presented in Table 6 which have, in addition, been standardised for health insurance coverage, do not differ from those in Table 4.

TABLE 6
Inequity indices HI_{WV} standardised for need and insurance status and medical supply differences

HI_{WV} standardised for need and:	Belgium			Netherlands	
	medical supply	WOPI lower coinsurance rates	Hospitalisation copayment insurance	medical supply	Deductible > dfl. 500
GP visits	0,0137 (0,009)	0,0191 (0,010)	0,0110 (0,010)	- 0,0014 (0,020)	0,0004 (0,020)
Specialist visits	0,0877 (0,015)	0,0967 (0,016)	0,0862 (0,017)	0,0656 (0,032)	0,0642 (0,032)
Hospital stays	- 0,0010 (0,021)	0,0040 (0,023)	- 0,0070 (0,032)	- 0,0190 (0,031)	- 0,0162 (0,031)

(*) Standard errors in parentheses, indices in bold if stat signif diff from zero, i.e. if its (absolute) t-value exceeds 1.96.

Next, we have also included variables indicating the density of GPs, specialists and hospital beds in the respondent's region of residence. The signs of the effects of these variables are counter-intuitive, indicating that residents of "*arrondissements*" with higher specialist and bed densities have higher, and those with higher GP densities lower rates of GP utilisation. Similarly, GP density has a positive effect on specialist use and negative on hospital admissions. Either the density data are unreliable or there is a problem of collinearity between these variables. The results for the Netherlands are more plausible, suggesting that WGR regions with greater availability of specialists and hospital beds have higher rates of specialist visits. However, also the impact of these "corrections" for regional differences has only a negligible effect on the HI_{WV} indices: the NL indices for specialist care are only marginally lower and the Belgian index is even slightly higher than in Table 4. In summary, it seems as if the basic equity results cannot be "explained" by factors such as differential insurance cover or availability of services across income groups.

6. Conclusions

In this paper we have exploited the relatively high degree of comparability of the Belgian and Netherlands Health Interview Surveys held in 1997

to (i) explore differences in medical consumption between both countries, (ii) to measure and test for differences in the degree of income-related horizontal inequities in medical care use, and (iii) to explore potential determinants of any such differences associated with insurance coverage or availability of medical care supply. First, we found that, in general, Belgian adults tend to go and see their doctors (both GP and specialist) more frequently and are twice as likely to be admitted to a hospital than their Dutch counterparts. This finding suggests that the direct access to a more abundant supply of medical providers, mostly remunerated on a fee-for-service basis, has a positive effect on use which seems to be stronger than the use-reducing effect of the generally higher rates of out-of-pocket copayments which Belgian patients have to face when they consume medical care. Obviously, other non-economic determinants of medical consumption influencing the propensity to seek medical care, such as cultural differences in attitudes towards medical help for health problems may play a role as well, or regulations like the legal requirement of a doctor certificate for absence at work, or differences in medical training, etc will play some part in the between-country differences observed.

Secondly, we observed a remarkably similar pattern in the degree to which medical consumption differs according to income. In both countries alike, GP and hospital care are more concentrated towards the bottom income deciles whereas specialist care tends to be distributed much more equally across the income distribution. Because the need for care – as proxied in this study by the expected utilisation on the basis of demographic and health indicators – also tends to be more concentrated in low income groups, it comes as no surprise that we only found substantial and significant pro-rich inequity in the use of specialist services. The distribution of the *actual* utilisation of GP and hospital services appears to be very much in agreement with the *need-expected* distribution. Although all inequity indices were slightly lower for the Netherlands than for Belgium – indicating a slightly more pro-poor (or less pro-rich) distribution – no significant differences between countries were found. The finding of no “excess” use of GP care by lower income individuals contrasts to the findings of De Graeve and Duchesne (15) with the Panel Study on Belgian Households who do find a significantly negative HI_{WV} index, and of van der Meer [16] using the Dutch GLOBE study who also find significantly higher rates of GP visits among lower educated individuals, even after controlling for need differences. On the basis of our study of these two more recent datasets, we can conclude that the principle of “equal access for equal need” is not violated for GP and inpatient hospital care in these two countries.

Finally, we have tested the hypotheses that the inequity findings were partly due to peculiarities of the health care systems related to health insurance and supply availability. However, after controlling for the level of liability for out-of-pocket payments and the level of medical supply in the location of residence, we found no significant changes in the inequity indices. This finding suggests that inequalities in health insurance coverage by income and inequalities in regional supply associated with income level do *not* seem to contribute much to the explanation of these findings. This observation suggests that the finding of significant pro-rich inequity in the use of specialist services is not due to peculiar perverse inequity incentives of the Belgian and Dutch health care system but appears to be a more general phenomenon, not specifically related to system features. This finding is consistent with those of Bongers *et al* (17) for the Netherlands on the basis of the GLOBE dataset.

What is the reason then for the apparently rising preference for specialised care with rising income level, or, in other words, for the apparent underutilisation of specialist care by lower income individuals? Possibilities include a perception of a higher quality, better communication skills or a stronger preference of higher income individuals for specialist versus GP services. These and other potential explanations can serve as useful hypotheses to be tested in future research in the area of socio-economic differentials in health care use.

Samenvatting

De Belgische Gezondheidsenquête van 1997 is zeer vergelijkbaar met het Nederlandse Permanent Onderzoek Leefsituatie van 1997. Gegevens uit beide onderzoeken worden gebruikt om het niveau en de verdeling van gezondheidszorggebruik in beide landen te vergelijken. Naast het toetsen van verschillen in hoogte en verdeling van het medische gebruik, wordt ook onderzocht in hoeverre sommige verschillen in kenmerken van het gezondheidszorgsysteem in beide landen bijdragen aan de gevonden verschillen. Voor-behoefte-gestandaardiseerde concentratie-indices worden gebruikt om de mate van inkomensgerelateerde ongelijkheid en onbillijkheid in gebruik te meten. We vinden dat, over het algemeen, Belgen meer intensieve gebruikers zijn van medische zorg, met meer huisarts- en specialistcontacten, meer ziekenhuisopnamen en een hoger gebruik van voorgeschreven geneesmiddelen. De Nederlanders daarentegen rapporteren meer contacten met de tandarts. Wij vinden geen significante onbillijkheid in het gebruik van de huisarts en het ziekenhuis, maar wel voor het gebruik van de specialist: in beide landen maken hogere inkomensgroepen significant meer gebruik van de specialist dan verwacht of basis van indicatoren voor behoefte. De mate van onbillijkheid is opvallend gelijk ondanks belangrijke verschillen in verwijssystemen, eigen bijdragen en artsendichtheden tussen B en NL. Noch het grotere aanbod en rechtstreekse toegankelijkheid van medische specialisten in België, noch de particuliere verzekeringsvorm van hogere inkomens in Nederland kunnen dit fenomeen verklaren.

Conclusie: Ondanks belangrijke systeemverschillen zijn er opvallende overeenkomsten in de gebruikspatronen van medische zorg naar inkomen in beide landen. Gelijke toegankelijkheid bij gelijke behoefte, ongeacht inkomen geldt blijkbaar wel voor de huisarts en het intramurale ziekenhuisgebruik, maar niet voor het gebruik van de specialist. Andere factoren dan systeemkenmerken, zoals verschillen in zorgpreferenties of kwaliteitspercepties tussen arm en rijk, zijn wellicht mede verantwoordelijk voor het hogere-dan-verwachte gebruik van de medische specialist door hogere inkomensgroepen.

Résumé

L'Enquête Belge sur la Santé réalisée en 1997 est très comparable à l'Enquête Néerlandaise sur la Santé de 1997. Les données provenant de ces deux enquêtes ont été utilisées afin de comparer le niveau et la distribution de l'utilisation des soins de santé dans chacun des pays. En plus de tester les différences de niveau et de distribution de l'utilisation des soins de santé, cette étude détermine aussi dans quelle mesure ces différences sont imputables aux caractéristiques propres de chacun des systèmes de soin de santé. Des indices de concentration standardisés pour les besoins ont été utilisés afin de mesurer le degré d'inégalité et d'iniquité, lié au revenu, dans l'utilisation des soins. Les résultats montrent que, en général, les Belges recourent plus intensément aux soins de santé, avec une plus grande fréquentation des médecins généralistes et spécialistes, plus de séjours à l'hôpital et un plus grand usage de médicaments prescrits. Les Néerlandais par contre, rapportent des contacts plus fréquents avec les dentistes. Aucune iniquité significative n'a été identifiée pour le recours aux médecins généralistes ou aux hospitalisations. Une telle iniquité est cependant observée pour le recours aux spécialistes dans chacun des pays: il est significatif que les individus aux revenus élevés font davantage appel aux spécialistes, ceci par rapport au niveau attendu sur base des indicateurs de besoin. La similarité de ces degrés d'iniquité pour le recours aux spécialistes est frappante étant données les importantes différences caractérisant les systèmes de soins de santé de chacun des pays: système «d'envoi» du patient, contribution personnelle et proximité des généralistes. Ni l'offre abondante et l'accès direct aux spécialistes en Belgique, ni le régime d'assurance privée propre à la tranche de population plus nantie aux Pays-Bas ne peuvent fournir une explication.

Conclusion: Malgré d'importantes différences entre les systèmes de ces pays, il existe aussi de remarquables similitudes, notamment dans l'utilisation des soins de santé en fonction du revenu. L'objectif d'accès égal à besoin égal, quel que soit le revenu, semble être respecté pour le recours aux généralistes et aux hospitalisations, mais pas pour les spécialistes. Des facteurs autre que les caractéristiques de l'offre des soins, tels que des différences en terme de préférences pour certains soins ou en terme de perception de la qualité entre riches et pauvres, peuvent être responsables de l'utilisation plus importante que prévue des médecines spécialistes par les individus à revenu élevé.

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