De vraag naar diensten van de huisarts

14

Summary: The Demand for General Practitioner's Services

Introduction

If one is interested in the analysis of the utilization of medical services in general and the general practitioner's services in particular, then a study carried out 'lege artis' should contain both variables on the demand side (the patient) as well as on the supply side (the practitioner and his practice).

The only type of study that meets this purpose is a so-called 'practice analysis' where per general practice is studied how characteristics of patients on the one side and the properties of doctors and their practice on the other side influence utilization. Such a study is very expensive and complicated because creating enough variation on the supply (practitioner's) side means that a minimum of 50 - 100 practices have to be studied. Besides, the usually scant information about the patient and his family available from the practitioner's medical record has to be supplemented by information collected by questionnaire. In the Netherlands no such study exists till this moment.

On the one side information about the utilization of medical services on the demand (patient's) side has been and is collected in 'household surveys', on the other hand only scattered information from practice studies (one, two, three doctors) exists, while information from the Dutch National Morbidity Survey in 1969 per practice unfortunately is not available anymore.

That is why we split our study in two parts. In the first part (called 'Complaints') the demand side is studied based upon household surveys (the Life Situation Survey 1977, collected by the Central Bureau of Statistics and the Dutch Socio Cultural Planning Office). It concentrates on the question why people complain about their health. In the second part ('Utilization') the focus is on the supply side. Here we have been using data from the English health care system, collected per practice in the 2nd National Morbidity Survey in England and Wales (by permission of dr.

Donald Crombie from the Research Unit of the Royal College of Generalpractitioners in Birmingham).

Part I: Complaints

A logical consequence of the introduction would not be a part called 'Complaints' and a part called 'Utilization', but a division into 'Demand' and 'Supply'. Why is this not the case? Well, all population surveys that aim to analyse the utilization of medical care; particularly, elegantly and sophisticatedly designed as they may be, come to one conclusion: 'people visit their doctors only if they have complaints about their health'. The title of David Mechanic's article (Mechanic, 1979): 'Correlates of physician utilization. Why do so many major multivariate studies of physician utilization find trivial psychosocial and organizational effects?', is significant in this respect.

Mechanic's diagnosis of this painfully true observation (think of all the money that those 'major multivariate studies' cost) is that 'complaints' or rather 'a score on a list of physical complaints' is not a valid measure of a person's health status, but rather an indication of psychological distress. We will return to this later. Mechanic points out how those population surveys have been based upon the classification of factors influencing physician's utilization into a 'predisposing' -, 'enabling' - and 'need' categorial system; a classification introduced in the American health care sector by Ronald Andersen (1968)* After reading most of the publications of Andersen and his collegues (Andersen 1969, Kravits and Anderson 1975, Andersen and Aday 1978, Andersen et al, 1977) we concluded that the 'predisposing-enabling-need classification scheme' was originally not intended to produce a causal analysis of the utilization of medical care, but to evaluate the efficiency of the allocation of health services. Andersen's most important book has as title 'Equity in Health Services' and as subtitle 'Empirical Analysis in Social Policy'. Health services have been allocated efficiently if the need for health care defines the use of health services and not factors as 'income', 'cultural deprivation', etc.

We could answer Mechanic's question 'why do those major multivariate studies etc.' with the statement 'because those major multivariate studies were designed to *produce* (scientifically) trivial results'. Unfortunately Andersen confused the original aim of his study by using the same scheme in a causal analysis of utilization (Andersen and Aday, 1978) where a causal sequence is introduced in his originally unrelated categories of variables. This causal sequence has been adopted by Kohn and White in their international health care study (Kohn and White, 1976) and is popular until today (Van Vliet en Van de Ven, 1982, Kronenfeld 1980). And indeed all those studies show the scientifically trivial result that the need for health care, indicated by a list of physical complaints, is the major determinant of the use of

* In the Netherlands a similar classification was used by Philipsen (1963, 1969) for the analysis of absence of work in industrial settings.

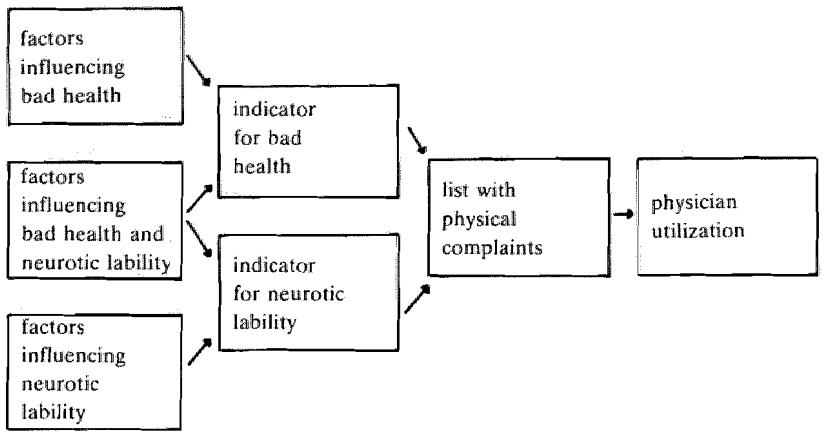
health services. Well, here the empirical part of our study starts. As it is true indeed that all utilization studies start and end with the above mentioned establishment we had better concentrate upon the explanation of the scores of physical complaints. Thus our utilization-model counts two stages: firstly we try to explain variations in complaints and in a second stage we will explain the utilization of the general practitioner's services.

The ambiguity of physical complaints

Here we arrive at Mechanic's second observation: the ambiguity of physical complaints. Do they measure 'health status', 'psychological distress', 'neuroticism' or does perhaps a list with physical complaints contain a mixture of all those possible interpretations? Chapter 4 of our thesis is dedicated to this subject. We could discern three unrelated approaches in this area. Firstly there is a predominantly medical tradition of producing questionnaires for anamnestic purposes. Secondly there is a strong and rich tradition to consider functional physical complaints as a vital indication of the 'neurotic personality' (Eysenck, and in the Netherlands, Wilde (1963, 1970) – whose Amsterdam Biographical Inventory contains a list of nonsomatic and somatic complaints as indication of neurotic lability –, in England Goldberg with his General Health Questionnaire for the detection of psychiatric illness), and thirdly we find authors who consider the utterance of complaints as an indication of 'stress' (Dirken, 1967).

Our conclusion is that a person's score on a list with physical complaints, no matter whether the intention was to measure health status, neurotic lability or distress, is a vector of bad health and psychological distress or neurotic lability. The problem is, one cannot tell from the summated rating which combination of the two beforementioned components applies in each case. So the second problem we had to solve in our study (the first was to escape the danger of the trivial results), was to split the commonly used list of complaints into an indicator of 'bad health' and 'psychological distress'. Fortunately the Life Situation Survey 1977 (LSS-77) contained both an indicator of chronic illness (an inventory of 26 categories of chronic diseases), and an indicator of nonsomatic neurotic lability (10 items from the above mentioned Amsterdam Biographical Inventory) (ABI-N) and a 21 items list with physical complaints designed as an indicator of stress. (Dirkens Questionnaire for Research into the Experienced Health status): the QREH is in Dutch the 'VOEG'. With those three measures of the phenomenon of physical complaints a model for their explanation could be designed. Schematically our model looks as follows:

Figure 14.1. Schematic model for the explanation of physician utilization in population surveys.



The model contains variables that influence a person's health status, variables that influence a person's neurotic lability and variables that influence both. Health status (measured as the absence or presence of chronic illness) and neurotic lability influence in their turn a person's score on a list of physical, somatic complaints, the major predictor of physician utilization. We intended to design a 3-stage model and to estimate in the first and second stage successively chronic illness, neurotic lability and physical complaints. At this point in our argument we arrive at chapter 5, where we describe the results of our quest for results of research into general factors that influence health status and factors that influence neurotic lability. In our quest we limited ourselves to the influence of rather rough categories of variables. We were not interested in the connection between related indicators of a general feeling of non-wellbeing but we rather looked for biographical and contextual variables.

Expectations and Results

We selected 10 variables from our sources in literature. Four were supposed to influence health status (i.e. chronic illness), viz.:

1. Age (the older the more chronically ill)
2. Sex (women more chronic illness than men)
3. SES (socio-economic status) (the higher a person's status the better his health)
4. Unfitness to work (persons who lost their work and come under the Disability Act are supposed to have a chronic illness).

We also found that persons from the lowest status category and aged between 35 and 44 years had a worse health than could be expected from a linear combination of status and age. So we introduced an interaction term in our estimation.

For neurotic lability we expected to find similar results with respect to Sex, SES and Unfitness to work. (Women more neurotic complaints than men, manual workers more than clerical workers or higher strata in the status hierarchy and persons without work due to chronic illness more neurotic complaints than others).
For 'age' we expected that the younger generation would utter more neurotic complaints than the elder generation, as 'complaining' has become more and more tolerated during the past decades. We also expected a relation between neurotic lability and marital status (we expected people whose marriage had been dissolved by divorce or death of the partner to have higher scores than married or unmarried persons). Divorce and widowhood were considered as suboptimal, more or less chronically depressing conditions among which we also counted 'unemployment' and chronic illness. The addition of the last variable complicates our model because it presupposes a relation between the dependent variables of our first stage (chronic illness and neurotic lability). Finally we included three variables in our model as indicators for the (normative) integration of an individual. Firstly the integration in a normative system (religiousness), secondly the integration in the direct surroundings (neighbourhood) and thirdly the size of the community. In table 14.1 all significant relations of the beforementioned independent variables and our indicator for chronic illness and neurotic lability are shown. The t-statistics show the strength of the relationship.
Two results are striking. At first the low proportion of explained variance. Only 12% in chronic illness and a poor 7% in neurotic lability is explained by the 11 independent variables. Technically spoken the results are not very hopeful, materially however, there are some interesting things to show. The health of older people is worse than the health of the younger. But older persons indeed complain less than younger ones. This explains why some authors do not find an expected relationship between age and physical complaints. A low socio-economic status is connected both with a worse health and with more non-somatic neurotic complaints. The latter also goes for the marital status variables. Divorced people show higher scores than widowed persons than married or non-married persons from 15 years and older. Unemployment is a source of complaints but not of worse health. Unfitness to work due to disability or chronic illness is also connected with neurotic complaints. Religious and integrated persons and inhabitants of smaller communities complain less than non-religious, badly integrated persons and inhabitants of towns and cities. We also found (what we do not show here to save space) that a chronic illness is connected with neurotic complaints.
In the second stage of our estimation we found the expected very strong relation between the list of physical complaints and the two versions of chronic illness and neurotic lability computed according to the results in table 14.1.
Physical complaints indeed are a vector of bad health and neurotic complaints and the two components can be distinguished analytically. The low proportion of explained variance however, frustrates our original intention to test a three-stage

Table 14.1 Estimation results chronic illness and neurotic lability in the Life Situation Survey 1977, The Netherlands. $n = 4157$. Persons 15 years and older. Multiple regression, ordinary least squares, B-coefficients and t-statistics printed when $p < .05$.

	Chronic illness (1=yes)		Neurotic lability (2=weak 10=strong)	
	B-coefficients	t-statistics	B-coefficients	t-statistics
Age (in years)	.0078	18.40	–.0042	2.64
Sex (1=man/2=woman)	.060	4.28	.48	8.43
SES (1=high/3=low)	.031	3.13	.21	5.63
Dummy variable: Age 35-44 yrs/Status low	.075	2.62		
Unfitness to work (1=yes)	.33	7.89	1.17	7.45
Unemployed (1=yes)			.84	3.96
Divorced (1=yes)			1.02	4.45
Widowhood (1=yes)			.52	4.50
Number of inhabitants of community (logarithmic transformation)			.057	3.02
Integration in neighbourhood (1=weak/9=strong)			.058	5.02
Religiousness (1=religious/3=no religion)			.099	2.67
Constant	.21	10.77	1.93	7.86
Estimation parameters	$\bar{R}^2 = .12$		$\bar{R}^2 = .07$	

model wherein utilization would be estimated in the third stage. The path from socio-cultural circumstances to physical complaints apparently is more complicated than we supposed.

Part II: Physician utilization

In the second part of our study we direct our attention to the supply side; the influence the doctor and the way he organizes his surgery exert upon the number of doctor/patient contacts. We consider physician utilization as a function of demand and supply, and as our emphasis till now laid upon demand characteristics, we will now focus upon the influence of supply qualities. As we told before, unfortunately in the Netherlands no complete practice study has been carried out. Neither exists routinely collected data, because general practitioners are paid a capitation fee for about 70% (the 70% with the lowest income) of their practice population. The other 30%, the private patients, are either privately insured or not insured at all for the services of a general practitioner. So we had to move towards our aim indirectly. Firstly we tried to find practice studies in comparable health care systems. We found what we were looking for in the Second National Morbidity Survey in England and Wales. Secondly we tried to connect supply characteristics (i.e. characteristics of the health care system) as contextual variables with the records of the individuals of the Life Situaton Survey 1977. The residence of the respondents in the survey was known, so we could compute variables for this community of residence (number of general practitioners per capita, number of hospital beds etc.) on an aggregated level and distribute these variables to all the respondents of the community.

The 2nd National Morbidity Survey in England and Wales

The Dutch and the British health care system are in some respect comparable as far as primary care is concerned. For 70%, the publicly insured part of his practice population (his 'list') the Dutch general practitioner gets a capitation fee*. He has a list of patients (in any way of publicly insured patients, but as a rule also of private patients) and the entrance to the secondary medical care is regulated via the general practitioner. Neither publicly insured nor privately insured patients are allowed to consult a medical specialist without being referred by the general practitioner. Here all resemblance stops: in Holland medical specialists usually practice as free entrepreneurs and are paid fee for service. This in (striking) contrast with the British

* A very crude and uncomplicated one. It consists of four parts: a fee for all patients (1), a remuneration of the practice costs for the first 1800 patients (2), a small remuneration of the practice costs for all patients (3) and a contribution to the doctor's old age pension for the first 2000 patients (4). For 1981 the amounts are: Dfl. 50,24 (1) + Dfl. 32,76 (2) + Dfl. 2,73 (3) + Dfl. 8,49 (4).
The remuneration for the practice-costs are irrespective the real costs; it is paid to all practitioners.

system where medical specialists generally are employed by hospitals. For primary care, however, the two health care systems are more or less comparable, so we were glad to be able to collect data for each practice that participated in the 2nd National Morbidity Survey.

For each practice (60 practices in all) we collected the following figures:
Per age/sex group
(M/F, 0-4 yrs, 5-14 yrs, 15-24 yrs, 25-44 yrs, 45-64 yrs, 65-74 yrs, 75 yrs a.o.)

a. the number of episodes including episodes that started outside the practice and recurrent new episodes of existing illness (new cases during the year the morbidity has been counted)
b. the number of episodes already existing before the morbidity counting started (mostly chronic illness)
c. the total number of consultations (divided into: at the surgery or home visits)
d. different types of referrals (in-patient, out-patient, investigation and other).

Per practice was known:

1. the number of principals
2. the list size
3. a rural/urban indicator
4. the practice location. From this location we derived, with the help of the Institute of Health Services Administrators, the distance between the practice residence and the nearest general medical hospital.

For a supply study the number of practice characteristics is very limited, but as we explained, even this limited set of data does not exist in Holland. For the purpose of our analysis we divided the consultations in two parts. We distinguished patient-initiated contacts and doctor-initiated contacts. The first category contained all new and recurrent episodes, the second category the total number of consultations minus the episodes of the first category. We considered contacts for chronic illness as doctor-initiated (although we analyzed them separately either).
We corrected the numbers of patient -and doctor-initiated contacts for the influence of the age/sex distribution of the practice population by computing expected frequencies on the base of the frequency distribution by age/sex group for all practices together and constructing per practice the differences between the number of patient and doctor-initiated contacts *expected* and *found* on the base of the specific age/sex distribution of the practice population.

Results

Firstly we looked at the relation between list size (i.e. number of patients per principal) and the two types of contacts and did not find a thing. There were two disturbing factors. Firstly there was one general practitioner with a very large list and many more contacts than we had expected from the age/sex distribution of his

practice (and our method of analysis (correlation analysis) is very sensitive for extreme values), and secondly there was a disturbing influence of the practice organization. Solo-doctors tended to have a somewhat larger list, and somewhat more contacts than practices with two or more principals. After separating soloists and partnerships, we found (see figures 10 1-4 on page 123-124) interesting and interpretable results. List size does not have any influence on the difference between the found and expected number of patient-initiated contacts but definitely influences the difference between found and expected doctor-initiated contacts. This goes both for solo practices and for partnerships, the latter group generally having somewhat less patient- and doctor-initiated contacts than one would have expected on the base of the age/sex distribution.

The results of our analysis (carried out as a multiple regression analysis with list size, type of practice and practice location as independent variables) are shown in table 14.2.

Table 14.2.: Multiple-regression, B-coefficients and t-values (between brackets) of list-size, type of practice, and practice location with the differences between the number of patient-initiated contacts, the number of doctor initiated contacts and the number of home visits found and the number expected on the base of the age-sex distribution of the practice population. T-values are italic if $p < .05$. Source: 2nd National Morbidity Survey in England and Wales 1970-1971, n = 59.

	List size	type of practice (1=solo)	practice location (1=urban)	hospital in community	hospital >10 miles from community	constant	R^{-2}
Df patient-initiated contacts	–.015 (.09)	441.67 *(2.22)*	407.20 (1.51)	65.01 (.24)	747.03 (1.97)	–591.84 (1.12)	.111
Df doctor-initiated contacts	–.668 *(3.05)*	746.76 *(2.85)*	84.54 (.24)	–179.94 (.50)	–54.55 (.11)	1574.56 *(2.27)*	.156
Df home-visits	–.077 (.77)	–43.96 (.36)	–442.38 *(2.71)*	99.18 (.61)	–72.77 (.32)	462.58 (1.46)	.108

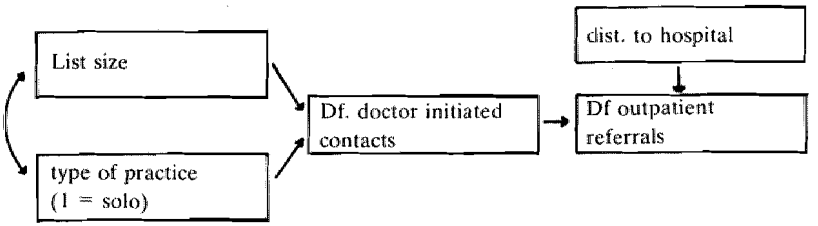
Patient-initiated contacts are only influenced by type of practice; doctor-initiated contacts by type of practice and list size; home visits only by practice location. In rural areas more visits are found than would be expected on the base of the age/sex distribution. This is an interesting result; the decision office/home visit apparently is only influenced by the location of the practice and is not used as a decision to reduce work-load caused by list-size or practice-organization.

Further analysis of the influence of type of practice (why should soloists have more contacts than partnerships) by comparing the number of patient-initiated contacts per age/sex group (see table 10.3) showed that the differences were found in relatively healthy groups (men from 5-24 yrs/women 5-14 yrs) which points to a probably lower threshold in solo practices.

Substitution between primary and secondary medical care

We intended to have our contact-analysis followed by an analysis of referral frequencies. From our previous research in this field (Posthuma and Van der Zee 1977, 1978) we expected a strong relation between the distance from practice to the nearest general hospital and the number of in- and out-patient referrals. In the Dutch health care system distance and number of medical specialists and hospital beds are major predictors of differences in referral- and admission-rates on aggregated (community) and individual (general practice) level. We wanted to test the following model (in a two-stage estimation).

Figure 14.2. Schematic representation of a model for the explanation of doctor-initiated contacts and referrals in general practice



We expected substitution between primary and secondary care to take place between doctor-initiated contacts and referrals as we considered the possibility to refer a patient as one of the means a general practitioner can use to reduce this workload. So we first estimated the number of doctor-initiated contacts (or rather the difference between the number found and expected) from the variables in table 14.2 and tried to test a relation between this computed variable and the distance from the nearest general hospital on the one hand, and the number* of in-patient and out-patient referrals and referrals for investigation on the other hand. The results are striking for an investigator deformed by being employed in a health care system where medical specialists are paid a fee for each service.

* Here too, not the exact number but the difference between the number expected and found was computed.

No negative relation was found between the distance to the nearest hospital and any of the referral rates, but even a positive relation between in-patient referrals and distance; the farther from the hospital the higher the number of acute admissions. In our discussion of the results we suggested several possibilities:

1. Our distance measure was too crude and should have been completed by regional data on the number of hospital beds and medical specialists per capita. In the Dutch health care system, however, the influence of distance on referral rates is much stronger than the influence of hospital beds and number of specialists per capita.
2. It also might be the case that secondary health care is (or rather was in 1970/71) more efficiently allocated in England and Wales than in our country; a result of great political importance if it were true indeed. More comparative research in this field might be useful.

Utilization in the Life Situation Survey 1977.

As we promised, our last chapter (11) has been dedicated to the analysis of utilization frequencies in the Life Situation Survey, 1977. We already announced that we should add to the data of individual respondents some characteristics of the health care of their community of residence (number of general practitioners per capita, number of medical specialists per capita, distance to the nearest general medical hospital, difference between the number of surgeries and the number of general practitioners per capita).

The latter indicator was meant to measure the degree of concentration of medical practices. We also added some extra demand variables to the existing set, namely those variables that exert influence upon utilization but not via chronic illness, neurotic lability or physical complaints. The variables were a dummy variable for women in the age 15-44 yrs (with regular visits for anticonception), two variables representing acute illness (one if the respondent had been in bed or at home less than a week but more than a day in the past three months and one if the respondent had been ill between one and two weeks). Finally we added an insurance variable that got the value '1' for private patients. Together with the three dependent variables in the complaint analysis and all the independent variables of this analysis we included the above mentioned variables in our analysis of physician utilization with the following result:

Of the (11) independent variables in our complaints model only Age had a significant relation with utilization. The other independent variables exerted their influence via our measure of health status and neurotic lability. From the extra demand variables women 15-45 yrs of age and acutely ill persons had a greater chance upon a contact with the doctor. The insurance variable had no independent influence on physician utilization. Our supply side variables did not contribute to the proportion of explained variance. We already expressed our fear that the aggregation level would be too high for our purpose, and this indeed proved to be true. It

proved to be not useful to connect the average number of general practitioners per capita with the medical consumption of an individual person. The size of the list of a persons practitioner could do perhaps, but not an average figure. The most important conclusion of this chapter is that the analysis of physician utilization based on surveys, that usually do not contain supply variables is not a fruitful affair. Supply variables do exert influence, as we saw in our analysis of the2nd National Morbidity Survey, but have to be measured in practice studies and not in population surveys.