

## **GENERAL PRACTICE AT WORK**

**Its contribution to epidemiology and health policy**

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**GENERAL PRACTICE AT WORK**

**Its contribution to epidemiology and health policy**

**(De huisartspraktijk aan het werk**

**Een bijdrage aan epidemiologie en gezondheidsbeleid)**

**PROEFSCHRIFT**

ter verkrijging van de graad van doctor aan de  
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**PART I**  
**GENERAL INTRODUCTION**

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## BACKGROUND

### Introduction

This thesis deals with the value of information from general practice, and in particular the role this can play in reducing socio-economic health differences. Improved technology has led to the availability of comprehensive information from general practice, but can this information be utilized for well-directed interventions aimed at resolving socio-economic health differences?

This study is the final piece of a large-scale research project called the Dutch National Survey on Morbidity and Interventions in General Practice, for which data collection has been carried out during 1987–1988. The aim of the project was:

'to gain at national scale insight into the presentation of complaints and health problems in general practice, in the actions of the general practitioners, related to these problems and in factors that influence the presentation of health problems, as well as the diverse reaction of general practitioners to presented health problems' (Foets et al., 1986).

The project was an attempt to create a database on general practice with a view providing policymakers with tools to encourage the substitution of secondary care for primary care, tools for stimulating the collaboration between health professionals working in primary care and tools for a more rational approach to requesting laboratory tests/X-rays and the prescription of medicines (Van der Velden, 1986). In addition, information on socio-economic health differences had been requested by the Ministry of Health (Tweede Kamer, 1986).

In Dutch equity-oriented health policy, two general practice related factors play a key role: accessibility and appropriate selection for referral to other health care providers. Good accessibility to general practice is one of the pillars for achieving equity in the Dutch health care system. Good access was to be guaranteed by fixed family-based patient lists, the provision of continuous care and the capability of dealing with a broad range of health problems of the population. The monitoring of person consulting rates in general practice in the Netherlands has revealed that access to general practice is good whatever the social class

(van der Meer, 1998).

The selection for referral is determined by the gatekeeping function of the general practitioner, i.e. all patients are first seen by the general practitioner before progressing to other health care facilities (e.g. hospital/physiotherapy/ambulant mental health care/pharmacy). The underlying assumption is that unnecessary medical consumption (and medicalization) is preventable and therefore able to be used as instrument of cost containment. Although information on referrals especially to medical specialists abounds, there is little insight into the selection process by social class.

Its high level of accessibility and the gatekeeping function make general practice, in some parts of world called family medicine, an important tool in the strategy towards 'Health for All to be achieved by Primary Health Care' (WHO, 1978). It also raises the question whether general practice could play a role in a strategy aimed at reducing socio-economic health differences. General practice as the first and most important entrance to health care in the Netherlands, and hence the most popular health facility is well positioned in this respect. Furthermore general practice has close ties with the community, and could thus fulfil a signalling function for health differences based on social problems. This signalling function requires a good information system which explains why 'the Health for All Strategy to be achieved through Primary Health Care' pays so much attention to the need for an appropriate information system for this purpose (WHO, 1988; Dahlgren et al., 1992).

### **Research question**

The purpose of this thesis is to show how general practice can be a source of information for epidemiological and health policy questions, especially those relating to socio-economic health differences. Such use of general practice based information differs in several respects from use of information for individual patient care. High requirements regarding uniformity in registration procedures, availability of background information and compatibility of datatypes apply and analysis and interpretation generally demands much effort and expertise. In this thesis, we have examined the methods of data collection in general practice, the quality of the information, how the information has been used and the available information relating to socio-economic and area-based differences. Four specific themes will be explored.

### **Theme I - the validity of general practice based information**

In the Netherlands and several other countries such as the United Kingdom, the

Nordic Countries, Australia and New Zealand national general practice morbidity data are used in assessing the need for health care services, on the assumption that general practice morbidity data reflect the population's health status. There are at least two objections to this use of general practice morbidity data. These are related to the validity of general practice based information.

The question is whether the population health status measured in population based surveys yields comparable findings to those of the general practice morbidity surveys. The main danger general practice based information faces, is the substantial inter/intraobserver variation, which is probably due to differences in medical training, availability and use of diagnostic facilities, and differences in recording and coding practices. The resulting systematic differences may bias estimates of morbidity rates.

In the framework of the Dutch National Survey of General Practice two studies were carried out to better understand the comparability of survey data by investigating methodological factors which determine differences in morbidity rates. The analyses can be found in chapters 8 and 9.

## **Theme II - a National Survey of General Practice and its support for a policy of strengthening primary care**

Since the late seventies there has been a strong tendency in the Netherlands to explore the value of information from general practice by developing a National Survey of General Practice. The main purpose was to support the governmental policy of strengthening primary care. Although a job description for general practitioners was available, there was little insight into the actual performance of general practitioners. The only information available was from small groups of university-linked general practitioners. Policy making in the area was frustrated because there were more questions than answers. Important policy issues were prevention in general practice, the quality of care, the workload, the payment system and the primary-secondary care interface.

It took almost ten years of debate and testing before agreement could be reached about the final survey design, the logistic machinery and the financial means. Data collection occurred between 1 april 1987 and 31 march 1988.

Now, more than ten years after the data was collected, we can assess whether the main purpose has been achieved. Chapter 10 presents the findings of the National Survey after which in chapter 11 the impact of the findings is discussed.

### **Theme III - socio-economic health differences and general practice**

A general and increasingly important belief in health sector reform strategies is the fact that a well-developed primary care led system with a general practitioner in a pivotal role as a provider of key information is a powerful tool for the reduction of socio-economic health differences. Routinely collected information from general practice cannot be directly applied to questions related to socio-economic health differences. If socio-demographic data could be added information from general practice could become very attractive. But at how much effort and for what new insights?

The general belief in the Netherlands is that all social classes have good access to general practice care. In this thesis access to general practice care is analyzed in detail according to social class. The analyses in chapter 12 challenge the overall positive picture. Chapter 13 examines the uptake of three screening programmes in general practice, of which the evidence is relatively undisputed, according to social class.

The assumption that there is an appropriate selection for treatment and referral without bias for any social group was tested in a series of analyses. In chapter 14, a description of social differences in morbidity in general practice is provided, followed by an analysis on social differences in disease management.

Although socio-economic health differences are well documented there is no straightforward explanation for the differences found. Working conditions, social circumstances outside the work situation and health related behaviour are considered the most important explanatory factors or in other words, the conditions under which people live and work (Marmot et al., 1997). At this point the general practitioner, with his knowledge of the immediate environment of the patient and of specific risk groups, comes into the picture, yet surprisingly little time is spent on the topic. Chapter 15 presents an analysis of morbidity data from general practice linked with data on employment status and occupation, which may provide a new, valuable insight into health problems in relation to work.

### **Theme IV - the interaction between the general practitioner and the local community**

To perform his duties well the general practitioner must not only have insight into working conditions, social circumstances and health related behaviour of the patient and the patient's family, but also a knowledge of the local community.

More emphasis should be put on the value of this knowledge and how this knowledge can be obtained. General practitioners working in deprived inner city areas are well aware of the value of a knowledge of the local community and intentionally make house calls for this reason (Querido, 1988).

House calls are a powerful tool which general practitioners can use to gain insight into the living conditions and the life style of the patient and the patient's family. The importance of general practitioner's making house calls for respiratory tract infections is described in chapter 16.

The large urban–rural variations in the provision of general practice care, are well known, but combined with rich–poor contrasts within municipalities, led to extreme differences at the level of local communities with consequences for individual general practitioners and general practitioners groups. Over the last 15 years, general practitioners in inner city areas have claimed that their workload has grown heavier, confronted as they often are with deprived people with complex health problems, while at the same time operating in an increasingly difficult health care situation, arising from a highly complex infrastructure and large cultural and language barriers with specific patient groups i.e. migrants and refugees. The problem was fuelled by the meagre earnings of the doctors which culminated in action aimed at rectifying this unfair situation. The problems illustrate the low degree of solidarity prevailing in the profession at the time. Restoring this solidarity was therefore the main goal of the action taken by the national professional bodies, as was well understood by the Ministry of Health and the National Insurance Body. An attempt to find a solution for the problem is described in chapter 17. With a view to developing a scheme by which extra resources could be allocated to general practitioners practising in deprived inner city areas, a method to identify these deprived areas was developed.

### **Reading guide**

Part I describes the background of the research and research themes and further deals with an overview of the present situation with regard to socio–economic health differences in the Netherlands, the role and position of general practice in the Netherlands over time and an overview on health information and the role of general practice. Part II describes the methodology of data collection in general practice, the quality and the utility of information from general practice on the basis of the Dutch National Survey of General Practice. It covers the study design, two studies on the validity of data and a summary of the major findings of this Survey and reviews how frequently these findings have been used to support a health policy directed at strengthening primary care. Part III consists

of several specific studies on socio-economic health differences in general practice. Attention is paid to consultation rates and uptake of preventive services by social class, education and occupation related health problems, and finally house calls and area-based differences of general practice with a focus on deprived areas. In part IV, the main findings are summarized and discussed.

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## SOCIO-ECONOMIC HEALTH DIFFERENCES

### 2.1 History

Socio-economic health differences are a widely acknowledged problem which has always existed. Far before, but more insistently since the Industrial Revolution and later, the establishment of the Welfare State has the struggle to overcoming these differences been high on the political and economic agenda, although with alternating fervour. The enormous strides in health improvement for large majorities in industrialized societies taken in the nineteenth and the first part of the twentieth centuries were the result of collective measures, such as sanitary reform, improved hygiene, later followed by social reform against child labor and compulsory education. These measures proved to be effective and provided immense benefits to all social classes at relatively low cost. In contrast, the development of services to promote individual health during the second part of the twentieth century was much more expensive and less effective in terms of reduction of mortality and morbidity (Abel-Smith, 1984). Since the sixties health differences have relatively speaking been on the increase in the industrialized countries (Feinstein, 1993). At the same time, the average health status rose considerably.

Socio-economic health differences exist between and within countries. The huge differences in mortality and morbidity rates between countries in the North and in the South respectively in the East and in the West of the globe are well documented in the annual reports of many UN organizations (UNICEF, 1985–1999; UNDP, 1990; UNFPA, 1993–1998), and in a report by the World Bank (1993). In most cases these differences have a socio-economic background.

Major socio-economic health differences are also seen within countries between various segments of society, which are determined by region, wealth, employment status, ethnicity, marital status, education and occupation.

Attention for socio-economic health differences in the Netherlands has grown over the past ten years. It started by mentioning the topic in several policy papers of the Ministry of Health (Tweede Kamer, 1986, 1989, 1995). The Ministry also financed two research programmes. The first programme (1989–1994) contributed to knowledge in descriptive and explanatory sense, followed by a second programme (1994–1999) with specific attention for intervention strat-

egies (Mackenbach 1994; Gepekens et al., 1995). As part of this work, a documentation centre for socio-economic health differences was set up at the Department of Public Health and Social Medicine at Erasmus University Rotterdam.

## 2.2 Socio-economic health differences in the Netherlands

This paragraph offers an overview of the present situation with regard to socio-economic health differences in the Netherlands, the operationalization of socio-economic health differences in research, the results and determinants. This overview is based on the most important studies (Mackenbach, 1994; Stronks et al., 1997).

### *- operationalization*

Socio-economic health differences are usually described through an operationalization of socio-economic status by education, occupational status or income/wealth. In explanatory research education is usually linked to health behaviour, occupational status to working conditions and income/wealth to material circumstances. Health differences determined by age, sex, marital status, actual employment position, ethnicity, region/area are linked to socio-economic health differences, but often less pronounced than socio-economic health differences themselves. The cumulative negative effect of socio-economic status variables and other determinants is called deprivation.

Health indicators commonly used to describe socio-economic health differences are the percentage of persons in good or bad perceived health, the percentage of persons with one or more chronic conditions respectively disabilities, mortality and health life expectancy. Much of the available data is interview-based and therefore related to self reported health. Research studying objective health is performed less frequently, but is focused almost exclusively on mortality statistics.

### *- description socio-economic status and health*

Almost all health indicators show persons with a lower socio-economic status as being worse off than those with a high socio-economic status, especially for perceived health and if a disability is present. The high prevalence rates for chronic conditions (e.g. coronary heart disease, asthma/COPD and some cancers) are striking in persons with a lower socio-economic status. Psychosocial problems also appear more frequently in persons with low a socio-economic status,

which problems are far more pronounced in women than in men. These higher prevalence figures are the combined result of high incidence rates and a worse natural history of health problems. There is also a negative relationship between socio-economic status and mortality, both at individual and group (= area) level. Differences in life expectancy at birth for men and women in different socio-economic status groups amount to 3,5 years, differences in healthy life expectancy between the groups more than 11 years.

Socio-economic health differences in children are strongest at birth and during the first years of life, but then diminish at adolescence. Socio-economic health differences in elderly people are strongest where income-related health differences are concerned. Socio-economic health differences in children and the elderly are proven for mortality (including perinatal/infant mortality) and reported health. Socio-economic health differences appear to be smaller in women than for men. In all likelihood these are true differences. The most probable explanation is that specific risk factors such as poor working conditions and unhealthy behaviour are more strongly clustered in men with a lower socio-economic status than in women with a lower socio-economic status.

Time trends of mortality indicate a slight increase of socio-economic health differences over the years in several OECD countries, although no firm conclusion can be drawn. For certain diseases, socio-economic health differences have reversed over time (e.g. lung cancer, cardiovascular diseases). The differences between social groups have also dwindled. In absolute terms, life expectancy has increased considerably for all social groups.

*- determinants*

In the socio-economic health differences theory two mechanisms play a role: causation and selection. Causation means during life, certain socio-economic factors have a negative influence on the personal health status of persons born healthy. Selection implies that disease may have a negative impact on a person's socio-economic status.

The following causation determinants have been studied:

- \* *unhealthy behaviour*: smoking and bad nutritional habits are more common in people with a lower socio-economic status; alcohol consumption and social economic status is determined by sex: high alcohol consumption is observed among men with a low socio-economic status and among women with high socio-economic status;
- \* *material deprivation*: complaints about bad housing and bad working conditions are more common in people with a low socio-economic status; also a

relative low income, one of the indicators of socio-economic status, can explain a part of the higher prevalence of health problems in lower social economic status strata;

- \* *psychosocial stress*: is not necessarily higher in lower socio-economic status strata, but people in these strata have fewer choices of coping strategies;
- \* *health care*: lower utilization for preventive services, higher utilization for curative services by lower social class;
- \* *parental background*: has little impact on socio-economic health differences according to the available research evidence (Van de Mheen, 1998).

Most important causation determinants for socio-economic health differences are considered unhealthy behaviour and material conditions.

For the selection determinants two situations appear:

- \* *diseased in childhood*: leads to poorer school results and culminating in a lower level of education and the consequences thereof;
- \* *diseased in adulthood*: may have an effect on career and income, but little on level of education;

In general it is acknowledged that in a mature welfare state, selection determinants play a minor role compared with causation determinants.

### **2.3 Policy with regard to reduction of socio-economic health differences**

#### *An equity oriented health policy*

Efforts are being made at various levels to develop policies and strategies aimed at reducing socio-economic health differences.

The *global strategy Health For All* by the year 2000 through Primary Health Care focuses explicitly on (in)equity (WHO/UNICEF, 1978; Whitehead, 1990). Inequity represents the moral dimension, suggesting that what is being talked about are avoidable and unjust dimensions of unequal distribution of health resources and disparities in health status (MacDonald, 1994). Stronks et al., (1993) suggest that inequity incorporates avoidable, unacceptable inequalities. Klein (1988) argues that using the word inequalities 'is to set up the presumption of a prima facie case for social concern, perhaps even moral outrage, and policy action'. A more neutral word would be differences. In this thesis this will be the term used.

Although it is clear that differences in health status will always remain, the results of the Health For All strategy, which has as target number one 'equity in health', have been disappointing so far in many countries (including the Netherlands) (van der Water et al., 1995). This failure can be explained for the most part by the fact that complementary (world wide) social policies are not yet effective. Social exclusion and social exploitation, which immediately affect health status, are still common features in high, middle and low income countries (World Bank, 1993). Global macro-economic policies seem to favour the affluent while the number of drop-outs in terms of poverty and underdevelopment is burgeoning (Max-Neef, 1992). The best illustration of the degree of sheer ignorance of the importance of good social policies may be the fact that the Social Summit held in 1995 at Copenhagen under the auspice of the United Nations was the first ever.

Less attention is paid to *national* policies and strategies to address socio-economic health differences. Indeed policy papers abound, and much research has been carried out. There are thousands of community health initiatives, yet on inspection they are seen to be diverse and disparate. Perhaps the recognition that there is nevertheless one common element to all the initiatives – a collective approach to health issues – paved the way for the widespread adoption and understanding of the concept. The response to the publication of the Black Report (Townsend et al., 1982) from the then Social Services Secretary Patrick Jenkin clarifies some problems. He wrote:

*"It will come as a disappointment to many that over long periods since the inception of the National Health Services there is generally little sign of health inequalities in Britain actually diminishing and, in some cases, they may be increasing. It will be seen that the Group has reached the view that the causes of health inequalities are so deep-rooted that only a major and wide-ranging programme of public expenditure is capable of altering the pattern. I must make it clear that additional expenditure on this scale which could result from the report's recommendations -the amount involved could be upwards of £2 billion a year- is quite unrealistic in present and foreseeable economic circumstances.... I cannot, therefore, endorse the Group's recommendations. I am making the report available for discussion, but without any commitment by the government to its proposals"*

Thus only wide-ranging public spending could tackle the roots of socio-economic health differences. Is this a correct conclusion? On the other hand, Jenkin's assertion that it would be difficult to assess the effects of such change has proved embarrassingly difficult to counter. So the problem has continued to be studied, the theories have moved on. National publications on the theme have

been produced indicating an upsurge of research and paucity of effective action by health authorities and others (Dahlgren et al., 1992; Mackenbach, 1994; McIntyre, 1997). One of the problems is the strong focus on lifestyle changes, such as smoking and diet and to prescribe more health promotion, rather than on the underlying causes such as poverty, limited power and unemployment.

In many countries *local* health authorities have produced their own mini-Black reports and mapped out local health differences. At the same time reviews on resource allocation formulas and area-based studies of socio-economic health differences show that only by developing adequate theories can research into deprivation and health move forward (Jarman, 1983; Townsend et al., 1988; Carr-Hill et al., 1991; Lloyd et al., 1995). But a real reduction in inequalities will only occur when the plethora of research is used as a springboard for action by the wide range of organisations and individuals able to change public health (Lau-IJzerman et al., 1981; Reijneveld, 1995). One of the problems is whether the information provided by research is appropriate for initiating good action.

In the Netherlands, the national (and to a lesser extent the local) policy is now focussed on the following targets (Stronks et al., 1997):

- attention for specific groups in prevention, which requires intensive, target-oriented actions with personal supervision;
- attention for specific groups in care, especially to guarantee access in financial, cultural and geographical terms;
- intersectoral collaboration;
- improvement of the information system.

#### *An equity oriented information system*

Convincing policy making with regard to and building strategies to combat socio economic health differences require more and better information (Dahlgren et al., 1992). Although two recent research programmes on socio-economic health differences in the Netherlands provided a sizeable amount of descriptive knowledge, omissions in the information system were observed for early school leavers, institutionalized elderly persons, single parents, poor, long-term jobless, asylumseekers, refugees and homeless people. More attention should be paid to cumulative and interactive effects and on the efficacy of interventions to reduce socio-economic health differences (Stronks et al., 1997).

To obtain relevant information, the following prerequisites must be fulfilled:

- coherent information system infrastructures, producing comparable, stan-

standardized data at all levels on small homogenous units;

- stable, reliable sources of information at key positions in health care;
- timely availability of simple, comprehensive, compact, accessible, high-quality data.

It is acknowledged that routinely collected or recorded information can be a basis for good information but still sufficient supervision and control is required to get an optimal result. Priority should be given to seeing how the information system can be modified to record the most important socio-economic variables. At the same time, changes need to be made to existing socio-economic statistics so that these include more health information. It is also important to strike an appropriate balance between recording and monitoring social factors and protecting the right of individuals to privacy.

Only a few countries in the world have been successful in fulfilling these conditions, most notably the United Kingdom and some Nordic Countries. The Netherlands, like the United Kingdom, has the advantage of a highly developed primary care system, in which more than 99% of the population is registered with general practitioners, who keep their patients' medical records. Putting these records on computer has opened the way for case-finding and a more effective follow-up of treatment in particular groups in the community. Some general practitioners have achieved excellent results in encouraging increased uptake and better follow-up in deprived communities using this system (Van Gerven et al., 1992). Others were able to link health information to occupational groups. This has enabled health policy makers to monitor disease patterns and taking some action. The question is whether socio-economic status variables should and can be routinely collected in all practices? While information on the type of insurance is directly available, special effort must be made to collect information on education, occupational status and income.

Although changing national information systems is a long term task, useful information may already be available locally. While every use should be made of this available information, an ongoing research strategy is also required to give greater insight into the causes of health differences in a country.

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## GENERAL PRACTICE IN THE NETHERLANDS

### 3.1 History

#### *The history up to World War II*

It was not until the early 19th century with the advent of a succession of legal rules and regulations that the medical profession in the Netherlands began to be better organized and regulated. Before that time uncertified medical practitioners of all kinds were active. The legislation not only pertained to the training and certification of doctors, but also included a number of measures against poverty, child labour, bad hygienic and sanitary conditions, as well as containing provisions on contagious diseases, undertaking, insanity and compulsory education. Furthermore the possibilities of establishing a Health Care Inspectorate were tentatively explored.

In 1849 the Dutch Medical Association was established. Its major task was the reform of the medical curriculum and the development of an adequate national medical platform. In health care policy the emphasis was on social hygiene, in view of the many epidemics, and later also on curative services. Generalist doctors dominated the health scene; specialisation started from 1880. As both groups were working in and outside hospitals, they were, in fact, in competition. In the period 1865–1945, the absolute number of doctors increased from 2500 to 7500 yet actually remained stable at 720 per million inhabitants (Aulbers 1995).

#### *1945-1970: The first phase of professionalization*

After the War, medical achievements favoured the work of the medical specialist compared with the work of the general practitioner, and created distance between the two medical disciplines. The need for creating a domain of their own became paramount for general practitioners. The book 'The family doctor and his patient' guided this process (Buma, 1950). Buma unfolded his vision on the role and position of general practice, proclaiming that 'individual medicine fails as it has a too small basis', and that 'there is indeed a domain for the general practitioner, especially a social task, however a theoretical frame is missing so far'.

The Royal Dutch Medical Association had been reorganized immediately after the War, whereby professional bodies for both Medical Specialists (LSV) and

General Practitioners (LHV) were created. Their main focus was on the structural and financial aspects of the respective professions, such as job description and payment system. In 1956 a special scientific association was established, the Dutch College of General Practitioners (NHG), which immediately initiated research programmes. In addition, individual general practitioners were writing PhD theses on a wide range of topics such as infectious diseases, genetics, sexuality, social and environmental issues and history. At the Universities general practitioners were working under the umbrella of the Departments of Social Medicine. During the important Woudschoten conference (1959) the content of the discipline was defined in the slogan 'personal integral continuous care'.

Health policy development in this period was rather pragmatic, a laissez-faire approach prevailed. It was also during this period, in 1966, that general practitioners went on what has hitherto remained their only national strike for a better income. A major pay rise of about 25% was granted. Later the emphasis was on strengthening primary care.

To provide ammunition for a health policy of strengthening primary care, a National Research Unit of General Practice (NHI) was established in 1964, supported by a grant from the Ministry of Health. One of its first activities was the organisation of the National Morbidity Survey (Oliemans, 1969). At the same time, the first Department and Chair of General Practice was inaugurated at Utrecht University (1966), soon followed by other universities.

#### *1970-1985: Where is general practice?*

Health policy development was far more pronounced during this period. Internationally the WHO came up with the Health For All strategy and the Primary Health Care concept, which was given a warm welcome (WHO/UNICEF, 1978). At national level the important Structuurnota (Tweede Kamer, 1974) was published, reconfirming the pivotal position of primary care. The development of health centres was a key issue. These centres were comprised of general practitioners, community nurses and social workers who can then work together to better cope with the increasing number of multi-causal problems. If collaboration in one building was not feasible, a so-called home team made up of the same health professionals as the health centre, was an alternative solution. As far as finances were concerned there were long and hot debates about the so-called Covenant between the LHV and the Government. This Covenant dealt with a new establishment policy, including an agreement on norm practice size and norm income, appropriate goodwill arrangements, rates chargeable to privately insured, training programmes, a support structure and better arrangements for dispensing general practitioners and general practitioners providing obstetric

care. The end of this period was marked by actions aimed at deriving maximal result from the Covenant for the profession, and with success (De Graaff, 1991). In academic general practice, most time was spent on the development of training and research programmes. This led to a braindrain of the Dutch College to the University Departments. Overall, general practice had a rather low profile throughout this period, which was in part also due to the antagonistic views held by the professional bodies.

*1985-1995: The second phase of professionalization*

A number of activities stimulated the further professionalization of general practice during this period.

- improvement of information and communication technology  
The introduction of computers in general practice provided excellent opportunities for improving practice management, quality assurance, programmatic prevention and research. While at the start the development was oriented towards financial administration, later emphasis was put on the automated medical record. Appropriate hardware and software were developed. To guide this work LHV and NHG joined forces to develop a so-called reference model; only software was accepted that fit into the model. In this way, the number of software packages was kept limited.
- NHG-Standards  
Since the mid 1980s the quality of general practice care has received much attention. As the issue of quality was considered a responsibility of the profession, LHV and NHG designed a policy, with as focus a system of recertification based on 'educational audit'; this system has been built around job description, curriculum content, guidelines and a well-balanced system of peer review. The NHG initiated a programme for the development and the dissemination of 'standards for adequate general practice care'. These standards cover guidelines on a range of common conditions. Over 70 standards have been produced within a strong framework (Rutten et al., 1993; Rutten et al., 1996) Because of its innovative approach, the programme attracted worldwide attention.
- improved doctor-patient communication  
Good communication skills were required to clarify the reason for encounter and to provide good counselling/advice or appropriate treatment respectively. The general practitioner training programme devotes much

time to developing these skills. Research in the area required videotaped consultations (Bensing, 1991).

- improved organisational infrastructure

Although the professional bodies were well organized at central level, at decentral level the organizational infrastructure was inadequate. A new infrastructure was proposed:

  - \* 23 district associations (DHVs) were formed, covering the whole country. Major tasks included retraining programmes, recruitment and establishment of new general practitioners and human resources management. The chairman, a general practitioner, represents the district at central level (LHV 1994).
  - \* at the local level the general practitioner group (HAGRO-) concept was introduced to stimulate the large proportion of doctors working alone to collaborate in a flexible format. A group consists of 8-10 general practitioners in a certain area, who collaborate in a varying degrees on evening/night /weekend duties, retraining programmes or share the same building (Van der Rijdt-Van der Ven, 1995).
  - \* at the practice level the general practitioner delegated for reasons of efficiency a number of tasks to a well-trained practice assistant (De Haan, 1986). With more patients requiring more intensive care and with new prevention programmes in place, more supportive staff was essential. The most recent development has been the introduction of the practice nurse on an experimental basis.
  
- development programmatic prevention

After long debate Dutch general practitioners overcame their -in Europe rather unique- reluctance to set up effective prevention programmes. As the decentral infrastructure became stronger, the NHG Standards also provided evidence that a national programme for prevention could be developed. Influenza vaccination and cervical cancer screening were the first topics for implementation, soon to be followed by prevention of cardiovascular diseases (LHV/NHG, 1997).
  
- productive relationship with government

During this period, general practice started to play a more significant role in health policy making. The excellent relations between the government and the well-organized professional bodies LHV and NHG strongly contributed to this development.

### **3.2 Present role and position: what can general practice offer?** (largely based on: J vd Velden. The contribution of general practice to health)

The statement of the Second European Conference on the Teaching of General Practice on the education of the general practitioner in the European Medical Community in 1974, is helpful for understanding the role and position of a general practitioner: "the general practitioner's role is to care for any human being as a whole person in his or her environment and the general practitioner's concern goes beyond the requirements of a particular 'incident' of illness. He interprets the patient's needs and demands in biological and pathological as well as in social and psychological terms. He provides continuity of care irrespective of the number of incidents or types of illness that the patient may encounter."

Health care in the Netherlands is a primary care led system with the general practitioner in a pivotal role. Almost every Dutch citizen is registered with a general practitioner, and three quarters of the population consult their general practitioner at least once per year. If people decide to seek professional help for health problems, they usually go to their general practitioner, whether their problems have a medical, a psychological or a social origin. But not only does the general practitioner play a crucial role in aiding those seeking help, the general practitioner has also emerged as a key figure in determining health policy. In many instances, the general practitioner decides in consultation with the patient on the next step to take: laboratory testing, a prescription, a referral or an advice. This role implies a major influence on financial flows in health care. Primary care, with general practice as its cornerstone, is now widely perceived to be the backbone of a rational health services system (UEMO, 1986; Starfield, 1994). Despite agreement on concepts and defined tasks services profiles of general practitioners differ widely in the European Region (Boerma et al., 1998).

#### **Concepts of general practice**

Five characteristics of general practice have been described by Lamberts (1991):

1. The importance of the –preferably longitudinal– relation with the patient, a prerequisite for adequate care. The relationship is however not an exclusive right and general practitioners should be aware of the limits.
2. Definition and legitimation of health problems. The patient expects the general practitioner to define the disease accurately. This confronts the general practitioner with values related to health, illness and disease. The general practitioner has to be careful not to medicalize non–medical prob–

lems.

3. Special attention for the family. Most patients function in a group which shares hearth and home. This group influences the way a individual member deals with problems and disease.
4. Orientation towards the whole practice population. This means that general practitioners responsibility is not limited to those people who are ill, but includes an anticipatory approach through disease prevention and health promotion to the whole practice population.
5. Assessment of the utility of medical interventions: the values of medicine must be confronted with the values of the individual patient and the individual doctor.

Because of its ability to provide continuous care to patients of both sexes and all ages and cost-effectively integrate curative and preventive care general practice is well suited to address comprehensive primary health care needs of people. Does it work? For the everyday work the foregoing concepts were operationalized into a number of tools (Bentzen, 1995).

*- registered populations*

Registered populations, of which the patient list is a well known form, exist only where patients may register with a general practitioner in order to obtain health care. Registered populations make clear for which patients general practitioners are responsible (Olesen et al., 1998). By no means do all countries in European Union have registered populations. There are important intercountry variations in average list size per general practitioner, ranging from 1500 patients in Italy to 2300 in the Netherlands (De Maeseneer et al., 1995).

*- low threshold*

General practice, if available, is a popular health facility, close to where people live and work. Home visits further contribute to a strong relationship with patients. Because of this situation the general practitioner knows the personal and social background of a patient.

*- reason for encounter*

The reason for encounter expresses the demand for care of a patient. The conversation between doctor and patient must clarify the precise reason for encounter and should result in an agreement. This implies finding a good balance between the presented problem and a potential underlying, medically diagnosed problem (Van de Lisdonk, 1985).

- *episode of illness*

Knowledge about the natural history of a disease is crucial in general practice. The general practitioner uses here the concept of episode of illness, defined as a "(health) problem or illness in a patient over the entire period of time from its onset to its resolution" (Bentzen, 1995). The concept of 'episode' in general practice is confined to the phase in which professional help is sought. Within the scope of a single episode one or more encounters can take place. In daily practice this concept helps the doctor to evaluate the situation of a certain patient. In research, episode-oriented registration provides a more accurate picture of the incidence and prevalence than is possible on the basis of individual encounters as many working hypotheses crystallize out into definite diagnoses (McWhinney, 1993).

- *epidemiology of diseases in the general population*

Where general practitioners serve a rather stable and well defined population they are in an excellent position to overview the burden of the disease. (Morrell, 1988; Van den Bosch, 1992) If appropriate tools are used, it is possible to make a community diagnosis and to develop public health strategies. The general practitioner has a lot of knowledge of the different health problems of one patient, including so-called comorbidity (Feinstein, 1970).

- *programmatically prevention*

General practitioners are well-equipped for programmatic prevention. Programmatic prevention involves planned actions targeted at prevention. 'Planned' means according to an agreed division of labour and strategies focusing on target groups and monitored/evaluated for coverage. This requires good steering and good preparation of rational programmes (Rosser et al., 1990; Pas, 1993; Austoker, 1994; Mant, 1994; Döbrössy, 1995; SEMFYC, 1995).

- *gatekeeping and general management*

The gatekeeper function could be defined as a function to create selective referral to specialist care. The patient is formally obliged (that is: not reimbursed) to consult the general practitioner who is managing his/her particular problem(s). In many countries general practitioners have been entrusted with such a 'gatekeeper' function and, in line with the growing level of cost-consciousness in the medical world, they have come under pressure to minimize the number of referrals without decreasing patient's safety or satisfaction (Crombie et al., 1990; Fleming, 1993). The gatekeeper function places the general practitioner in a management position. To fulfil the related tasks more energy



has been put into issues like practice management, delegation of tasks to supportive staff, problem oriented recording and specific communication techniques.

### **Tasks in disease control**

General practice deals with a variety of problems and diagnoses (Hodgkin, 1963; Hasler, 1985; Fry, 1985; De Maeseneer, 1989; Bridges-Webb et al., 1992; Njalsson, 1995; OPCS, 1995). Ideally general practice combines clinical medicine and public health. It is important to realize that the epidemiology of general practice differs completely from the epidemiology of the hospital (Froom et al., 1990). The following diseases are the core of curative services provided in everyday Dutch general practice (table 3.1). The basic job description (Springer, 1983), and the comparison of the population figures from the Public Health Forecast 1997 and general practice based information (Springer, 1991; Van der Velden et al., 1992; Metsemakers, 1993; Lamberts et al., 1994; Van de Lisdonk et al., 1994) serve as the basis of the assessment of importance for general practice.

### **Home care and rehabilitation**

Nowadays people are discharged earlier from hospitals to receive care at home. There is also a tendency for terminally or chronically ill patients to remain at home. For the mentally handicapped special homes are created in neighbourhood environments. Toward this type of patient the attitude of the general practitioner is one of concern with the personal situation. The general practitioner's task is to find a solution with the patient, taking into account the functional capabilities of restarting work, of supporting the family, and to have an advocacy role in care by other providers. Usually home care and rehabilitation involve a range of other professionals, most frequently nurses, home helps, physiotherapists, and other paramedics. Increasingly more home care technology is implemented. The general practitioner could be coordinator of a team of health professionals if required (Van Weel, 1994).

Table 3.1 Curative services in general practice in the Netherlands

	importance for general practice	remarks
<i>Communicable diseases</i>		
- infectious diseases	+++	about 25% of all consultations
- pregnancy and complication	+	physiological pregnancy and delivery may be under control of a GP, complications referred to a obstetrician
<i>Non-communicable diseases</i>		
- cancer	+	in the terminal phase the GP is most active and may coordinate care;
- diabetes mellitus	++	only type II under full control of a GP. New technology (e.g. insulin pump) can create a more important role in type I.
- neurological diseases (incl. Parkinson, epilepsy, MS, neuropathy)	+	usually monitored by neurologists; GP is responsible for intercurrent morbidity.
- eye problems	++	mainly degenerative diseases
- ear problems	++	mainly deafness
- cardiovascular diseases	++	acute cases referred to cardiologist, chronic cases responsibility for GP;
- asthma/COPD	+++	asthma/chronic bronchitis usually under control of a GP. Pulmonary emphysema and other lungfibrosis monitored by a specialist.
- diseases digestive system	++	
- diseases genitourinary system	+	
- skin diseases	++	acute cases for GP, chronic for specialist
- rheumatic diseases (incl. dorsopathy osteoarthritis, rheumatoid arthritis)	+++	in the acute phase under control of a specialist, later of a GP
<i>Psychological and psychiatric problems</i>		
- anxiety/nervousness/stress	+++	
- sleeplessness	+++	
- addiction	+	GP's involvement depends on ambulant mental health care
- depression	+++	
- other serious psychiatric problems	+	mostly under control of specialist, GP's attention require (inclination to) suicide and (pre)senile dementia;
<i>Social problems</i>		
- problems in relationships partner, family members, friends	+++	often underlying cause of other problems
- problems education of children/or at school	+	GP sees problems at late stage
- problems at work or loosing a job	+	GP is confronted indirectly
- socio cultural/economic problems	+	GP caring for asylumseekers/immigrants most frequently meets these problems
<i>Injuries</i>		
- home accidents	+++	
- traffic accidents/sport injuries	+	in urban areas the ambulance services resp first aid is usually the first contact in rural areas GPs have an important function.
- violence (incl child abuse, sexual abuse, murder)	+	above all a hidden affair
<i>Other</i>		
- symptom diagnosis (incl. chronic benign pain, allergy, ME)	+++	causal mechanism often not known
- minor ailments (incl. headache, tiredness, depressive feelings, common cold)	+++	exclusion of serious condition and reassurance are main activities
- worried well people	+++	reassurance most important aspect

+++ >80% under control of general practitioner/++; >40% <80% under control of general practitioner; + <40% under control of general practitioner

children, but it is nowadays frequently the scene of violence, incest and divorce.

- *community*: the problems of the patient are viewed in the context of his/her life in the local community (Abramson, 1988; Hart, 1988). The local community ensures a good infrastructure, housing, water and sanitation.
- *society*: the problems of the patient are in many cases part of a societal development. Income distribution, educational and occupational environment, national traffic infrastructure are determined on the societal level, all touching the individual citizen.

\* Social target groups

General practitioners see children, elderly people, men and women, poor and rich, well and less educated and people with differing work exposure, but are not always aware of their differing needs. General practitioners must try to define groups which require special attention as tool for solutions for common health problems of these groups. The most important focus for the general practitioner are the places where people live and work.

– *health at home and neighbourhood*

Through intersectoral collaboration the health sector is represented in programmes of water supply and sanitation, food quality and safety, housing schemes with attention for indoor/outdoor air quality, waste disposal management and soil pollution, urban planning, energy and transport, traffic infrastructure and several social programmes.

The role of general practitioners in these programmes differs between urban and rural areas. In a village the general practitioner is often the local public health officer, dealing with issues such as a coroner's inquest or a medical examination of a detainee. In other areas the general practitioner plays a rather passive, surveillance role and only considers human ecology in his day-to-day patient care. The situation of general practitioners working in deprived inner city areas is different yet again. The inhabitants of these deprived areas, among which large communities of ethnic minorities, often show limited self reliance, little social cohesion and a great need for care. The local general practitioner is frequently confronted with social problems, with language and cultural barriers and he must moreover operate in complex care structure. The average income of a general practitioner working in such an area is below average, hardly rendering such a practice an attractive option. To tackle this problem a scheme, by which general practitioners in deprived areas could receive extra resources, has been developed. The method of identification of deprived areas for allocating

extra resources as described in chapter 17 is an attempt to find a solution for the problem.

The general practitioner has in principle the expertise needed for recognizing problems by detecting relationships between health of individuals, families or other groups and the environmental conditions (village, neighbourhood, building) (Querido, 1988). Further general practitioners must have a knowledge of housing conditions. The general practitioner can obtain this knowledge during house calls. How this can work is described in relation to respiratory tract infections in chapter 16.

– *health at work*

Occupational medicine is the field of medicine dealing with health at work. It plays an important role in the industrial/agricultural development, not in the least in areas of illness-related absenteeism and disability benefit schemes. It monitors the quality of labor and looks for ways to improve conditions. The hot topic today is work stress.

The general practitioner could play a role with regard to the early detection of work-related conditions, common in the specific community in which the general practitioner works. This role requires training. General practitioners moreover play an advocacy role for patients in need of their assistance with labour-related conditions. A good relationship with occupational medicine is required. To date, little is known about the potential of general based information on the issue. The analyses in chapter 15 are an attempt to fill parts of the gap.

It is not helpful to general practice to have different doctors deliver primary care to certain categories of the population, but general practitioners should be aware of the existence of different public health programmes such as child health, school and adolescence health, public mental health, women health care, care for ethnic minorities, asylum seekers and deprived people and finally care for elderly people. The added value of general practice based information with regard to these different target groups is described in chapter 10.2 under the heading of the major findings of the Dutch National Survey of General Practice.

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## HEALTH INFORMATION AND THE ROLE OF GENERAL PRACTICE

### 4.1 Sources of health information

In the Netherlands, like in most other industrialized countries, many sources of health information exist. These are based on differing purposes resulting in differing designs and output. The most important determinants of sources of health information can be characterized as follows:

- \* permanent registries versus ad hoc research
- \* population-based versus care based information
- \* comprehensive registry versus event based registry
- \* objective health status versus subjective health status
- \* content: mortality/morbidity/disability (and interventions)

An overview of sources of health information is provided regularly by the Ministry of Health. The most important permanent registries are presented in table 4.1. There is a good mix of population based, primary and secondary care based information, comprehensive and event based information on objective and subjective health status.

### 4.2 General practice based information

- *the history of general practice based information systems*

Since the Second World War individual general practitioners have been active in collecting data in a systematic way. Huygen created his famous family register, with which he was able to run his practice efficiently and to do research (Huygen, 1979). It became the basis for the CMR Nijmegen, a health information system that is running since 1967. Under the umbrella of the Dutch College of General Practitioners a national morbidity survey was carried out, which was succeeded by the still existing national sentinel network (Oliemans, 1969; Bartelds, 1998). Later the Ommoord group practice in Rotterdam was the basis for several registries such as Morbiditeits-analyse, Monitoring-project and

Table 4.1 The most important Registries on Health Information in the Netherlands with study population, health indicators and availability of information on medical consumption

Registry	Study population	Health Indicator	Availability information on medical consumption
Cause of death	total	mortality life expectancy	-
National Medical Registry (LMR)	hospital admissions	all diagnoses at discharge	+
Nursing Home Statistics (SIVIS)	nursing home admissions	all diagnoses/functional status	+
Intramural Mental Health Care (PIGG)	intramural psychiatric patients	all diagnoses at discharge	+
Polyclinic information system (POLIS)	OPD patients in sample of hospitals	all diagnoses new patients	+
National Obstetric Registry (LVR 1+2)	pregnant women in primary and secondary care	birth and complication	+
Congenital Anomaly Registry (EUROCAT)	patients in primary and secondary care	congenital anomaly	+
Pathological Anatomical Archive (PALGA)	biopsy from primary and secondary care	PA diagnosis	+
National Cancer Registry (NKR)	patients in primary and secondary care	cancer	+
Case registry epilepsy	patients in primary and secondary care	epilepsy	+
Registration Networks General Practice	primary care	all episode oriented diagnoses	+
Sentinel Network General Practice	primary care	specific event-based diagnoses (incl lab confirmation)	-
Alcohol/drugs information system (LADIS)	primary care	addiction alcohol/drugs	+
Health Interview Survey (GE)	open	subjective health status incl - complaints - chronic diseases - ADL/IADL - mental health	+
Injuries (PORS + VOR)	open	home/traffic accidents	+
Sickness Absence /Disability Benefit Scheme Registry	total working force	all diagnoses	+

Sources: Ministerie van VWS, 1993/Van der Maas et al., 1995

Transition (Lamberts, 1972; 1984; 1991). In the 1980s the Departments of General Practice/Family Medicine of all Medical Schools wanted to start a registration network.

In other countries, similar developments were seen. The United Kingdom obviously has the oldest tradition in this respect (OPCS, 1995), but nowadays also countries such as Australia, Belgium, France, Iceland, New Zealand, Spain and Portugal have followed suit (Van Casteren, 1991; Bridges-Webb et al., 1991; Backer et al., 1993; De Maeseneer 1995; Njalsson, 1995; Dovey et al., 1996; Bartelds et al., 1998)

It might therefore be expected that the work of the general practitioner in the Netherlands have been mapped out in detail yet this is not the case. The major reason for this is that the way the payment system of general practice care has been organised does not stimulate general practitioners to put their work on paper or in the computer. General practitioners receive a capitation fee, i.e. an income independent of the help the general practitioner provides for those insured by the public sick funds, which does not stimulate the production of routine information. Moreover, the care for privately insured persons is reimbursed by different companies, rendering an overall picture is not available.

Another problem related to routine information about primary care is that the information is either directed at the patient or the general practitioner, and not at both at the same time. On the one hand is the annual health interview survey of Statistics Netherlands (CBS) taken every year since 1981 and in which a sample of 10,000 persons are questioned about their health status (and health experience) and medical consumption combined with determinants. This provides only limited insight into the different health care provisions (Bonte, 1989; Van Sonsbeek, 1996). On the other hand practice-based research, in which morbidity and interventions are recorded, fails to provide information on the patient.

It is clear that there is lack of comprehensive information from general practice and lack of perspective on the role and position of general practice within the health care system of the Netherlands. Moreover no appropriate tools for data collection were available.

- *towards a policy for general practice based information systems*

A coherent policy was required, the more as the progression in automation of general practice demanded co-ordination with regard to hard- and software developments. There was also a need for developing a standard medical record ('green chart'). The Dutch Association of General Practitioners and the Dutch College of General Practitioners agreed to develop a national reference model.

Only hard- and software that were compatible with the standards defined in the model were acceptable. At the same time a research strategy was set out, including studies on the medical record in non automated and automated practices (Höppener, 1990; Meijboom, 1990; Metsemakers, 1993). Yet all the work focused more on development inside general practice than on support for national health policy.

- *present role of general practice based information systems*

This attitude changed in the 1990s as the profession discovered the importance of the information kept in patients' medical records for the three major Dutch health reports i.e. Health Budget Report, Public Health Status Forecast, State of Care. Knowledge about the work of the general practitioner is important for the implementation of a policy focusing on meeting needs of the population and a more efficient health care. The general practitioner can also provide much information about the health status of the Dutch population. This information is indispensable to a health policy that strongly focuses on social inequalities and specific target groups (Tweede Kamer, 1986, Ruwaard et al., 1993, 1997) These information systems have resulted in a strong position for primary care research in the Netherlands covering a wide spectrum of research disciplines (clinical research, epidemiology, health services research, health system research, behavioural/antropological research).

- *implementation of general practice based information system*

- \* assessment of the information need: the first assessment of general practice based information needs was not carried out until the early 1990s (Stokx et al., 1996). A clear core minimum basic dataset could easily be constructed from the needs of the many different parties.
- \* development of registration system models: an inventory of general practice based registration systems revealed that several models were in use, such as continuous comprehensive morbidity recording, intermittent prescription recording, or recording for the sake of a research infrastructure or for training purposes;
- \* development of appropriate classification: the development of both ICPC and Read Classifications was of great help in the progress of primary care research (Lamberts et al., 1994; Chisholm, 1991). The ATC classification for medicines (Nordic Council, 1991) was another important milestone;
- \* data processing: one of the logistic problems for general practice based information systems is the availability of strong main frames and/or large PC-network with appropriate database management software;

- \* data analysis and dissemination of results: Dutch primary care researchers are successful in becoming published in peer reviewed journals. However, no clear policy exist to as yet.

*- evaluation of general practitioner based information systems*

The value of the available general practice based information systems in the Netherlands has been the subject of intense debate over the past ten years (Meijboom–de Jong, 1993; Knottnerus, 1994; Foets et al., 1994; Lamberts et al., 1994). Research focused on the description of information systems (Höppener, 1989; Metsemakers, 1993), on the comparison of the different morbidity registration systems (Hart et al., 1996; Gijzen et al., 1997; Hofmans, 1997), and further in–depth analyses on specific topics were performed (van Weel, 1995). At international level, the combined national sentinel networks were subject of several studies (van Casteren, 1991; de Maeseneer, 1995; Schwarz, 1997).

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**PART TWO**

**THE DUTCH NATIONAL SURVEY OF  
GENERAL PRACTICE**



## BACKGROUND AND HISTORICAL DEVELOPMENT

In this part the Dutch National Survey of General Practice is presented. The chapters below describe its historical roots, added value, methodological aspects and major findings. During all the phases of this project, but especially during the study design phase many considerations, alternatives and choices passed the central team. As it is impossible to present all the ins and outs of the decisions made, particular attention will be paid to the more controversial sections.

### 5.1 A historical note on the development of the survey

The roots for the now successful general practitioner research programme in the Netherlands lay in the 1950s, when many, often single-handedly general practitioners did research in their own practices, which was later followed by a National Morbidity Survey under the umbrella of the Dutch College of general practitioners (Oliemans, 1969). Somewhat later, in the early 1970s, groups of general practitioners carried out morbidity research under supervision of experienced researchers. As these general practitioners were recruited locally, the generalisability of the results was questioned. Moreover, there were no national figures on interventions and information about the practice population was very limited. During these years, strengthening primary care was high on the political agenda.

To develop a successful strategy of implementation, policymakers were very keen on 'national representative data on morbidity, and related interventions in general practice, linked to information about the practice and the population'.

The first ideas for a National Survey were launched in the late seventies. A network of computerized practices was proposed, which would provide continuous information (Van der Velden, 1986). An initial project proposal, focusing solely on referrals to a medical specialist was so expensive that it was decided 'to record all interventions and all morbidity, to properly answer all relevant research questions' (Posthuma & van der Zee, 1979).

To do so a number of methodological questions had to be dealt with. This was achieved by an extensive literature review and intensive discussions during

round table conferences, resulting in the following 'roots' for the conceptual frame of the study design (Crombie et al., 1984).

– *National Morbidity Study in the Netherlands* (Oliemans, 1969), carried out under auspices of the Dutch College of General Practitioners; it was the first and only representative study on morbidity in general practice in the Netherlands; the registration was intermittent and contact based; at the time researchers were dependent on region-based information systems. This created fragmentation of information.

– *Continuous Morbidity Registration Nijmegen*, the longitudinal morbidity registration project which has been running since 1970 in the Nijmegen Region under umbrella of the Department of General Practice/Family Medicine of Nijmegen University (Van de Lisdonk, 1994). The importance of the availability of longitudinal data on chronic diseases stems from this project.

– *National Morbidity Surveys in the United Kingdom* (OPCS 1961, 1974, 1984, 1995) carried out four times since the 1950s. The following ideas were picked up: linkage with census information, episode-oriented registration, the diagnosis is determined by the participating general practitioner and a sufficient large database to be able to analyse interdoctor/interpractice variation;

– *National Health Interview Survey* carried out annually in the Netherlands since 1981 among a random sample of households by Statistics Netherlands (Van Sonsbeek, 1996). Relevance for general practice and comparability with existing information from the survey were the guiding principles in designing the health interview as component of the National Survey.

The next step explored the methods of data collection and data processing applied in two projects: 'Automation in General Practice' and 'Registration and Classification in General Practice' (Schellevis et al., 1984). The project 'Automation in General Practice' was an attempt to develop an automated recording system for daily practice combining the production of required routine information for general practitioners and information for research. This was not yet feasible. In the project 'Registration and Classification in General Practice', existing classification systems were reviewed for usability. The study also included issues such as the use of diagnostic criteria and the central or decentral coding of diagnoses. The project reached no clear cut conclusion.

Given the complexity and size of the proposed project, and because of the costs involved, a Feasibility Study was carried out, prior to an ultimate decision about the execution of the project. This study was performed between 1 October 1985 and 30 June 1986. It included the following activities (Foets et al., 1986; Bensing et al., 1991).

- design and elaboration of subprojects, the backbone of the project;
- development and testing of the most important measuring instruments;
- development of a data-entry system and a plan for database management;
- development and testing of a fieldwork organization, from which the blue-print for the final project was produced;
- selection and recruitment of the sample of general practitioners for the main survey;
- development of methods for quality control of the data;
- initiative for collaboration with university departments of general practice / family medicine for specific subprojects and with Statistics Netherlands (CBS) for the health interview survey

## **5.2 From practice-based to population-based research: the added value of the survey**

Although the emphasis in the survey was on health services research, with demand and supply forming the key features, the emphasis in health policy in the Netherlands shifted during the late 1980s in the direction of the assessment of needs and demand for care. The survey design was adapted in that direction. It could make general practice an even more important source of social epidemiological information (Tweede Kamer, 1986).

### **5.2.1 The need for social epidemiological research in general practice**

Many health problems have a psychological or social basis, but are frequently presented in general practice as physical symptoms, and can be only dealt with adequately by attempting to unravel the underlying psychological and social causes. Important tools for this work are continuity of care, providing information of patients, their life and diseases over time, and house calls, providing information over the immediate environment (White, 1988). Although general practitioners are primarily trained to treat individual patients, their knowledge about the social network of the patient i.e. family and the community is indispensable for a good quality of care (Huygen, 1979). The general practitioner

may be relatively powerless to change the psychological and social causes of diseases in comparison to the ability to take action for physical illnesses, but the general practitioner could have an important signalling function. But while the psychological dimension of health problems has received considerable attention from general practitioners during the last decades, the social dimension of their work seems to be a forgotten awareness of the past (Buma, 1950).

### 5.2.2 The requirements for social epidemiological research in general practice

The following general requirements for social epidemiological research in general practice can be identified:

- *socio-demographic data of registered persons on a fixed list;*

General practice in the Netherlands operates under optimal circumstances to collect data of the practice population. There is a fixed list of patients, and the mobility of patients is generally rather low, although in some deprived areas an annual mobility rate of 30% of the whole practice population can be observed. Almost all Dutch citizens are registered in a general practice.

Until recently social information about the patients on a general practitioner's list was obtained by linking the morbidity records to census data in the National Morbidity Surveys in the United Kingdom. Such a bold solution was not possible in the Netherlands, because censuses have been abolished. It was, therefore, necessary to collect this information by means of separate patient registration. Although we had expected problems with collecting socio-demographic data it was a surprise to discover that the age-sex register in many practices was not complete or up to date (Van der Velden, 1989).

- *standardized health information;*

Collecting standardized health information in the practice requires good measuring instruments, good instruction and good quality control of data. A major problem is that no clear-cut diagnosis fitting a nosological system can be made in many health problems when first presented. Many diagnoses will be kept rather vague during a first contact and may or quite frequently may later not crystallize into recognizable diseases.

Most health data from general practice are available through the medical record. Since 1979, a standard medical record has been available. The recording according SOAP and the problem list became routine in training and daily practice. The record, however, is not always kept up to date (Meijboom, 1989).

Health data from the total practice population are not routinely available. Specific research has proven of great value (Van de Lisdonk, 1985).

*- linkage of these data sets*

We used a combination of unique information from the practice, the general practitioner, the practice assistant and from an individual. We decided to code the latter by using a variation of the Hogben code in use in the National Morbidity Survey in the United Kingdom (OPCS, 1984). The code included three letters of the name, date of birth and sex.

These aspects have been incorporated in the design of the Dutch National Survey. The Survey offered so an excellent opportunity for social epidemiological research.

### **5.3 The information requested**

Information on the following topics was requested (Van der Velden, 1986):

- a description of demand and supply of general practice care with extra attention, when compared with previous research, for:
  - \* factors on the demand side which influence the presentation of health problems to the general practitioner such as socio-demographic characteristics, type of insurance, health status, self care arrangements and social support;
  - \* factors on the supply side which influence the reactions of general practitioners to the problems presented to them such as organization and management of the practice, professional attitude and performance of general practitioners;
- the relation between workload and the existing payment system; the topic of this research question was viewed as a baseline measurement before introducing new cost sharing arrangements and changes in the payment system;
- the relation between the general practice and other health care provisions; general practice has a pivotal role in the Netherlands, whereby the general practitioner is an important link in the consumption of home care/social work, physiotherapeutic care, pharmaceutical care, specialist care and ambulant mental health care; moreover insight is requested on the need of

aftercare of patients discharged from hospitals; the available information on the issue is fragmented, incomplete and needs an update, which is the reason why several subprojects were planned to deal with the issue.

- the relation between the general practice and informal care; different policy measures were taken to impose clear restriction on the provision of professional care. At the same time self care and mutual care were stimulated. With this background it is important to know under which condition people tend to seek help from a general practitioner, and under which conditions they try to solve problems themselves or with help of the direct environment.

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*background and historical development*

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## STUDY DESIGN AND APPROACHES TO DATA COLLECTION

This chapter will describe the most important methodological aspects of the Dutch National Survey of General Practice i.e. aim, objective and design of the study, the study population, measurement instruments, classification issues, data collection, data-processing and data-analysis. Feedback to the practice will be examined separately.

### 6.1 Aim, objective and design

#### Aim of the National Survey

In the study design, the aim of the National Survey had been described as follows:

'to obtain at national scale an insight in the presentation of complaints and health problems to general practice, in the actions of general practitioners, related to these problems and in factors which influence the presentation of health problems as well as the differing reaction to presented problems' (Foets et al., 1986).

#### Objectives

The objectives of the survey were:

- description of the pattern of diseases registered in general practice;
- description of the management of diseases in general practice;
- identification of determinants on the patient's side which influence the presentation of health problems to the general practice;
- identification of determinants on the general practitioner's side which influence the reactions of general practitioners to the problems presented to them.

#### Design

In the final design of the survey experiences from other surveys ('the roots') were combined with new ideas:

- the link between the health information from the population and general practice

– comprehensive information about socio-economic status

Originally, the survey was designed primarily as a health services research, in which demand and supply in general practice were to be investigated. Information gathered on both the side of the doctor and the side of the patients provides unique opportunities for obtaining an insight into the position and function of the Dutch general practitioner. In health care systems where the general practitioner has a central position as a gatekeeper to secondary health care provisions, this type of information is useful to policy-makers in particular.

However, over time the research into the link between practice-based and population-based information has become more and more the cornerstone of the National Survey. Epidemiology is often considered the linking pin between clinical medicine and public health (White, 1991). Epidemiology in general practice combines the best of two worlds (Morrell, 1988) and was from the beginning one of the guiding tools in the National Survey.

### **Subprojects**

Because of the complexity of the research aim, the survey design was based on twelve subprojects, some of which concerned the health status and medical consumption of the patient, the morbidity presented in general practice, and morbidity-related interventions. The selection of the subjects was based on the original aim of the study, current policy-related questions, obtained from a series of consultations with policy-making bodies. The titles of these projects are presented in table 6.1.

Table 6.1 Dutch National Survey of General practice: original projects

Self Care and Mutual Care
Prevention
Obstetric Care
Morbidity in General Practice
Psychological Problems and Mental Health Care
Chronic Diseases in General Practice
Diagnostic Procedures
Prescription of Medicines
Referral inside Primary Care
Referral to Secondary Care
Primary/Secondary Care Interface
Workload in General Practice

The study population and the data collection were largely similar in all twelve projects and set up in such a way as to fulfil the requirements of these projects

in the best possible way. A number of the projects required the collection of additional data in sometimes divergent study subpopulations.

## **6.2 Study population: sampling, recruitment & response** (Foets et al., 1986; Foets et al., 1990a, 1990b; Bensing et al., 1991; Foets et al., 1992)

The National Survey has been designed as a two-step-multi-level survey of general practitioners and patients in which additional information could be collected from the practice population.

### **\* general practitioners**

A random non proportional stratified sample of general practitioners was chosen. It must be emphasized that the general practitioners themselves were approached, and not practices, whereby colleagues of general practitioners in the sample working in the same (group) practice were also requested to participate for two reasons. In the first place we wished to avoid a situation in which one of the general practitioners in a group practice wanted to participate, while his/her colleague(s) did not. In the second place, the age-sex register was linked to the whole practice and not to individual general practitioners. Moreover, patients often visit more than one general practitioner in a group practice. Because it was our aim to link (reasons for) encounter(s) to episodes of care, the health problems presented to these colleagues were indispensable.

The sample framework was formed by the national general practitioner's file as of 1 January 1985. A non-proportional stratified random sample was drawn in order to guarantee that all values of potentially explanatory variables were well represented in the sample and that all sample cells were equally filled. The stratification variables were region, distance from the practice address to the nearest hospital and degree of urbanisation, as these are known to be connected with morbidity and interventions in the population and general practice.(table 6.2)

In total, three consecutive sample of 150 general practitioners were drawn, but due to overlap in the sample only 408 general practitioners were approached. In the recruitment of general practitioners the general practitioner from the first sample was consistently given priority. General practitioners were invited to participate in the study by letter, accompanied by letters of recommendation from the Dutch National Association of General Practitioners and the Dutch College of General Practitioners. In a few stratification sample cells, it was

necessary to invite the participation of volunteering general practitioners.

The recruitment resulted in the participation of 161 established general practitioners, working at 103 locations. Of these 161 general practitioners, 98 originated directly from the sample; the other general practitioners are colleagues of sample physicians in the same practice (N=57) and volunteers (N=6). The study further comprised 32 non-established doctors: assistant general practitioners (N=10), locums (N=9), general practice-trainees (N=13). Thus a total of 193 doctors collaborated in the investigation.

Table 6.2 Dutch National Survey of General Practice: stratification variables

<i>region is divided into three categories:</i>	
-north	(Groningen, Friesland and Drenthe)
-middle	(Overijssel, Gelderland, Utrecht, Flevoland, North and South Holland, Zeeland)
-south	(Noord Brabant, Limburg)
<i>distance from the practice address to the nearest hospital variable is divided into:</i>	
-hospital in same place as the practice address	
-hospital outside the place and up to 15 km from the practice	
-hospital outside the place and more than 15 km from the practice	
<i>degree of urbanisation has the following categories:</i>	
-rural	(fewer than 30.000 inhabitants)
-suburban	(30.000 to 50.000 inhabitants)
-urban	(more than 50.000 inhabitants)
-large cities	(Amsterdam, Rotterdam, Den Haag)

Non-response analysis has shown that the average age of the doctors taking part in the study was lower than the national average, there were more female doctors and less doctors practising alone.

A weighting procedure to correct for these differences ensured national representativity of the results. For the subprojects on chronic disorders and psychosocial problems, a number of doctors who had kept records during the last two registration periods were asked to continue doing so. 15 general practitioners were prepared to participate in the chronic disorders project and 19 in the psychosocial problems project.

#### \* Population

Basic information on the total practice population of the participating general practitioners was gathered in two ways:

- socio-demographic information had to be gathered from the whole practice population of all participating general practitioners. An age-sex register was set up for each practice, yielding a population of about 335,000 patients, as served by the participating general practitioners. The age and sex were known of practically all patients. As regards distribution by age and sex category the population of the National Survey may be described as representative of the Dutch population (Van der Velden et al., 1992).

Regarding this total patient group a number of socio-demographic data was collected by means of a so-called patient registration whereby a special form has been used (see paragraphs 6.3 and 6.4). It was possible to collect all required information on 91.2% of all patients. Non-response was higher in groups with a lower educational or occupational background. As both education and occupation are key variables in analyses presented in part III of this thesis more attention is paid to these patient characteristics.

With regard to *education* information has been derived from a question whereby the respondents were asked to indicate the highest level of education attained. The overall response was 79.3%. Because not all persons up to 24 years inclusive have attained their highest level of education, this category has been left out of consideration in the analyses presented in this thesis. Further analysis showed that respondents and non respondents did not differ by stratification variables, type of health insurance and sex; the highest number of non-responders (27%) could be found among the oldest age group (>75 years).

With regard to *current employment status and occupation* the respondents were asked to indicate their (last practised) occupation. If they did not (yet) have one the occupation of the parents, in case of children living at home, or the partner was included. Non-working persons, broken down into jobless and recipients of disability benefits, were identified by a question concerning the situation if one does not practise that occupation. Students, people in the national services and people in early retirement were separately identified. The current employment status was unknown among 16% of men and 20% of women of the working population aged 16-64 years. The non-response is almost identical for the various age categories and types of health insurance. The occupation remained unknown for 13,4%. In that case the situation if no occupation was performed, was looked at. A comparison of the registration of occupations in the National Survey with national data from Statistics Nether-

lands(CBS) at the level of occupational sector indicated only minor differences, which means that the data of the National Survey can be considered representative for the Dutch working population (van der Velden et al., 1993).

- from a random sample of, on average, 100 persons per participating general practitioner supplementary information was collected by means of a health interview survey. These people were also invited to take part in a health diary study covering a three-week period. Thus, persons selected for the interview did not necessarily have to have visited their general practitioner. The response rate for this interview was 76% and nearly 93% of these respondents completed the health diary. Non-response for the health interview was slightly higher for youngest and oldest age groups and for the health diary high for lower social classes (Foets et al., 1992; Kooiker, 1996).

### **6.3 Measuring instruments and classification**

#### **Measuring instruments**

The study is based upon four central data collections: the registration of the practice population, the registration of interactions between patients and general practitioners/practice assistants, the health interview survey including a health diary and the general practitioner/practice assistant questionnaire combined with a diary. These will now be discussed in some detail. Also several additional data collections will be briefly described.(table 6.3.)

Table 6.3 Dutch National Survey of General Practice: measuring instruments

Registration form practice population
Health interview survey and health diary
Registration form contact between patients and general practice
Questionnaire and diary general practitioner
Questionnaire practice assistant
Intake form/registration form chronic diseases in general practice
Registration form/questionnaire psychosocial problems in general practice
Registration form/questionnaire aftercare and continuity of care general practice-hospital

#### **Registration form practice population**

It is important to consider the morbidity data against the total population at risk and not just against those consulting the general practitioner. The value of mor-

bidity surveys can be highly improved when relevant socio-demographic data are collected. Moreover, list size and practice composition are important characteristics in the study of the general practitioner's diagnostic and therapeutic interventions and of his workload.

The fact that every Dutch citizen is registered with a general practitioner is an ideal starting point for setting up a census like patient registration. However, in the Netherlands approximately one third of the patients is privately insured, and general practitioners' lists are often unreliable where this group, in particular, is concerned. Privately insured patients can change physicians more easily and this is not always adequately registered by the general practitioners concerned. Because of these and other problems the efforts required for obtaining these data have been considerable.

Information has been collected on age, sex, marital status, ethnic background, profession, education, health insurance type and housing conditions of all patients registered in the practices of participating general practitioners.

#### **Health interview survey and health diary**

The objectives of the health interview survey were to collect information on the health status perceived by the individual and on factors influencing the presentation of illness to the general practitioner. A morbidity registration by general practitioners concerns only reported morbidity, and gives no information on illness not reported to the general practitioner. Moreover, registration of the practice population only provides information on a limited number of patient characteristics.

The survey included several health indicators:

- perceived health, assessed on a scale of very good/good/not good, not bad /bad/very bad;
- common symptoms experienced during the last 14 days, presented on a checklist;
- chronic disease(s) suffered by a patient over a period of at least three months, presented on a checklist;
- disability present, measured through questions based on the OECD indicator;
- mental health status, assessed by General Health Questionnaire (GHQ) and biographic problem list (BIOPRO).

Other questions in this survey concerned attitudes of patients regarding health and illness, patient satisfaction, health related habits such as drinking, smoking and exercise, social networks and social support.



The questionnaire also included many questions about the illness and health care utilisation behaviour of the respondents: not only questions concerning the consultations with general practitioners, but also questions on the consultation of other care providers (specialists, physiotherapists, dentists, alternative healers) and services (hospitals, ambulatory mental health care, child health clinics, home nursing and home help), questions on being confined to bed, and on school or work absenteeism. Patients of all age groups were selected for this interview; proxy interviews were conducted for patients aged 0–14 years, which means their mother, father or guardian/caretaker answered the questions on behalf of the child.

In addition, respondents were asked to keep a diary during a period of three weeks in order to furnish insight into the number and kind of health problems, and actions taken, for which no professional help was sought.

#### **Registration form patient consultation**

Over a period of three months the participating general practitioners kept a complete record of the morbidity presented in their practice and of all associated activities. The registration form included sections on the consultations, on morbidity and on interventions.

The consultations registered included face-to-face contacts as well as consultation with the practice assistant. Consultations by telephone were registered only when they resulted in a (repeat) prescription or referral.

The choice for a three-month registration period was the result of what had been proved to be feasible in the pilot study. An one-year-period of registration, as is the case in the English morbidity studies, was impossible because the demands of the study were too high: not only morbidity was to be recorded, but also exhaustive registration of interventions was demanded. Moreover, the registration of the practice population involved considerable work on the part of the participating general practitioners and, in particular, their receptionists. Because of seasonal influences, the registration period was spread over a one-year period: from 1–4–1987 until 31–3–1988. The participating general practitioners were accordingly divided into four equal groups. Each group was representative for the whole group and registered in the same way.

#### *\* type of consultation*

The contact registration form included the following items:

- time at which the consultation took place (during the day/evening/night)
- length of the consultation;
- character of the consultation (consultation in the practice/phone calls/home

visits/other);

- initiator of the consultation (patient/general practitioner/someone else);
- type of the consultation (first consultation/follow up consultation/re-lapse/periodic check up).

This information is necessary to study the workload of general practitioners and for the construction of illness episodes.

*\* morbidity*

The following items were recorded:

- the reason(s) for the patient to consult his/her doctor and the diagnosis or diagnoses. For each consultation more than one reason for encounter and diagnosis could be recorded. In every case the general practitioner recorded to what degree somatic or psychosocial factors played a role. The clinical problem was described in diagnostic terms whenever possible by stating a working hypothesis. No clinical criteria for diagnosis were imposed, in the first place because the diagnoses in general practice must often be based on circumstantial evidence at the time of the consultation. General practice is characterized by the large amount of not so serious conditions for which no clear diagnostic criteria exist. In the second place such a procedure was in agreement with the aim to study interdoctor-variations.
- the degree of severity of the disease according to the degree of life threat and to the probability of serious disability as well. Underlying conditions related to the problem presented were also recorded.

*\* interventions*

The following data on interventions were recorded in respect of all encounter with a general practitioner:

- requests for laboratory investigations/X rays/functional tests and the results;
- activities concerning health promotion, counselling, vaccinations and minor surgery;
- prescriptions of medicines: brand name, strength, defined daily dose and prescribed daily dose; prescribed medicines are classified according to the international ATC classification;
- referrals to primary and secondary health care providers; purpose and type (new or repeated) were also recorded;
- consultations with colleagues and follow-up appointments.

**Questionnaire and diary general practitioner/questionnaire practice assistant**

The *general practitioners* were asked to complete a questionnaire in order to

obtain information on: (Foets et al., 1992b)

- characteristics of the general practitioner and of the practice;
- practice organisation and working procedures such as the degree of work being delegated to the receptionist and the use of medical techniques;
- prevention in general practice: task perception and organisation;
- occurrence and treatment of psychosocial problems;
- prescription of medicines;
- collaboration with colleagues and other care providers;
- professional contacts and interests; post graduate courses, additional functions;
- task perceptions, dealing with uncertainty, opinions on the relations between general practitioners and specialists, on doctor–patient communication, and on job satisfaction.

These data were collected in order to contribute to the explanation of interdoctor variations with regard to diagnostic and therapeutic interventions.

Finally general practitioners were asked to keep a detailed diary covering 24 hours a day during one week, including the weekend. This diary informs us of the number of hours general practitioners spent on different aspects of their work.

The *practice assistants* were asked to complete a questionnaire in order to obtain information on: (Nijland, 1991)

- characteristics of the practice assistant and the practice, not immediately related to patients, but e.g. the organisation of the practice;
- factors such as task perceptions on a number of medical technical skills;

### **Additional instruments**

For several projects additional information was necessary.

– *intake form/registration form chronic diseases in general practice.*

The registration period of three months of the National Survey limits the possibilities of studying the natural history of longer lasting conditions. That is why a special subproject with regard to chronic diseases was developed, in which a small group of general practitioners (N=15), at seven locations continued recording (in adapted manner) after the three initial months period allotted to the project for another 21 months (Schellevis, 1993).

All patients in the practice population with hypertension, chronic ischemic heart disease diabetes mellitus, chronic respiratory disease and osteoarthritis of hip

and/or knee were identified by an intake form. The form contained general patient information, risk factors possibly relevant for the selected chronic disorders, diagnosis, co-morbidity and therapy. A separate consultation registration form was designed which, however, was in many ways similar to the general form.

Compared to this general form a number of items, being less relevant for this project, have been less exhaustively recorded, especially because a limited number of general practitioners had to continue registering during a period of 21 months. On the other hand, other items were of particular relevance to this project: for that reason more information has been collected on the use of diagnostic procedures, including their results, and on prescriptions.

*- registration form/questionnaire psychosocial problems in general practice.*

Similarly, a separate registration form was designed with respect to the project on psychosocial complaints, covering all patients having presented psychosocial problems to the general practitioner, or somatic problems considered to be psychosocial by the general practitioner. Again, this form is very similar to the general form, but less complicated. A limited number of additional items with particular relevance to this project were included. A limited number of general practitioners continued this registration for a period of 9 months (Tijhuis et al., 1991).

In addition, a questionnaire was set up to be filled in twice by all patients included in this study: once at the beginning of the study and once at the end. It included the General Health Questionnaire, questions on psychosocial problems and a questionnaire on the health locus of control (Tijhuis et al., 1991).

*- registration form/questionnaire aftercare and continuity of care between general practice and hospital*

Every hospital admission during the study was recorded on a special form containing information on admission and stay (date/diagnosis/initiator/receipt of a written admission report/type of hospital/specialism/communication between general practitioner and the patient, his family and other care providers/number of general practitioner visits), on the discharge (date/diagnosis/initiator/admission to another hospital or institution such as a nursing home or a rehabilitation centre/communication between the general practitioner and the patient, his family and other care providers) and on the aftercare provided by the general practitioner or other care professionals. Finally, some information was collected on the contents of the discharge report (Kersten, 1991).

Every patient discharged from a hospital was asked to complete a questionnaire on the aftercare he needed and/or received.

### **Classification**

Particularly important was the choice of classification system in respect of occupation/profession, morbidity and medicines. Here we will confine the discussion to systems chosen for use in the National Survey (Foets et al., 1992).

\* *CBS occupational classification system and EGP score system*

Our work demanded that each profession, on which data were collected, be specified by a separate code. The CBS occupational classification system is the only system in the Netherlands able to do this (CBS 1984). To determine socio-economic status of the profession, this was linked to the so-called EGP score system.

\* *International Classification of Primary Care (ICPC) for perceived health status and morbidity in general practice and linkage with laboratory investigation/X-rays/ultrasound/functional test/prescription/referral*

In preparing the National Survey a number of morbidity classification systems were reviewed to assess which classification was most appropriate. In the light of new developments occurring during the feasibility study, both the old ICD-9 CM and the new ICPC were tested. Higher user friendliness, higher relevance for general practice and better comparability with other Dutch general practice research led us to opt for the International Classification of Primary Care (ICPC). (Lamberts et al., 1987; Lamberts et al., 1993). A negative aspect of this decision was the impossibility of coding interventions in ICPC. This was solved by the development of our own coding system for diagnostic procedures and for medical specialists /other health professionals, relevant for studies on laboratory investigations/X rays and referrals.

\* *ATC for medicines*

We sought to classify medicines according to pharmaceutical characteristics (chemical composition and application form), commercial background (product and price) and article (wrapping). The Anatomical Therapeutic Chemical (ATC)-classification fits these determinants (Nordic Council 1991). The system has 5 different levels, indicated by letters and figures and allows for different aggregations. The ATC system allows for use of defined daily doses and prescribed daily doses (DDD/PDD), both of which are tools for presenting and comparing drug consumption figures. The DDD is the normative, interna-

tionally defined daily dosage of a certain drug, whereas PDD presents the actual prescribed daily dose. Prescription data presented in DDD per 1000 persons per day provide a rough estimate of the proportion of the population within a defined area treated daily with certain drugs. Prescription data presented in PDD per 1000 persons per day provide a more precise estimate of the proportion of the population within a defined area treated daily with certain drugs, but this indicator is more vulnerable to local peculiarities. In the National Survey a comparison between DDDs en PDDs is made for youngsters (<12 years) and for the elderly (>70 years), groups which may lead the doctor to prescribe different dosages, compared to the routine standard for dosage. Considerable discrepancies emerged. However, these discrepancies were not large enough to justify adaptation of DDDs (Foets et al., unpublished).

#### **6.4 Data collection and -processing: planning and implementation**

*\* contracting and training fieldworkers/coding clerks and data-typists/contracting research agency*

Four months before starting to collect data 45 field workers/coding clerks were recruited for the job. These were given a 2-months training course, in which the background, objectives and design of the survey were explained and all elements of the data collection were practised, including the different classification systems.

While the data was being collected administrative workers, datatypists for the processing of census data and datatypists for processing data related to medicines were contracted, and trained for their work. The whole group consisted about 15 persons.

During the preparatory phase of the survey, it was decided to contract a commercial research agency to perform the datacollection and -processing required on behalf of the health interview survey. A number of bureaus was asked to submit an offer. On the basis of several criteria (experience/expected response/sufficient number of interviewers/quality control aspects/delivery of data), NSS Research in The Hague was selected.

*\* introduction of the survey in the participating general practice*

Before the first registration period, all general practitioners in the sample were approached to reconfirm their participation, to ask about their preference of registration period and for further logistic information.

Prior to each of the four registration periods, the selected general practitioners and practice assistants received written material about the survey, followed by an instruction meeting. The objectives and relevance of the survey were explained in this meeting. The contract between NIVEL and general practitioner including the privacy regulation, and arrangements for financial reimbursement, and the necessary material was provided.

\* *registration of practice population: 'from patient to census'*

Two steps can be distinguished in the registration of the practice population in the National Survey:

- creation of an age–sex register
- collection of data on other demographic variables (marital status/ethnicity) and social variables (education/occupation/employment status/insurance/housing)

The starting point for registration of the practice population was the patient record. This registration provided such basic information as age, sex and insurance on the vast majority of the patients. This information was supplemented with the aid of forms, on which various socio–demographic data could be entered in addition to age and sex.

A month before registration started, the registration forms for the practice population were brought into the administration of the practice. The field worker wrote the person code(s) on the form. The form was subsequently filed with the record of the patient concerned. The forms were completed during an encounter of the patient with the general practitioner or practice assistant. People who did not visit general practice during the registration period or who had failed to fill in a form for some reason were sent a form upon completion at the end of this period. In the final phase the data were further supplemented by means of reminders, telephone interviews with relevant individuals and health insurance scheme lists.

\* *registration of health information from the population: 'from common symptom to illness'*

A pilot study was performed by NSS Research during the first registration month of the survey to test the clarity of the questions and the required time. Interviewers were selected and trained about the objectives of the National Survey and the place of the health interview, about the sample, about the distinction between normal and proxy interviews and about the construction of the interview. The sampling procedure for the health interview survey was

carried out by the field worker.

During the second month of the data collection period those sampled were approached for, among other things, information about their health status as measured through perceived health, common symptoms, chronic diseases, disability and mental health. The information on common symptoms and chronic diseases was coded in ICPC compatible systems.

At the end of the health interview respondents were asked to keep a health diary for three weeks, reporting daily information on symptoms/complaints, assessment and actions taken. This information was later put in episodes of need and coded in the ICPC.

NSS Research performed the data processing for both the health interview survey and health diary.

\* *registration of contact between patients and general practitioners (both 3 months and longitudinal): 'from encounter to episode'*

Before the registration period, a pilot registration of three days took place. During these days problems and questions of the participating general practitioners and also the way the registration could take place were discussed.

During the registration period the general practitioner and practice assistant recorded each encounter occurring with a patient. Trainees also recorded their activities. Phone consultations were only recorded if these resulted in a prescription or a referral. Laboratory investigation outside the surgery were put on a separate form. Later the test results were included in this form and processed. During the weekly visit of the field worker the forms were checked and further completed if required.

Reasons for encounter and diagnoses recorded by the general practitioner on the registration form were classified in the ICPC by well-trained coding clerks with a medical background. Coding problems were solved by a specific team of ICPC experts. Thus the participating general practitioner themselves were not involved in the coding activities, although they played a role in the data quality control. The data subsequently underwent processing.

The data processing of medicines (including coding) was done separately by pharmacy assistants using a specific data entry programme, based on so-called KNMP taxes. This programme allows for calculation of daily defined doses (DDDs) and prescribed daily doses (PDDs), and even price calculations.



The episode in the Dutch National Survey of General Practice

\* definition

An episode is a problem or illness in a patient over the entire period of time from its onset to its resolution (Classification Committee WONCA 1981)

\* operationalization

Following the definition in a operational sense, the concept of 'episode' is confined here to the phase in which professional help is sought ('the episode of care').

Because an episode can include several (reasons for) encounter(s) with a patient, general practitioners were also seen to amend the diagnosis in the successive contacts within one episode. For epidemiological purposes, it was decided in general to assign the diagnosis of the latest contact as the label of the episode. Studies on general practitioners interventions, however, are not primarily interested in the final diagnoses but in the diagnosis in every single contact. The way in which doctors react to the complaints presented, can best be understood from the conclusions with respect to the diagnoses drawn at that moment. Therefore the separate diagnosis given at each reason for encounter has also been stored in the database.

\* episode types

Different type of episodes of care were determined by

i. the registration period. Two possibilities could occur:

- episodes also involving pre-registration period contacts;
- episodes whereby the first consultation occurred in the registration period; a distinction was made between completely new problems and recurrent problems.

To calculate incidence statistics, only the second category of episodes can be used; for calculating the prevalence all episode types can be used.

ii. Multiple pathology

A distinction should be made between health problems which have or have no direct link with a known episode varying from a concurrent disease (e.g. diabetes and cancer) to a complication of a disease (e.g. diabetes and retinopathy). Both situations were considered separate episodes. Clear exacerbations of a known disease (e.g. asthma attack) were considered part of a 'chronic' episode.

\* *questionnaire and diary general practitioner/practice assistant: 'from individual to team'*

During the last month of the registration period the general practitioners were requested to complete the questionnaire and to keep a diary for one week, in which they could indicate their activities per quarter of an hour. Later, the 177 practice assistants in the participating practices were requested to complete a

questionnaire.

### Overview of sample size, data collected and processed

Table 6.4 provides an overview of the sample size, the data collected and the response.

Table 6.4 Dutch National Survey of General Practice: overview of the data collected and processed. Key figures

	N =
<i>General practices</i>	
* general practitioners	103
* practice assistants	161
* registered persons	177
	335,000
<i>Measuring instruments (+ response)</i>	
* registration of census data practice population	305,000
* health interview survey/diary in nested random sample of 100 persons per participating general practitioner	
– health interview survey	13,000
– health diary	12,000
* registration of consultations for 3 months in 4 groups of 40 general practitioners including	
– episodes of care	300,000
– lab test/X ray/functional test	34,000
– prescription of medicines	275,000
– referrals	32,000
* questionnaire (+ diary)	
– general practitioners	157
– practice assistants	170

## 6.5 Data analysis

During data analysis, the data are expressed in different rates and ratios (Last 1988). The encounters are expressed in person consulting rates or consultation rates.

Morbidity has been expressed in incidence and prevalence figures, interventions in rates per 1000 persons, per 1000 consultations and per 1000 episodes.

### *Incidence and prevalence (see box)*

In the National Survey both cumulative incidence and period prevalence are indicated (Van der Velden et al., 1992a).

#### Incidence and Prevalence in the Dutch National Survey of General Practice

\* definitions

*cumulative incidence*: the number of new cases of disease that occur in the course of a period of time, divided by the number of persons present in the population at the beginning of the time considered. In the National Survey this period is three months.

*period-prevalence rate*: the number of existing cases of disease in a given period of time divided by the average population. The period prevalence is built up from the prevalence at a given point in time, plus the number of new cases and relapses in a given period. In the National Survey this period is three months.

\* operationalization

The incidence was determined by counting those episodes in which the general practitioner indicated in the first encounter of the episode in question that it was a first encounter for the problem in question or a encounter in connection with a relapse for the problem involved.

The prevalence was determined by counting the total number of episodes in which identical episodes were also counted once per patient. Conversion to statistics on a twelve-month-basis is possible by quadrupling the incidence rates. For prevalence rates such a solution would result in unreliable statistics, since chronic conditions exceed the registration period.

#### *Weighting versus standardization*

Although the study population has been based on a sample of 161 established general practitioners serving a large population of 335,000 people, it was clear that the National Survey did not represent the Dutch population. There were two options for calculating representative rates: weighting and standardization. In general terms it comes on to viewing the subject of study as a general practitioner versus viewing the subject of study as a patient. Both procedures have been carried in different analyses. As the sample is made up of general practitioners from the sample weighting is the procedure of first choice. For some specific purposes, however, standardization was the preferred method.

## 6.6 Feedback: the practice profile

During and after the registration period general practitioners received feedback about their work for the project. Initially the data disseminated were crude production figures, later followed by a complete set of data. When the first results

Table 6.5 Dutch National Survey of General Practice: the practice profile

<p>* <i>practice population</i></p> <ul style="list-style-type: none"> <li>- total, age–sex distribution, marital status</li> <li>- % publicly insured, % ethnic minorities, % unemployed/recipients disability benefit, % in different occupations</li> </ul> <p>* <i>health interview survey</i></p> <ul style="list-style-type: none"> <li>- health status in population: perceived health, common symptoms, chronic diseases, mental health</li> <li>- opinion in population: <ul style="list-style-type: none"> <li>% critical on attitude general practitioner</li> <li>% critical on actions of general practitioner</li> </ul> </li> <li>- medical consumption of population <ul style="list-style-type: none"> <li>% last two months with general practitioner</li> <li>% last two months with physiotherapist</li> <li>% last year with community nurse/home help/social worker</li> <li>% last year with speech therapist/dietician</li> <li>% last year with alternative healer</li> <li>% last year with ambulant mental health care</li> <li>% last year with dentist</li> <li>% last year with medical specialist</li> <li>% last year admitted to hospital</li> </ul> </li> </ul> <p>* <i>health problems in general practice</i></p> <ul style="list-style-type: none"> <li>- no of consultation type</li> <li>- no of consultation during evening/night/weekend</li> <li>- morbidity (incidence/prevalence) per ICPC chapter</li> <li>- morbidity (incidence/prevalence) top 20</li> <li>- interventions in general practice: <ul style="list-style-type: none"> <li>no of laboratory investigation/1000 population inside the practice</li> <li>no of laboratory investigation/1000 population outside the practice</li> <li>no of non pharmaceutical therapies/1000 population</li> <li>no of pharmaceutical therapies/1000 population</li> <li>no of referrals/1000 population</li> <li>no of follow–up appointments</li> </ul> </li> </ul>
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of the survey were published it was decided to produce a complete practice profile of all 103 practices and of the 9 Almere practices, which had participated in the data collection for the survey (van der Velden et al., 1992b). A careful selection of the data collected was made for this overview (table 6.5). Socio-demographic information was combined with information about the health status and medical consumption of the practice population, the morbidity presented and interventions undertaken. General practitioners were very enthusiastic about the information and later asked the team for more detailed analyses on certain topics related to their work.

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## ISSUES OF VALIDITY AND RELIABILITY

### 7.1 An Overview

There is not much evidence on the validity and reliability of general practice-based information. A certain degree of misclassification is unavoidable, if only because of the decentralized nature of data collection. Besides, classification asks for certainty, but in daily practice it is often difficult to reach a firm conclusion on the true and only diagnosis. General practitioners have discovered an escape. Repeatedly, studies among general practitioners have shown they themselves prefer code numbers from the ICD chapter 'Symptoms and ill defined conditions' or the ICPC codes -29 and -99 (Schadé, 1983; Lamberts, 1991).

To control the quality of information in general, several approaches have been explored. *Autopsy* may reveal conditions which were not recognized ante mortem. In the only Dutch study comparing clinical diagnosis in general practice with autopsy findings in 45% of the cases the cause of death found at autopsy had not been clinically diagnosed (Wabeke, 1989).

Comparison between clinical diagnosis in general practice records and *hospital records* on meningitis revealed that 6 out of 17 cases were misclassified (Koorevaar et al., 1995). Comparison between clinical diagnosis in general practice records and *specific registries* for cancer and epilepsy showed satisfactory completeness (Schouten, 1993; Metsemakers, 1994a). A remarkable study was carried out by Van Weel on diabetes mellitus in the famous Nijmegen Registry. In 74% of the patients with diabetes mellitus, the diagnosis was made in accordance with the WHO criteria: in 12%, no clinical information from the time of diagnosis could be traced (van Weel, 1995).

### 7.2 Quality control of data in the Dutch National Survey of General Practice

During the data collection process on behalf of the Dutch National Survey of General Practice, a number of measures were subject to adequate quality control.

*\* operationalization during data collection and data processing*

The validity of general practice diagnoses must be viewed in the light of the general practitioner's working methods. Inherent in these methods is that many diagnoses are made as working hypotheses (Van der Velden, 1983) and are formulated at a poorly defined level. As the episode continues, a more differentiated picture emerges and it is possible to make a diagnosis able to be fitted into a nosological system. Basing morbidity data on episodes increases the validity of those data.

In order to gain insight into the validity of the diagnoses made, 30 paper vignettes were submitted to all participating general practitioners who were then asked to make a diagnosis in each case and classify each according to an ICPC code. Per paper vignette the response varied from 85%–100%. Because of interpretation problems, one paper vignette was not involved in the analysis. In the case of 27 of the 29 patients the percentage of agreement was 75 or higher; for 21 of the 29, this was 90% or higher (van der Velden et al., 1992).

The validity of the morbidity data can be increased by the controlled application of diagnostic criteria by the registering general practitioner (Classification Committee WONCA, 1983). This could be achieved through training and verification meetings. The scale of the National Survey made this unfeasible.

Various procedures and measurements were performed to track down systematic errors (van der Velden et al., 1992):

- the diagnosis reported by the patient and recorded by the general practitioner was coded centrally by trained field workers. Besides intense training during data collection and –processing, regular (=on a weekly basis) uniformity tests were performed with 10 paper vignettes, including 'problem' cases. Where uniformity left something to be desired further instruction was given. For the coding of diagnoses by field workers, an average agreement percentage of 80 was achieved, with considerable improvement over time.
- episode construction was also performed by a field worker. In problematic cases, the general practitioner was consulted. The construction of encounter diagnoses into episodes was fully checked by four physicians, based at NIVEL; two did the complete checking, two others randomly checked the other two and were available on request if major problems appeared; if necessary, the episode diagnosis was changed.
- data entry was checked by comparing data input of a sample of 2% of the



encounter forms with the actual information on the form. An error was found in only 1.1% of the checked forms and usually concerned one variable.

- finally, incompatible combinations of diagnosis–age and diagnosis–sex was detected by a computer program. The incompatibility for age was satisfactory, for males 0.7% of the episodes, for females 1.3% of the episodes.

*\* operationalization after data collection and data processing*

Because the survey included many measuring instruments it was possible, sometimes with additional information, to carry out validation studies, such as:

- a comparison between the reporting of common symptoms in children and adults in a health diary versus in a health interview survey; (Bruijnzeels, 1997; Kooiker, 1996)
- a comparison between a diagnosis reported by a patient in a health interview survey versus written down in the medical record (Donker et al., 1992; Schellevis et al., unpublished)
- estimating the population at risk by using the incidence rate of Herpes Zoster as a means for and estimating disease prevalence (Fleming et al., 1997; Hutten, 1997; Hoogeveen et al., unpublished)
- a study on interdoctor- and interpracticevariation within and between general practice registries (Westert et al., 1999)
- a comparison of general practice consultation reported by patients in the health interview survey versus recorded in general practice (de Bakker et al., 1995)
- a comparison on patient satisfaction with general practitioner services based on different methods (Sixma et al., 1998)
- a comparison of prescription behaviour based on paper vignettes versus actual prescription; (Foets et al., 1994)

In this thesis, two studies are presented which contain analyses that contribute to a better understanding of morbidity data from both health interview surveys and general practice morbidity surveys.

Chapter 8 consists of a comparison of data on chronic diseases in 3 health interview surveys, combined with a comparison of data on chronic diseases measured in health interview surveys versus identified in the medical record in general practice. This study builds on earlier studies reviewing methodological procedures in measuring the prevalence of chronic diseases, which were carried

out with data from the National Health Interview Survey of Statistics Netherlands and the Amsterdam Survey on the Chronically Ill. The wording of the question and certain data collection methods had the greatest influence on results (van den Berg et al., 1989; van Sonsbeek, 1996). Comparison with morbidity data from other sources had so many drawbacks that no firm conclusion could be drawn. (van der Zee, 1981; van den Bos, 1989). The advantages of our study were that the three health interview surveys used an almost identical list of chronic conditions and that the information provided by the patient in one of the health interview surveys could be checked against the information of the same patient in the medical record in general practice.

In chapter 9, we have tried to contribute to a further understanding of the differences in incidence and prevalence figures between general practice registries. During the past seven years, several reports and comments have been published in which the different morbidity registration systems in the Netherlands were compared (Meijboom-de Jong, 1993; Knottnerus, 1994; Metsemakers et al., 1994b; Hart et al., 1996; Hofmans, 1997; Gijzen et al., 1997). A precisely diagnosis which methodological factors determine differences in incidence and prevalence figures from these systems could not yet be established.

On the basis of a comparison between incidence and prevalence figures available from three important Dutch morbidity registration systems, a thorough analysis has been carried out by which methodological factors the differences are determined.

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## WHAT DO HEALTH INTERVIEW SURVEYS TELL US ABOUT THE PREVALENCES OF SOMATIC CHRONIC DISEASES?

A study into concurrent validity

### **Abstract**

This study examines the concurrent validity of a list of chronic conditions used in health interview surveys in the Netherlands. The results regarding the prevalence of chronic diseases from three health interview surveys, carried out in The Netherlands during the 1980s, were compared. In addition the results for chronic diseases of one of these health interview surveys were checked against the medical records of 11 randomly selected general practices.

The comparison indicates the prime importance of the wording of the question. The level of agreement between information about chronic conditions provided by patients and by general practice medical records differed widely for the separate disease categories. This was especially true for the reporting of migraine/serious headache, other diseases of the neurological system, diseases of the stomach and intestines and serious consequences of injury. Age, sex, level of education, and how long the interviewee was registered as a patient at the practice played a minor role in these differences.

When quantifying health differences it is essential to understand the impact of methodological influences, as minor differences in survey methodology have a substantial effect on the prevalence of chronic disease. Moreover, health interview surveys measure a different health status than general practice morbidity surveys. Neither method is the gold standard for the other. A consensus on instruments and methodological procedures of health interview surveys at (inter)-national level should be sought.

### **Introduction**

With the ageing population, chronic diseases are and will remain the most important health problem in countries such as the Netherlands<sup>1</sup>. Appropriate information is needed to be able to quantify the long term consequences for patients' functioning and the demands for health care, and to monitor and evaluate public health in relation to chronic diseases. One of the main sources of this information on chronic diseases is the health interview survey, which

provides information on a target population by structured questioning of a sample. Such surveys have been used in European countries, the USA, Canada, Australia, and Japan to obtain data on the occurrence of chronic diseases.<sup>2-5</sup> Most recently survey data on chronic diseases are used in research exploring disability free (or healthy) life expectancy, a measure that combines mortality figures with prevalence rates of chronic diseases and/or disability.<sup>6-7</sup> These data guide the creation of policy measures and the monitoring of public health policies such as Health for All.<sup>2,5</sup> The availability of these data sets tempts researchers and policy makers to make comparisons about the differences in the prevalences of chronic diseases between countries, between regions or over time. To be able to assess whether we are dealing with real health differences it is necessary to understand the comparability of survey data. Many studies have reviewed methodological procedures, that may cause differences in the prevalence of chronic diseases, using a variety of approaches.

- \* Review of question content and order ("the way of questioning").<sup>8-10</sup> This includes analyses of the wording of the question and the way the question is put to the interviewee. For both, major differences in the prevalence of chronic diseases appear. The effects of wording can be due to the inclusion of a separate clinical entity or lack of clarity about the severity of a problem. The best results are obtained with a slightly selective question and the "one at a time" method of interviewing. Data collection methods variably influence results: there are no major differences found between oral and written data collection, but there are for mail and telephone versions of surveys.<sup>11-12</sup>
- \* Comparison with other types of morbidity surveys.<sup>13-16</sup> Health interview data are usually compared with surveys from general practice, because here morbidity is more objective on the assumption that a definite diagnosis is possible at the end of the consultation. All studies found substantial similarities in terms of health status, reason for encounter and diagnoses treated as recalled by the patient at the time of interview. A major drawback in these comparisons is that the samples under review are drawn from different data sets.
- \* Comparison between doctors and their patients from the same study population.<sup>13,17</sup> In most cases general practitioners, sometimes hospital doctors and patients provide of the answers on a identical list of individual chronic conditions. Unfortunately in this situation information on patients not receiving treatment/care is missing.
- \* Comparison between health interview survey and health examination survey data from the same study population.<sup>18</sup> Patients answering an open-ended question on chronic conditions in a health interview survey were reinterviewed and clinically examined by different people. Although an optimal de-

sign the open-ended question is a suboptimal method for assessing the prevalence of individual chronic conditions, as mainly serious conditions are reported.

Nevertheless, the core question about the quality of methods of measurement in health interview surveys with regard to the prevalence of chronic diseases remains largely unanswered. There is still a great need to search for different data collection methods, to reveal determinants and to decide which data collection method is most appropriate for which purpose. Under more favourable conditions a study was conducted to address the following questions:

1. Do health interview surveys, with different backgrounds, but with the same optimal conditions for questioning, provide us with similar results in relation to the prevalences of chronic diseases?
2. Are patients who claim (not) to suffer from a chronic disease in a health interview survey recorded with the relevant diagnosis in general practice?

## **Methods**

To answer the first question a comparison was made between the results regarding chronic diseases from the three most important health interview surveys, carried out in The Netherlands during the 1980s: the Netherlands Health Interview Survey 1989–1990 performed by Statistics Netherlands (CBS) among a random sample of the Dutch population (N=16508)<sup>19</sup>, the health interview survey of the Dutch National Survey of General Practice, carried out by the Netherlands Institute of Primary Health Care (NIVEL) among a random sample of persons from general practitioner lists (N=17058), the general practitioners being themselves a random disproportionate stratified sample of the whole Dutch general practitioner population<sup>20</sup> and a health interview survey performed with a random sample of the 55–79 year old population of Amsterdam (N=17.598).<sup>21</sup> These surveys were chosen, because their list of chronic conditions was almost identical and the way of questioning shows a high similarity.

The samples of the three health interview surveys are representative of the Dutch and Amsterdam population. Table 8.1 shows a comparison between the three health interview surveys in design and (non-) response. The background of the sampling differs with respect to age groups and origin of the population. The Dutch National Survey obtained the highest response, but non-response analysis shows remarkable similarity in the under-representation of certain socio-demographic groups for all three studies. With regard to health characteristics respondents, compared with non-respondents showed slightly lower prevalences

Table 8.1 Comparison between 3 health interview surveys in design and response

	CBS 1989–1990	NIVEL 1987–1988	Amsterdam 1983–1986
Method of data-collection	Structured interview	Structured interview	Postal questionnaire
Sampling methods	Random sample of Dutch households (excluding institutionalized persons)	'Nested' random sample of general practice population in the Netherlands (excluding nursing homes)	Random sample of 55–79 years population of Amsterdam (including institutionalized persons)
Sample size	n=16,508	n=17,057	n=16,917
Overall response rate	62.3%	76.6%	59.1%
Study population 55–79 years	n=3,241	n=2,539	n=9,998
Non-response analysis (underrepresentation of)	male, living alone / divorced, working, 3 big cities	≥65 years, living alone / divorced, 3 big cities	55–59 years, divorced / widowed, institutionalized people, inner city

CBS: Statistics Netherlands; NIVEL: Netherlands Institute of Primary Health Care

of chronic diseases and disabilities in the Amsterdam study, but the differences are very small.<sup>7</sup> No information is available from the other surveys.

From the three original lists of conditions, 15 (clusters of) conditions were selected for comparison: asthma/chronic bronchitis, hay fever, heart complaints, disorders stomach/intestines, diseases gall-bladder and liver, kidney disease, diabetes mellitus, diseases of the thyroid gland, chronic back complaints, rheumatic or joint complaints, neurological diseases, chronic headache, chronic skin disease, cancer and serious consequences of injury. This means exclusion of the following diseases, in most cases available in only one or two of the three studies: atherosclerosis, varices, haemorrhoids, chronic menstrual problems and handicap as consequence of congenital disorders as these appear only on the list of chronic conditions in the Dutch National Survey. The Amsterdam study and the Dutch National Survey differ with respect to hay fever and stroke and both



differ from the National Health Interview Survey in 5 items: sinusitis, leg ulcer, chronic cystitis, prostate problems and serious consequences of injury. Hay fever and serious consequences of injury are included, because these diseases are used for answering the second question of this study.

The selected conditions are most relevant in terms of physical, psychological and social functioning. Asthma and chronic bronchitis were combined, because a large number of persons responded positively for both diseases, and because in the 1980s both clinical entities were considered to be part of the same disease. Heart complaints and cardiac failure were combined because there were very few persons claiming to suffer from cardiac failure.

As the Amsterdam study only included people aged 55–79 years, the comparison of the 15 chronic diseases was restricted to identical age groups in the other surveys. The exclusion of people younger than 55 years can be justified by the age dependence of chronic diseases and the exclusion of people of 80 years and older can be justified because although elderly people suffer from many chronic diseases, distinct clinical entities cannot always be identified because of the increasing problems of multiple pathology and the effects of the 'normal' ageing process.

The data have been controlled for age with the total population of The Netherlands at 1 January 1987 as the standard population.

To answer the second question we compared the results regarding the prevalence of the chronic diseases of the health interview study of the Dutch National Survey of General Practice with the medical records of 11 randomly selected general practices (with 22 general practitioners serving almost 48,000 people), participating in the same survey. Few cases will escape notice because in the Dutch primary care system almost all people are registered at one general practice and the general practitioner is the first and most important entry to health care. A comparison between the information available from all interviewees in the database and the lifetime information available from the medical records in the practice was carried out noting differences before, during and after (1 year) the time of interviewing with the confirmation that the problem still existed. This distinction allows assessment of recall bias and of the fact whether or not the chronic condition was presented to the general practitioner. For logistic reasons only the information related to 9 of the 15 conditions could be checked. There is enough evidence that the medical recording of general practices was sufficient enough at the time of the health interview to contain the necessary information on the presence of chronic conditions.<sup>22–24</sup> Finally, our findings were checked for completeness with the general practitioner. The design of the Dutch National

Survey was adequate for the purpose of comparison, because the interview and examination of medical records were carried out independently of each other.

For the inclusion of the disease in the study a set of criteria was developed: the disease must exist over a period longer than three months and the disease must be covered by the list of chronic conditions of the survey with vague complaints not accepted.

Information on 2,086 persons was checked in this way. No information could be obtained from 487 patients, either because they had died (N=16), moved out of a practice (N=427) or other reasons (N=44). These missing patients do not differ in age–sex composition compared to the 1,599 persons, whose medical records were available. Patients from practices in rural areas, far from a hospital in the north in the 25–44 age group were most easily identified. The remaining patients represented all forms of diseases in sufficient numbers.

The level of agreement in response to the list of chronic conditions by patients and medical records in general practice has been measured by Cohen's kappa.<sup>25-27</sup> A kappa-index of more than 40% indicates an acceptable level of agreement. Age, gender, level of education (only for persons older than 12 years) and stay of the interviewee at the practice were taken into account as determinants for the level of agreement. This information was also collected during the health interview survey. Because of language problems foreigners (e.g. immigrants) were not taken into account in these analyses. The category of serious consequences of injury was excluded from this analysis, due to small numbers.

## Results

### *Comparisons of the 3 health interview surveys*

Table 8.2 shows the age-adjusted prevalences of the 15 chronic conditions, calculated from 3 health interview surveys with different backgrounds. A comparison of results of these surveys indicates that the wording of the question has a major influence: for kidney diseases, diabetes mellitus, diseases of the thyroid gland, in which the wording in the three surveys is almost identical, the differences are small. Where the NIVEL and Amsterdam surveys use the same wording these do lead to similar prevalence rates for asthma/chronic bronchitis, heart complaints, neurological diseases (in men), chronic headache and chronic skin disease, but it does not for disorders of the stomach/intestines, diseases gall-bladder/liver, chronic back complaints (in women) and cancer.

In many instances the Amsterdam survey has the highest score, which is partly explained by the inclusion of all institutionalized people and partly by the urban character of the survey. The slightly different wording of 'asthma/chronic bronchitis' in the CBS survey produces lower prevalences as compared to the other

surveys. The same applies to the wording of 'heart complaints' in the NIVEL and Amsterdam surveys resulting in higher prevalences as compared to the strict wording 'serious heart complaints, myocardial infection' in the CBS survey. Similarly, higher prevalences were associated with the word 'joint complaints' and the extensive description of "musculoskeletal disorders" used in the Amsterdam and CBS surveys, as compared to the strict wording in the NIVEL survey. The CBS survey described 'neurological diseases' as epilepsy, dizziness with collapse and other, while the other surveys replaced dizziness with collapse by parkinsonism and multiple sclerosis: the result is a far higher prevalence, particularly in women, for these diseases in the CBS survey. On the contrary the CBS survey restricted 'chronic headache' to migraine, while the other surveys also include serious headaches in the list, resulting in far higher prevalence figures.

*Comparison of health interview survey and medical records in general practices*

Patients claim to suffer less from almost all reviewed chronic diseases, excluding hay fever, than general practitioners acknowledge in their medical records (table 8.3). The level of agreement measured by Cohen's kappa differs widely for the separate disease categories. A relatively high agreement (in  $p_0$  and kappa) is observed for asthma/chronic bronchitis, hay fever, diabetes mellitus and back complaints. General practitioner records and patients differ most in their reporting of chronic headache, other diseases of the neurological system, diseases of the stomach and intestines and serious consequences of injury.

Concurrent validity according to age reveals a lower level of agreement at older age for most diseases (table 8.4). Differences between males and females can be observed in hay fever, heart complaints, chronic headache and back complaints. The level of education shows clear, but different gradients per disease, in particular for asthma/chronic bronchitis, neurological disorders, chronic headache and back complaints. The stay at a practice shows a differing pattern per diagnosis group.

Table 8.2 Sex-specific prevalence figures of 15 chronic diseases of the population 55-79 years (in %) adjusted for age<sup>a</sup>

Diagnosis group (precise description of wording as used in lists)	CBS 1989-1990		NIVEL 1987-1988		Amsterdam 1983-1986	
	Males		Males		Males	
	Females	Females	Females	Females	Females	Females
Asthma/chronic bronchitis						
Asthma, chronic bronchitis or CNSLD	9.6	7.8				
Asthma, chronic bronchitis, emphysema, stretched/worm out lung			14.1	9.1	15.2	9.5
Hay fever	-	-	2.7	3.1	-	-
Heart complaints						
Serious heart complaints or myocardial infarction	8.3	4.6				
Heart complaints (including cardiac failure)			17.0	14.1	19.0	14.5
Heart complaints						
Disorders of the stomach/intestines						
Peptic ulcer, duodenal ulcer, intestinal disorders for longer than 3 months	5.3	6.6				
Chronic gastric disorder, peptic ulcer, duodenal ulcer, intestinal disorders			6.9	6.6	10.4	9.6
Diseases of the gall-bladder and liver						
Bilestones, gall-bladder infection, liver disease, liver cirrhosis	1.7	2.6				
Bilestones, diseases of the gall-bladder and liver			1.5	3.2	3.5	7.8
Kidney disease						
Kidney stones, serious kidney disease	2.6	5.0				
Chronic kidney disease, kidney stones			3.5	2.5		
Kidney disease						
Diabetes mellitus	5.0	6.6				
Diseases of the thyroid gland	0.9	4.5				
			0.6	4.6	1.4	5.2

Chronic back complaints						
Persistent back disorder (longer than 3 months), slipped disc	12.7	14.9				
Long standing back complaints, slipped disc, ischialgia broken down back			19.9	20.9	22.8	27.5
Rheumatic or joint complaints						
Degeneration of joints: hips, knees, hands; arthritis of the hands, feet, other chronic rheumatism	14.3	28.1	5.7	14.3	14.4	26.0
Chronic rheumatism, (osteo) arthritis						
Rheumatic or joint complaints						
Neurological diseases						
Epilepsy, dizziness with collapse plus other neurological diseases	2.4	5.4				
Parkinson's disease, epilepsy, multiple sclerosis and other			2.6	1.3	2.2	2.3
Chronic headache						
Migraine	2.9	6.7				
Migraine or serious headache			6.0	11.7	6.6	12.2
Chronic skin disease						
Serious skin disease	2.7	1.9				
Chronic skin disease, eczema			5.1	5.3	5.9	5.5
Cancer						
Malignant neoplasm, cancer	2.4	1.7				
Tumour growth, cancer, leukaemia			0.7	2.7	3.0	5.4
Serious consequences of injury	–	–	2.8	3.0	3.3	3.7

\*: Data from National Health Interview Survey by Statistics Netherlands(CBS), Health Interview Survey of Dutch National Survey of General Practice (NIVEL) and Chronic Diseases Survey Amsterdam

Table 8.3 Concurrent validity of 9 chronic conditions (in Cohen's kappa and (dis)agreement of general practitioner and patient in absolute numbers) (N=1,599)

	GP+pat+	GP+pat-	GP-pat+	GP-pat-	Patient- assessed prevalence	Doctor- assessed prevalence	p0	Cohen's kappa (SE)	ppos	pneg
Asthma/chronic bronchitis	63	67	45	1,424	6.8	8.1	0.93	0.49 (0.04)	0.53	0.96
Hay fever	30	17	41	1,511	4.4	2.9	0.96	0.49 (0.06)	0.51	0.98
Heart complaints	30	50	29	1,490	3.7	5.0	0.95	0.41 (0.05)	0.43	0.97
Diseases stomach/intestines	31	110	20	1,438	3.2	8.8	0.92	0.29 (0.04)	0.32	0.96
Diabetes mellitus	15	15	6	1,563	1.3	1.9	0.99	0.58 (0.08)	0.59	0.99
Neurological diseases	8	48	3	1,540	0.7	3.5	0.97	0.23 (0.07)	0.24	0.98
Chronic headache	43	86	82	1,388	7.8	8.1	0.89	0.28 (0.04)	0.34	0.94
Back complaints	112	160	69	1,258	11.3	17.0	0.86	0.42 (0.03)	0.49	0.99
Serious consequences of injury	4	27	16	1,552	1.3	1.9	0.97	0.14 (0.07)	0.16	0.99

GP+pat+: patients with disease as reported by general practitioner and patient

GP+pat-: patients with disease as reported by general practitioner only

GP-pat+: patients with disease as reported by patient only

GP-pat-: patients without disease as reported by general practitioner and patient

p0: observed agreement

ppos: positive agreement

pneg: negative agreement

Table 8.4 Concurrent validity of 8 chronic conditions (in Cohen's kappa(SE)) by age, gender, level of education and stay at the practice

	Age (years)		Gender		Education			Stay at practice		
	0-14 n=238	15-64 n=1037	≥65 n=121	Male n=708	Female n=688	Low n=353	Middle n=677	High n=116	≤5 yrs n=281	>5 yrs n=896
Asthma/chronic bronchitis	0.49 (0.09)	0.50 (0.06)	0.48 (0.11)	0.49 (0.06)	0.52 (0.07)	0.54 (0.07)	0.51 (0.06)	0.14 (0.16)	0.18 (0.11)	0.50 (0.05)
Hay fever	0.49 (0.18)	0.51 (0.06)	0.08 (0.01)	0.52 (0.08)	0.46 (0.09)	0.49 (0.11)	0.53 (0.08)	0.46 (0.16)	0.55 (0.13)	0.53 (0.07)
Heart complaints	0.66 (0.22)	0.42 (0.07)	0.30 (0.11)	0.39 (0.07)	0.46 (0.09)	0.39 (0.07)	0.41 (0.08)	0.42 (0.21)	0.25 (0.15)	0.36 (0.07)
Diseases stomach/intestines	-	0.31 (0.05)	0.17 (0.10)	0.27 (0.06)	0.29 (0.07)	0.30 (0.08)	0.30 (0.06)	0.26 (0.14)	0.27 (0.13)	0.29 (0.05)
Diabetes mellitus	-	0.55 (0.11)	0.64 (0.13)	0.58 (0.12)	0.69 (0.12)	0.63 (0.09)	0.62 (0.08)	0.80 (0.20)	0.66 (0.22)	0.56 (0.11)
Neurological diseases	0.50 (0.31)	0.25 (0.08)	0.12 (0.11)	0.22 (0.10)	0.25 (0.10)	0.08 (0.08)	0.30 (0.11)	0.39 (0.28)	0.15 (0.15)	0.24 (0.09)
Chronic headache	0.15 (0.15)	0.32 (0.04)	0.11 (0.14)	0.25 (0.07)	0.33 (0.06)	0.25 (0.08)	0.32 (0.06)	0.60 (0.14)	0.37 (0.10)	0.25 (0.05)
Back complaints	0.39 (0.28)	0.42 (0.04)	0.26 (0.12)	0.46 (0.04)	0.39 (0.05)	0.46 (0.06)	0.46 (0.04)	0.39 (0.05)	0.46 (0.06)	0.41 (0.04)

## Discussion

Chronic diseases cause complex problems for patients and public health, because they have an impact on life expectancy, disability, and use of health care<sup>13</sup>. Good information on chronic diseases is therefore essential. The main objective of this study is to gain more insight into the concurrent validity of health interview surveys in relation to the prevalence of chronic diseases. Two key results appear. Firstly, major differences in the estimated prevalence of chronic diseases seem to be caused by rather minor differences in the instruments used, namely in the wording of the disease and response categories in the different surveys. Secondly, the level of agreement between patient reports in health interview surveys and medical records in general practices differs substantially per disease category. While the level of agreement is relatively high for asthma/chronic bronchitis, hay fever, diabetes and back complaints, in other categories there is little agreement. We found surprisingly low levels of agreement for complaints of the heart, and more understandably, we uncovered low levels of agreement for diseases of the stomach/intestines, neurological diseases, serious consequences of injury and chronic headache. Further examination of our data reveals an interesting picture with respect to heart complaints. The disagreement between general practitioner and patient over heart conditions was, in many cases, caused by the fact that rhythm disorders were not reported by patients, but were considered by doctors as heart problems. Different levels of agreement could only be partially explained by differences in age, gender, level of education, or length of stay at the practice.

The information used to compare the three health interview surveys was based on existing data and was not collected for the purpose of investigating methodological differences. The design is therefore not ideal for the study of methodological influences on the outcome of surveys, because factors such as differences in the selectivity of the relative high non-response and/or are large shifts in the real prevalence of chronic diseases might also contribute to inter-survey differences. However, the systematic similarity of the results of most questions in the surveys analysed, in which identical wording was used, make this unlikely. Further, temporal trends in the prevalence of the chronic diseases investigated during the study period have not been reported<sup>1</sup>. As this study is conditioned as to wording and the questioning the results cannot be directly applied to evaluations of other health interview methods. The "one at a time" method of questioning used in the surveys analysed results in higher reporting rates than open-ended questions.<sup>8,18</sup> This difference could easily influence the level of agreement scores.

The high level of agreement between the three health interview surveys and the



low level of agreement between the health interview survey and medical records in general practice, in particular for back complaints, chronic headache and diseases stomach/intestines, indicate a discrepancy in methods of measurement for these health problems. This mismatch has been reported earlier, notably in the USA.<sup>28-29</sup> Although both health interview survey and morbidity registration attempt to measure the same items, these are different tools. The value of external validation of these survey methods is probably overestimated. The paradox of high observed agreement( $p_0$ ) and low kappa in this study is strongly influenced by the symmetrically imbalanced marginal totals, whereby a large difference between  $p_{pos}$  and  $p_{neg}$  leads to a low kappa.<sup>30-31</sup> The development of new measures which take a proportional distribution between two groups into consideration may be required.

Measurement of (chronic) disease is extremely complicated in both daily care and research. To quantify health differences between groups we need comparable data on the prevalence of health problems. Although health examination surveys appear to be the most appropriate approach to collecting these data, these surveys are not popular because of their high cost, their biomedical orientation and, consequently, their dependence on 'invasive' investigations. In most instances, health interview surveys and general practice-based morbidity registration systems are the measuring instruments used. The health interview survey is an indispensable and increasingly used tool to measure and monitor the burden of diseases in the population, whereas general practice-based morbidity registration is an essential tool for further study of aetiology, comorbidity, and interventions. The most comprehensive source of information about perceived symptoms, illnesses, previous diseases and need for care is the individual patient, but researchers must rely on the patient's intelligence, memory and willingness for good reporting. On the other hand the physician may cause inaccuracy by not diagnosing the disease, reporting a false diagnosis or perhaps even not reporting a disease. Further complexity is created by problems associated with defining the disease as "chronic" and the inclination to underreport stigmatizing illnesses.

Our study illustrates the size of the influences that methodological differences in health interview surveys have on estimated prevalences of chronic diseases. Prevalence is very sensitive to the characteristics of a survey and depends, in particular, on how the severity of the disease is indicated by the actual wording of the questions and response categories. Most serious chronic diseases are usually well-circumscribed (homogenous diagnostic criteria), well-detectable (objective) clinical entities (e.g. diabetes mellitus and asthma/chronic bronchitis in our

study) and provide high levels of agreement between the 3 health interview surveys and also with medical records. These findings are in agreement with similar studies.<sup>8,18,32</sup> Chronic diseases with a highly subjective "illness nature" (e.g. chronic headache, dizziness and joint complaints), with a wide range of complaints with complex histories, imprecise diagnostic criteria and unpredictable need for diagnosis and care cause low levels of agreement and require, therefore, special attention while designing and interpreting the results of health interview surveys.<sup>13,18,33</sup>

The design and execution of any health survey require (inter)national agreement on instruments and consistency in methodological procedures for the collection of comparable data.<sup>2,5,34-5</sup> This is important not only at national level but even more for comparative research at European level.

When precise information about a specific condition is needed researchers must choose their measurement strategy carefully. For studies on chronic morbidity where similar results on prevalence rates are provided by health interview surveys, general practice records, and general practice registration systems (e.g. diabetes mellitus), a cost-benefit calculation of data collection, data processing and data analysis can help determine the best approach. In those cases where a high discrepancy in prevalence rates between several data sources (e.g. chronic headache) exists, the need for doing both health interview surveys and general practice registration is paramount.

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## MORBIDITY IN GENERAL PRACTICE

### Three Dutch registration systems compared

#### Abstract

General practice morbidity data is a potentially important source of health information, but is underutilized. For a better understanding (of the value) of these data, three morbidity registration systems in the Netherlands were compared. The three systems collect the same type of data, but differ widely in objectives, study population and approaches to data collection, resulting in different incidence and prevalence figures. Major factors contributing to these differences are the location of the practices, participation of the practice assistant, training in the use of diagnostic criteria combined with recording over a longer period. Morbidity registration in general practice may produce excellent data, but uniform registration should be guaranteed.

#### Introduction

In many countries, health statistics are not only based upon birth rates, death rates and hospital admissions, but also on morbidity data from general practice.<sup>1-3</sup> This is particularly the case in countries where general practice combines high accessibility with functioning as a gatekeeper towards other health care facilities. Virtually everyone in the Netherlands is registered with a general practitioner, a relationship which is strongly enduring. Most new health problems are first presented to a general practitioner. General practitioners thus acquire a comprehensive overview of the health problems in the whole practice population. Both numerator and denominator are directly available for calculating incidence and prevalence figures, while the opportunity for observing the natural history of diseases is greater than offered by any other health care facility. The Netherlands boast a number of morbidity registration systems in general practice (see box). These systems differ in design and implementation and do not inter-act. Incidence and prevalence figures from these systems can thus not be compared without further background information. Access to these systems is not easy and users are confronted with different definitions and classifications. The result is that the available information on morbidity in general practice is underutilized. Recently, more attention has been paid to the comparability of general practice morbidity data, but the differences between the registration systems have not yet

**Historical overview of registration systems on morbidity in general practice in the Netherlands**

In the 1960s a national morbidity survey was carried out under the supervision of the Dutch College of General Practitioners (NHG). As a result the Continuous Morbidity Registration of Sentinel Practices<sup>4,5</sup> was set up. In the early 1970s another Continuous Morbidity Registration was set up in four University-linked practices in the Nijmegen-region. This registration system focuses primarily on morbidity-data.<sup>6</sup> In addition, a number of local registration projects were initiated, usually in the big cities and carried out under the supervision of local health authorities or academic departments of general practice. In the same period Lamberts worked on the development of classification systems, culminating in the Transition project.<sup>7-9</sup> Further and better coordinated automation of general practices and the availability of powerful mainframes led to new morbidity registration projects, covering larger numbers of general practices.<sup>10-11</sup> The central objective of these surveys is the epidemiological description of general practice morbidity and care. All of this led to an abundance of morbidity data from general practice in the mid eighties. The past ten years has been spent on the development and implementation of a computerized medical record and the linked development of a national registration network.

been entirely clarified.<sup>12-14</sup>

This study compares different general practice-based morbidity registration systems in the Netherlands in order to answer the following questions:

- what are the objectives, study population, methods of data collection and quality control systems applying in the different registration systems?
- how comparable are the incidence- and prevalence figures for specific diseases from these registration systems?
- how can differences in incidence- and prevalence figures be explained?

**Methods**

From the five publicly accessible morbidity registration systems three have been selected for review: the Continuous Morbidity Registration (CMR) of Nijmegen University, the Transition-project of Amsterdam University and the National Survey of General Practice of the Netherlands Institute of Primary Health Care.<sup>6,9,11</sup> The selection criteria were: same period of registration (i.e. between 1985 and 1990), a sufficiently large study population (>40.000 person years), comprehensive morbidity registration, and relatively good access to the data.

*Description of the selected registration systems*

The main characteristics of the three data systems are summarised in table 9.1.

Table 9.1 Characteristics of 3 registration systems on morbidity in general practice in the Netherlands

	CMR	Transition	Dutch National Survey
<i>objective</i>	academic research	academic research	planning&research
<i>selection of practices</i>	volunteers Nijmegen region	volunteers A'dam/R'dam Northern Region/ Neth. Antilles	random dis- proportionate stratified sample
<i>study population</i>			
- locations	4	14	103
- GPs	7	38	161
- population	12.000	40.796	335.000
- person years	48.000	40.000	85.000
<i>registration</i>			
- data collection	automated registry	self copying form	registration form
- inclusion of consultations	telephone practice assistant specialist initiated non visit chron disease	- - -	telephone practice assistant -
- unit of recording	diagnosis/ episode-based	encounter/ episode-based	encounter/ episode-based
- registration period	1967-ongoing*	1 year	3 months
<i>classification</i>			
- diagnostic criteria (trained in use of)	+	+	-
- system	E.list	ICPC	ICPC
- coding done by	gp in practice	gp in practice	clerk central
<i>no of episodes</i>	148.486	108.704	309.125

\* data from the 1986-1990 period were used for this study



The *objective* of the systems varies from academic research to general planning and research. The CMR focuses on longitudinal recording of morbidity in a small number of practices. The Transition project registered all face to face encounters between general practitioner and patients at 14 locations for a period of at least one year. (Registration is still ongoing in a few practices). The Dutch National Survey was a nationwide, encounter-based study on a 2.5% sample of all general practitioners throughout a three-month registration period.

Differences in *registration* between the systems showed up in respect of consultations by telephone, consultations to the practice-assistants and morbidity as diagnosed at the hospital's emergency room or during hospital stay. In the CMR, chronic diseases with a long-term impact on the (dis)-abilities of a patient are coded annually even if the relevant condition did not result in a patient-doctor contact during that year. When the accompanying disabilities have been treated successfully the disease is removed from the registry. (e.g. a lens implantation signals the end of a cataract episode). Data collection methods and the personnel responsible for data processing differed. The units of recording also differ slightly. All three systems use some form of standardised *classification* of morbidity.<sup>15-18</sup> The diagnostic criteria of ICHPPC-2 defined were applied in the CMR and Transition projects.<sup>16</sup> The coding in the CMR and the Transition study was performed by the participating general practitioners. In the Dutch National Survey, medically trained clerks supervised the data collection at a central location, and coded morbidity data with a slightly adapted but compatible version of the ICPC. Both the general practitioners and clerks were trained in coding. The three databases use population data (i.c. practice lists) as denominator of the results. The practices in the Netherlands Antilles in Transition were excluded to ensure fair comparison. *Data quality control* in the CMR was ensured by standard procedures, while classification and other problems were discussed at monthly meetings. In Transition and the National Survey, the episode structure of the information was checked. Errors were reported back to the practice and as far as possible corrected; also the patient's records in the practice and the information contained in the computerized dataset were compared. In the Dutch National Survey, 30 vignettes were used for quality control of the registration by the general practitioner; the coding by the clerks was subjected to weekly uniformity-tests. In all systems, data-entry and databases were checked by standard computer programmes in order to identify incompatibilities (diagnosis-age, diagnosis-sex).

#### *Expectations for morbidity figures*

Comparison of the objectives, study population and methods of data collection

gave rise to the following expectations in respect of their morbidity figures. In the case of the CMR and Transition, general practitioners had to be trained to adhere to a strict recording discipline over a long period of time. A longer time frame allows the general practitioner opportunity to change the diagnostic label of a problem when new evidence becomes available and thus to arrive at a more accurate clinical diagnosis. To this end, a small group of highly motivated general practitioners was selected from practices in the vicinity of the coordinating departments. In the CMR, the majority of practices was situated in small towns and villages in the eastern part of the country. Transition mainly comprises large city practices boasting substantial numbers of patients from ethnic minority groups, which may have consequences for the number of injuries registered. Such patients tend to go straight to the emergency room at the hospital, bypassing their general practitioner.

Differences in approaches to data collection are most pronounced for chronic diseases. The CMR prevalence figures will obviously be higher than those of the other systems that register only chronic conditions that have actually presented. The CMR figures are even more inflated by the inclusion of chronic diseases with an acute and possibly life-threatening start diagnosed in hospital. Transition lacks information from the practice assistant and telephone consultations, which may have consequences for the morbidity figures on minor problems. The relatively short registration period in combination with a large group of recording general practitioners may have resulted in some loss of uniformity, overestimation of incidence and underestimation of prevalence figures in the National Survey.

#### *Description of selected morbidity*

A small number of conditions was selected for comparison from the total list of disease categories of the three registration systems. Clear-cut diagnostic criteria were available for the majority of selected conditions, which fit the different classification systems in use. The conditions are illustrative for the morbidity pattern of general practice with respect to age and sex distribution, and acute versus chronic character.<sup>19</sup> As most psycho-social problems have a complex and often ill-defined nature, prevalence figures of only a few psychiatric conditions are presented.<sup>20</sup>

This study calculates the cumulative incidences for each of the 3 registration systems in the same way, based on the sum of new and relapse episodes per 1000 patients per year. Relapses as part of a chronic disease (e.g. asthma attack) are not included in the calculation. The cumulative incidences in the Dutch National Survey are based on 3-month data, multiplied by four to reach annual

data, while the CMR Nijmegen-project data are based on the annual average of a four-year registration period. The prevalence rates are calculated from all known episodes per 1000 persons per year, with recurrent episodes in one person counted once. The 3-month data of the Dutch National Survey are weighted to annual data by adding incidence rates for 9 months to the 3-month prevalence rate of basically non-fatal diseases (i.e. all disorders listed minus cancers and cerebrovascular disease). The data presented are standardized for age and, where relevant, for sex using the overall Dutch population as per 1 January 1988.

## **Results**

The age-sex distribution of the total population of the CMR and the Dutch National Survey is almost identical with the Dutch population. The total population of Transition has an over representation of elderly people (19% Transition - 14% nationally).

The cumulative incidences per 1000 persons per year for 24 conditions in the three registration systems in the Netherlands are presented in table 9.2. For most infectious diseases comparable incidence figures were found. Differences are seen for sinusitis, acute bronchitis, non-specific gastro-enteritis and, particularly, for foreign body in eye and cut/laceration, with one of the three surveys showing an outlier. Major differences in incidence rates of the 10 selected chronic diseases showed up for irritable bowel syndrome, rheumatoid arthritis and allied conditions, asthma and COPD. The cumulative incidences of the selected cancers display no major differences.

Table 9.3 shows the period prevalences per 1000 persons per year for 27 chronic conditions in the registration systems under review. For 15 conditions the prevalence rates are rather similar. Major differences emerge for cataract, glaucoma, deafness, other cerebrovascular disease, epilepsy all types, COPD, psoriasis, hyperthyroidism/thyrotoxicosis, uterovaginal prolapsus, cancer of the breast, dementia and depressive disorders, with again one of the three surveys showing an outlier.

### *Relation between the differences in registration systems and the differences in incidence/prevalence figures*

Setting the differences in incidence/prevalence figures against the different characteristics of the registration systems reveals the following pattern:

- the selection process of general practices could limit the generalisability of data from the CMR and Transition; an example is the higher respectively lower incidence of injuries, compared with figures from the National Survey;

Table 9.2 Cumulative incidence per 1000 persons per year for 24 conditions in general practice registration systems in the Netherlands: standardized for age and sex

ICPC code		CMR	Transition	Dutch Nat Survey
<i>Infectious diseases</i>				
A71	Chickenpox	3.2	2.4	2.4
A75	Infectious mononucleosis	1.0	1.8	2.0
D74	Non-specific gastro-enteritis	30.7	16.4	26.4
H71	Acute otitis media/myringitis	20.5	22.5	26.8
R74	Upper resp tract infection	155.3	117.2	123.2
R75	Sinusitis acute/chronic	22.0	31.8	34.8
R78	Acute bronchi(oli)tis	21.3	38.2	38.8
S74	Dermatomycosis/phytosis	33.2	22.3	23.2
Y73	Prostatitis (*1)	1.8	2.4	2.4
<i>Injuries</i>				
F76	Foreign body in eye	10.5	1.6	5.6
L77	Sprains/strains of ankle	15.6	9.9	12.8
S18	Lacerations/cuts	49.3	12.4	14.8
<i>Chronic diseases</i>				
B80	Iron deficiency anaemia	4.6	5.3	4.4
D93	Irritable bowel syndrome	5.5	13.4	16.0
K77	Heart failure	3.1	4.2	3.6
L88	Rheumatoid arthritis/allied cond.	0.5	1.2	2.4
N89	Migraine	2.6	3.9	4.8
R91/5	COPD	2.2	2.6	4.8
R96	Asthma	2.6	5.9	7.2
S96	Acne vulgaris	6.5	6.6	6.8
T90	Diabetes mellitus	2.1	2.7	3.6
X87	Uterovaginal prolapsus (*2)	2.6	4.1	4.4
<i>Cancer</i>				
R84	Cancer lung/bronch/larynx	0.6	0.5	0.4
X76	Cancer breast (*2)	1.1	1.2	1.6

(\*1) per 1000 males

(\*2) per 1000 females

Table 9.3 Prevalence rate for 27 chronic conditions in general practice registration systems in the Netherlands per 1000 persons per year standardized for age and sex

ICPC code		CMR	Transition	DNS
<i>Chronic diseases</i>				
B80	Iron deficiency anaemia,	4.6	7.3	7.9
D85/6	Peptic/duodenal ulcers	5.0	4.0	6.2
D94	Chronic enteritis/ulcerative colitis	1.3	1.2	1.6
F92	Cataract	10.1	2.0	1.8
F93	Glaucoma	3.2	0.8	1.9
H84	Deafness	30.1	4.9	3.7
K77	Heart failure	11.1	7.5	9.1
K86/7	Hypertension	54.2	55.7	62.5
K90	Other cerebrovascular disease	9.0	4.2	5.3
L88	Rheumatoid arthritis/allied cond.	5.8	3.2	5.2
L95	Osteoporosis	2.0	1.2	2.0
N87	Parkinsonism	1.9	1.1	1.7
N88	Epilepsy, all types	5.8	1.8	4.4
R91/5	COPD	20.9	10.2	16.2
R96	Asthma	13.2	14.4	15.6
S91	Psoriasis w/wo arthropathy	11.0	2.9	3.4
T85	Hyperthyroidism/thyrototoxicosis	3.3	1.6	1.9
T86	Hypothyroidism/myxoedema	1.5	1.4	1.8
T90	Diabetes mellitus	20.0	12.4	14.7
X87	Uterovaginal prolapsus (*1)	16.7	8.2	7.6
<i>Cancer</i>				
D75	Cancer esophagus/stomach/colo-rectal	3.4	2.3	2.2
R84	Cancer lung/bronchus/larynx	1.6	1.2	1.8
X76	Cancer breast (*1)	8.7	3.3	4.4
Y76	Cancer prostate (*2)	1.4	1.2	1.2
<i>Mental problems</i>				
P70	Dementia	3.4	3.6	1.7
P71	Schizophrenia, all types	0.7	1.0	0.9
P76	Depressive disorders	4.8	13.8	15.2

(\*1) per 1000 females

(\*2) per 1000 males

- the different approaches to data collection:
  - \* the inclusion of hospital-based information further adds to the high incidence figures for injuries in the CMR; it shows that routine morbidity figures from general practice indeed underestimate this incidence;
  - \* the annual re-recording described above, combined with its comprehensive and longstanding character result in a high prevalence of chronic diseases in the CMR. The fact that prevalence figures in the Dutch National Survey are higher for diagnoses such as peptic ulcers and hypertension, contrary to our prediction, may be attributable to diagnostic criteria probably not being applied correctly;
  - \* the practice assistant and telephone consultations indeed influence the morbidity figures in the registration. These consultations comprise to a large extent repeat prescriptions, which add morbidity to the registration that is not seen by the general practitioner. This is illustrated by the higher prevalence figures in the CMR and National Survey for glaucoma, peptic ulcers, epilepsy, asthma and COPD, and their higher incidence figures for non-specific gastro-enteritis.
  - \* the way in which general practitioners use diagnostic criteria can be illustrated by clustering respiratory tract problems like sinusitis, acute bronchitis, upper respiratory tract infection and acute otitis media. This largely reduces the differences between the systems, indicating that general practitioners easily switch to their favourite diagnosis, not necessarily the accurate one. This phenomenon has also been observed in other comparisons of similar nature.<sup>13-14</sup> As yet precise diagnostic criteria are lacking for a large number of common diseases presented in general practice.

## Discussion

General practice-based morbidity registries are an important source of epidemiological information, as general practice records reflect more closely the true relative frequencies of most diseases than do hospital or mortality records.<sup>21,22,23</sup> Although the diagnostic information available in general practice is often less precise than in hospital, the data are free from many of the biases which arise from selective referral and admission of patients to hospital. In several countries of the European Union, the data collected on the numbers of consultations for different disorders are readily converted into morbidity rates, which can be used in health research and policy documents.<sup>19,24,25</sup> There are, however, very few systems where all data of all patients consulting general practitioners are collected on a continuous basis. CMR Nijmegen is a rare example! A major reason is that it is too expensive and requires an enormous

effort to build and maintain such a system. We are, therefore, usually left with cross-sectional studies.

This review aimed at providing a better understanding of differences between morbidity datasets in primary care in order to optimize their use. Two key results emerge. First, the differences between the reviewed registration systems with respect to objectives, selection of practices, approach to data collection and quality control are substantial. Secondly, differences in incidence and prevalence figures appear to be caused by differences in the selection of practices and approaches to data collection.

This study illustrates the impact that methodological differences in morbidity registration systems may have on incidence and prevalence figures. The number of participating general practitioners, whether they are part of a sample or not, seems to be less important. The choice between reliability, more important in scientific research, and representativeness, more relevant in policy questions, therefore has profound implications. A combination of the approaches from the three systems would guarantee best results. A representative sample of computerized practices using standard programmes may offer a feasible option for the next step.

In an epidemiological sense, an ideal general practitioner registration system would deliver comprehensive health information. A small-scale system could be the best choice, but is usually region based which sets limits on the degree of representativeness.

For a better understanding of general practice-based morbidity registration systems, the following steps must be taken. First, a common framework in which agreement is reached on the type of data collected with special attention to the severity of disease, the instruments and methodological consistency, balancing both the objectives and the resources of each system should be developed.<sup>19</sup> Second, careful and realistic planning is necessary to maximise the possibilities of standardisation, as disruption of the normal stream of consultations booked at 5–10 minutes intervals should be kept to a minimum. Excessive demands by researchers will almost always lead to incomplete data collection. Third, the participants must remain motivated to continue which can be achieved by providing feedback from the registry and offering opportunities to participate in publications and other applications.

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## MAJOR FINDINGS

### Introduction

The First Dutch National Survey of Morbidity and Interventions in General Practice has produced a wide range of results and products from both the original and new subprojects.

During the early phase of data analysis a dissemination strategy had been developed. This strategy consisted of the production of several background papers (van der Velden, 1986; van der Velden, 1990; Groenewegen, 1990; van der Zee, 1990; Bensing et al., 1991), four basic reports, one report or thesis of each of the original subprojects and further articles in national and international scientific journals. Special attention was paid to publications in the professional journals (Buijs et al., 1990; Visser, 1992–1998), conferences such as 'Doctors at work' (Dutch National Survey, 1990) with related public relation booklets (Popkema et al., 1988; Spanjer, 1990) and in particular the production of profiles of the participating practices (van der Velden et al., 1992) Finally overviews such as Synopsis (Foets et al., 1991), the Family Doctor in the Practice (Foets et al., 1992), Portfolio (1995) and Caleidoscoop (1997) were produced.

Table 10.1 Overview publications in absolute numbers First Dutch National Survey of General Practice as per 1–9–1999

	N=
PhD theses	18
Scientific Reports	71
Policy reports with major input	35
Scientific articles national	100
Scientific articles international	72
Dissemination articles professional journals	24
Book contributions	47
Practice profiles	112
Overviews	8

In the following chapters, the most important findings from the different subprojects will be described, extracted from all publications and unpublished analyses. The overviews and NIVEL Annual Reports (NIVEL, 1990–1997) were used for the purpose.

Information was, moreover, provided on various occasions to individual general practitioners, municipal health services, hospitals, university departments, individual researchers and research institutions, policy makers, and mass media, quite frequently based on new analyses of the data. If relevant, this information has been included in the findings. An overview of the total production to date is presented in table 10.1. The findings of the different subprojects are clustered. This clustering is arranged into illness and disease management, specific targets groups, quality assurance and health care chain. The known absolute number of publications, arranged by topic, is shown in table 10.2.

Table 10.2 Overview publications excl dissemination articles and practice profiles by topic in absolute numbers First Dutch National Survey of General Practice as per 1–9–1999

	N=
Child health	22
Acute health problems	27
Chronic diseases	64
Psychological problems	27
Social problems	47
Quality assurance	31
Health policy	90

In paragraph 10.1, an overview will be provided of the analyses and publications with regard to the management of complaints and diseases as reported by the practice population or presented in general practice. Paragraph 10.2 focuses on studies about specific target groups, such as children, men and women, marital status and social networks, occupational groups, ethnic minorities and elderly people. Paragraph 10.3 is dedicated towards primary health care related topics, such as access to care, quality of care and health financing issues. Paragraph 10.4 will describe the results of health policy related subprojects.

The description per subproject follows a fixed framework of policy context, research questions, results, relevance and policy implication. A complete list of publications is provided at the end of each chapter.

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*major findings*

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## 10.1 ILLNESS AND DISEASE MANAGEMENT

### Policy context

Managed care, including disease management, is a popular concept nowadays. Its aim is to enhance structure, cohesion and professional collaboration to improve the quality of health care. Illness and disease management form the core of general practice/family medicine. Consequently many subprojects dealt with the management of illnesses and diseases and the actions of patients respectively general practitioners. Data for both type of subprojects originate from the same study population, with the possibility of linkage.

### Research questions

- what is the epidemiology of specific illnesses/diseases in general practice?
- what is the management of illnesses/diseases by the population and/or by the general practitioner?

### Results

In the description of the different subprojects the ICPC chapters and codes are followed (table 10.3). For each ICPC chapter and code studied it is indicated whether research has been done on illness and/or disease management. Illness is defined as complaints and/or conditions reported in the health interview survey. Disease is the reason for encounter or diagnosis recorded in the contact registration of the survey. In quite a number of publications, information from the health interview (and/or diary) and the contact registration was combined.

In several publications, complete ICPC chapters such as digestive system, cardiovascular system, musculoskeletal system, psychological problems and pregnancy/delivery and family planning were analysed and reported. A total of over 300 diagnoses reports were made of both common and rare diseases.

The overview indicates the importance of infectious diseases, chronic degenerative diseases and psychological problems. Less attention has been devoted to pregnancy-related problems and injuries. The survey made it possible to describe the management of rare diseases such as colon carcinoma, meningitis, multiple sclerosis, anorexia nervosa/boulimia and HELPP syndrome.

Included in these results is the delivery of relevant information to research groups, professional bodies (e.g. NHG standards), industry and media.

### Relevance

For the first time the work of general practitioners in the Netherlands has been

able to be described at national scale. The publications reflect the daily work of general practitioners in the Netherlands. Next to the research community and professional bodies, use was also made of this information by individual general practitioners, patient organizations, insurance schemes and even some court cases used the information. Most important aspect of the information was its contribution to the Public Health Status Forecasts 1993 and 1997.

**Policy implication**

A complete picture of the work in general practice at national level has become available. This information has been widely used. Guidelines and policy development received support a.o the programmatic prevention and prescription behaviour of medicines. With this empirical information, the effectiveness of many interventions can be studied in greater depth.

Table 10.3 Dutch National Survey of General Practice: findings on illness and disease management. Publications and data delivery (*in italics*) per ICPC chapter and ICPC code period 1989–1999

	illness (interview + diary)	disease (contact registration)	references
<b>A-Z GENERAL</b>	+	+	Foets et al., 1991; De Bakker et al 1992; Van der Velden et al 1992; Groenewegen et al 1992; Bruijnzeels et al 1993; Van der Velden et al 1993; Schellevis 1993; Kooiker 1996; Bruijnzeels 1997; Van der Velden et al 1998;
<b>A GENERAL AND UNSPECIFIED</b>			
A01 pain generalized/unspecified	+	+	<i>RGO 1994; VPRO 1995; HP/De Tijd 1995;</i>
A03 fever (incl + N07)	+	+	Hart et al 1992; Hart et al 1993; Verburgh et al 1992; Speelman-Verburgh et al 1996; Zaat et al 1992; <i>VPRO 1995; HP/De Tijd 1995;</i> Bensing et al 1996; De Rijk et al 1996;
A04 general weakness/ill-feeling	+	+	Rijken et al 1996; Van der Meer et al 1997; Bensing et al 1997; Van Mens-Verhulst et al 1997; Van Mens-Verhulst et al 1998; De Rijk et al 1998; Bensing et al 1999;
A06 fainting/syncope	-	+	<i>WKZ Urecht 1998;</i>
A12 allergy NOS/NEC	-	+	<i>Nieuwe Revu 1993; VPRO 1995; HP/De Tijd 1995;</i>
A15 excessive crying infant	-	+	Tasche et al 1993;
A71/74 measles/rubella	-	+	<i>RIVM 1991;</i>
A77 other viral diseases NOS	-	+	<i>RIVM 1991;</i>
A85/87 adverse effect med agent prop dose/ complications surgical/medical treatment	-	+	<i>Koppen et al 1994; Visser et al 1995; Conradi et al 1996;</i>
A96 death	-	+	<i>Van der Velden 1992;</i>
A97 no disease	+	+	<i>VTV 1993; Winkelman van Hessen 1994; Weide et al 1999;</i>



**B BLOOD, BLOODFORMING ORGANS, LYMPHATIC SYSTEM, SPLEEN**

B02	enlarged lymph gland	-	+	<i>Vogelsang 1992;</i>
B80-82	anemia	-	+	<i>Vakgroep HVG VU 1992;</i>
B86	abnormal blood test	-	+	<i>NHG standard 'blood test';</i>
B90	HIV/Aids/ARC	-	+	<i>GGD Amsterdam 1990;</i>
<b>D DIGESTIVE</b>				
D01-99	general	+	+	<i>De Waal et al 1992; NLDS 1991; NLDS 1993;</i>
D01/06	abdominal pain/cramps	+	+	<i>De Waal et al 1992; Van der Velden 1998;</i>
D02-03	stomach ache/heart burns	+	+	<i>De Waal et al 1992; NHG standard 'stomach complaints';</i>
D09-10	nausea/vomiting	+	-	<i>De Waal et al 1992;</i>
D11	diarrhea	+	+	<i>De Waal et al 1992; NHG standard 'acute diarrhoea';</i>
D12	constipation	+	+	<i>De Waal et al 1992; Lamers 1997;</i>
D15	melena	-	+	<i>Van den Berg et al 1991;</i>
D71	mumps	-	+	<i>RIVM 1991;</i>
D72	infectious hepatitis	-	+	<i>GGD Utrecht 1995;</i>
D74	gastro enteritis	+	+	<i>Nutricia 1992; VTV 1993;</i>
D75	malignant neoplasm colon/rectum	-	+	<i>Riemeijer et al 1993;</i>
D85-87	peptic ulcer/gastritis	+	+	<i>Vakgroep HAG UU 1993; Vakgroep MedInfoEpid KUN 1994;</i>
D93	irritable bowel syndrome	-	+	<i>Vakgroep HVG VU 1993; Donker et al 1999;</i>
D97	cirrhosis/oth liver disease	+	+	<i>NEI 1989; Van Dam 1994; NHG standard 'liver function test';</i>
D98	cholecystitis/lithiasis	-	+	<i>Reitsma 1989</i>

<b>F</b>	<b>EYE</b>							
F05	oth problems with vision	-		+				<i>Doofblinden Stichting 1990; Foets et al 1991</i>
F70-71	conjunctivitis	-		+				<i>NHJ standard 'red eye';</i>
F76	foreign body in eye	-		+				<i>Van der Velden et al 1996</i>
F80	dacryostenosis congenita	-		+				<i>Vakgroep Klin Genetica AMC, 1994</i>
F92-94	cataract/glaucoma/blindness	-		+				<i>Van de Lisdonk et al 1992</i>
F99	ectropion/entropion	-		+				<i>Vakgroep Oogheelkunde AMC 1995</i>
<b>H</b>	<b>EAR</b>							
H01	earpain/earache	-		+				<i>Felicitas 1997</i>
H07	ringing/buzzing/tinnitus	-		+				<i>Lucas Stichting 1996</i>
H70	otitis externa	-		+				<i>NHG standard 'external otitis'; Rooijackers-Lemmens et al 1993</i>
H71-74	acute/non-suppur otitis media, glue ear/eustach	-		+				<i>Bohnen et al 1992; De Melker et al 1993; Kuyvenhoven et al 1993; De Melker et al 1994</i>
H84-86	salpingitis, chronic otitis media, mastoiditis presbycusis/acoustisch trauma/deafness NEC	-		+				<i>Foets et al 1991; Bond van Audiciens 1992; VTY 1993a, 1993b;</i>
<b>K</b>	<b>CIRCULATORY</b>							
K01-99	general	-		+				<i>Sweep et al 1996; Plexus 1996</i>
K01-02	pain attributed to heart	+		+				<i>Voorn 1993; De Volkskrant 1996</i>
K04-05	palpitations/irregular heart beat, pulse	-		+				<i>Beiersdorf 1995</i>
K06	prominent veins	-		+				<i>Beiersdorf 1995</i>
K07	swollen ankles/edema	-		+				<i>Miedema 1994</i>
K71	rheumatic fever/heart disease	-		+				<i>Vakgroep Cardiologie KUN 1995</i>
K74	angina pectoris	-		+				

K75	acute myocardial infarction	-	+	Kluft 1992
K76	chron ischaemic heart diseases	-	+	Yoon 1993
K77	heart failure	-	+	Mosterd et al 1996; Cost et al 1998
K78-84	rhythm disorder/heart disease NEC	-	+	Van der Velden 1994
K85-87	elevated blood pressure/hypertension	-	+	Van der Velden et al 1993; Peeters 1993; Van der Velden et al 1999
K89-90	TIA/CVA/other cerebrovascular diseases	-	+	Inst CBK/EUR 1991; Van der Velden 1994; Welling et al 1997
K91-92	oth atherosclerosis/periph vascular disease	-	+	Hofstra et al 1993
K94-95	(trombo)phlebitis/varicose veins/crural ulcer	-	+	Beiersdorf 1995
K96	hemorrhoids	+	+	De Waal et al 1992
<b>L</b>	<b>MUSCULOSKELETAL</b>			
L01-99	general	+	+	APRO 1990; Miedema 1994; Vijlbrief et al 1995b
L02-03	(low) back compl w/o rad symptoms	-	+	NHG standard 'low back pain'; IRV 1992; Van Breemeninstituut 1996; Huisman 1996; Delnoij et al 1997; Van der Velden 1998; Van de Lisdonk et al 1998; Van Elbacker-Niele, 1992;
L04-29	symptoms/complaints	-	+	
L76-81	fracture/sprains & strains/dislocation/oth injuries	-	+	Grol et al 1991; Ipsa facto 1992; SWSF 1995; YPRO 1995; HP/De Tijd 1995
L86	backpain with rad symptoms/dorsopathies	+	+	van Breemeninstituut 1993; Delnoij et al 1997; McWorther 1997
L88	rheumatoid arthritis/ank/losing spondylitis	-	+	van Breemeninstituut 1993; Van de Lisdonk et al 1993; De Waal et al 1994
L89-90	osteoarthritis knee/hip	-	+	van Breemeninstituut 1993; Schellevis et al 1994; De Waal et al 1995
L91	transient synovitis of the hip/arthritis other type	-	+	Vijlbrief et al 1992; Vijlbrief et al 1995a
L92	shoulder syndrome	-	+	NHG standard 'shoulder complaints'
L93	epicondylitis lateralis/other bursit/tendinit	-	+	NHG standard 'epicondylitis lateralis'
L95	osteoporosis	+	+	Afd Geriatrie AZU 1993; St Huisartsen Lab Breda 1993; Afd Endocrinologie AZU 1994;
L96-97	acute damage menisc/chron derangement knee	-	+	Ipsa Facto 1992
L98	acquired deformities of limbs	-	+	Vakgroep HAG UU 1996
L01-99	four year follow-up (ROME)	+	+	Miedema 1994

N	<b>NEUROLOGICAL</b>								
N01-02	headache/tension headache	+							Donker et al 1992; Bijl et al 1994; Bijl 1994a, 1994b; Van der Velden 1998; Van der Wouden et al 1999
N07	convulsions/seizures	-							Verburgh et al 1992; Speelman-Verburgh et al 1996.
N17	vertigo/dizziness	+							Foets e.a. 1991
N70	meningitis/encephalitis	-							Koorevaar et al 1995
N86	multiple sclerosis	-							<i>Dunning Cie 1991; St. Vrienden MS 1993; Donker et al 1995; Donker et al 1996; Smit 1998</i>
N87	parkinsonism	-							<i>Landelijk Overleg Parkinson 1993; Foets et al 1995</i>
N88	epilepsy, all types	+							Stokx et al 1990a, 1990b; Donker et al 1997; Donker et al 1999
N89	migraine	+							Donker et al 1992; Van Rooijen et al 1993; Bijl et al 1994; Bijl 1994a, 1994b; Van Rooijen et al 1995
N90	cluster headache	-							Donker et al 1992; Bijl et al 1994
N99	other diseases of neurological system	-							<i>NEI 1989</i>
P	<b>PSYCHOLOGICAL</b>								
P01-99	general	+							Bensing et al 1990; Verhaak et al 1990; Foets et al 1991; Verhaak 1991; <i>NRV 1992; Verhaak 1992; Schrameijer et al 1993; Verhaak et al 1993; Bensing et al 1994; Koopman 1994; Verhaak et al 1994a, 1994b; Verhaak 1995a, 1995b, 1995c; SOM 1995; Foets et al 1996; RIAGG A'dam ZO 1997; Middageditie 1997; Verhaak 1997a, 1997b; Van der Pasch et al 1998</i>
P01-03	feeling anxious/nervous/tense, acute stress reaction, feeling depressed	-							<i>De Boerderij 1990; Vakgroep Psychiatrie KUN 1996</i>
P07	disturbances of sleep	+							Foets et al 1991; <i>NHG standard 'sleep disturbances'; Peeters 1993</i>
P12	enuresis	-							<i>Vakgroep HSV KUN 1997</i>
P15-16	alcohol abuse	+							<i>NEI 1989; Foets et al 1991; NRV 1992; Van Baar et al 1991; Foets et al 1993</i>
P17	tobacco abuse	+							<i>NRV 1992; Foets et al 1991; Haverkamp 1992; Kooiker et al 1996</i>
P18	drug/other abuse	-							<i>NRV, 1992</i>
P70	(pre) senile dementia/oth organic psychosis	-							<i>Werkgroep Dementie VU 1991</i>

P76	depressive disorder	+	+	Tertuin et al 1993
P78	surmenage/neurasthenia	+	+	Tertuin et al 1993
P01-99	one year follow up	+	+	Tijhuis et al 1990; Tijhuis et al 1991
<b>R</b>	<b>RESPIRATORY</b>			
R01-99	general	-	+	<i>Vakgroep Med Microbiologie AMC 1995</i>
R02	shortness of breath	-	+	De Meiker et al 1994
R05	cough	+	+	De Meiker et al 1994; Van der Velden 1998
R06	nose bleed/epistaxis	-	+	<i>Vakgroep HAG UU 1996</i>
R09	symp/comp/ sinus	-	+	De Meiker et al 1994
R21-22	symp/comp/ throat/tonsils	-	+	Hofstra et al 1993
R74-76	URI, sinusitis, acute tonsillitis	-	+	<i>GGD Zuid Kemmerland 1991</i> ; Kuyvenhoven et al 1993; Van der Ven et al 1993; De Meiker et al 1993; VTV 1993; De Meiker et al 1994
R77-81	acute laryngitis/tracheitis/croup, acute bronchi(ol)itis, influenza, pneumonia	-	+	<i>GGD Midden Limburg 1992</i> ; VTV 1993a, 1993b; <i>RIM, 1994</i> ; Sluiter et al 1996; Bal-tussen et al 1997a, 1997b; Peters et al 1997; Kuyvenhoven et al 1999
R84	malignant neoplasm lar/trac/bronc/lung	-	+	<i>IKMN 1994</i>
R91/95	COPD/emphysema	-	+	Bijl et al 1993; <i>BGD Midden Twente 1994</i> ; <i>RIM 1997</i> ; <i>Vakgroep HAG UU 1997</i> ; Hut-ten 1997
R96	asthma	+	+	Van Campen et al 1993
R97	allergic rhinitis, hay fever	-	+	<i>Nieuwe Revu 1993</i>
R98	hyperventilation	-	+	<i>Nieuwe Revu 1993</i>
<b>S</b>	<b>SKIN</b>			
S03	warts	-	+	Koning et al 1994a; <i>DHF Helmond 1996</i>
S09-11	paronychium/boil/carbuncle/oth local skin infect	-	+	Rutten et al 1998
S12-13	insect/animal/human bite	-	+	<i>Vakgroep Wonen en Gezondheid TUE 1996</i>

S14-19	burns/foreign body/bruises/contusion/abrasion /scratch/blister/aceration/cuts/other injuries skin hirsutisme/other symp/comp/ hair & scalp	-	+	<i>Wound Care Society 1991</i> <i>Organon 1995</i>
S23		-	+	<i>IMTA/EUR 1994; Rutten et al 1999; Fleming 1997</i> <i>De Boer 1996; Rutten et al 1999</i> <i>Rutten et al 1999</i> <i>Vakgroep HAG UU 1996</i> <i>LHV 1989; Leiden/Alphen 1991; NHG 1996</i> <i>LHV 1989; Leiden/Alphen 1991; NHG 1996</i> <i>Van der Ven-Daane et al 1993; Rutten et al 1998</i> <i>Vakgroep HAG RUG 1995</i> <i>Inst HAG EUR 1993</i> <i>Donker et al 1998</i> <i>LHV 1989; Leiden/Alphen 1991; NHG 1996</i> <i>LHV 1989; Leiden/Alphen 1991; NHG 1996</i> <i>Koning et al 1993b; Koning et al 1995; Koning et al 1996</i> <i>Brandenburg et al 1991; Noort 1997</i> <i>Vakgroep Allergologie AMC 1991</i>
S70	herpes zoster	-	+	
S71	herpes simplex	-	+	
S74	dermatomycosis/phytosis	-	+	
S76	erysipelas/other infection skin disease	-	+	
S78	lipoma of skin	-	+	
S82	nevus/mole	-	+	
S84	impetigo	-	+	
S86-87	seborrheic/atopic dermatitis/eczema	-	+	
S89	diaper rash	-	+	
S91	psoriasis w/wo arthropathy	-	+	
S93	sebaceous cyst	-	+	
S94	ingrown toenail/other disease of nail	-	+	
S95	mollusca contagiosa	-	+	
S96	acne	-	+	
S98	urticaria	-	+	
T	ENDOCRINE AND METABOLIC			
T04-07	feeding/weight problems	+	+	<i>Foets et al 1991; TNO 1993</i>
T13-14	anorexia nervosa/boulimia	+	+	<i>Vakgroep HVG VU 1991; Vakgroep HSY KUN 1997; Psychiatrisch Centrum Rosenberg 1997</i>
T15	thyroid lump, mass	+	+	<i>Schildklierstichting 1992</i>
T78	thyroglossal duct/cyst	-	+	<i>Schildklierstichting 1992</i>
T81	goiter/nodule w/wo thyrotoxicosis	+	+	<i>Schildklierstichting 1992</i>
T83	obesity	+	+	<i>Foets et al 1991</i>
T85	hyperthyroidism/thyrotoxicosis	+	+	<i>Schildklierstichting 1992</i>
T86	hypothyroidism/myxedema	+	+	<i>Schildklierstichting 1992</i>

T90	diabetes mellitus	-	+	Konings et al 1993; Hart et al 1996; Weide et al 1999
T91	vitamin deficiency/other nutritional diseases	-	+	<i>Weekblad Margriet</i> 1995
T92	gout	-	+	Miedema 1994
T93	lipid metabolism disorder	-	+	Van der Weijden et al 1995
U	UROLOGY			
U01-04	APFM-syndrome	-	+	Hutten et al 1993; VTV 1993
U04	urge incontinence	-	+	<i>K + V</i> 1995; <i>Vakgroep Vrouwenstudies KUN</i> 1995; Lagro et al 1996
U05	urin retentio	-	+	Elzinga et al 1997
U06	hematuria	-	+	<i>Holhuis</i> 1994
U70	acute pyelonefritis/pyelitis	-	+	Hutten et al 1993; VTV 1993
U71	cystitis/urinary tract infection	-	+	Hutten et al 1993; VTV 1993
U72	non specific urethritis	-	+	VTV 1993
W	PREGNANCY AND FAMILY PLANNING			
W01-99	general	+	+	Van Wijk et al 1992
W11-14	family planning	-	+	<i>Trouw</i> 1996
W70-71	pyelitis gravidarum	-	+	Hutten et al 1993
W82-83	abortion	-	+	<i>Abortus werkgroep YU</i> 1996
W90-91	normal delivery	+	+	<i>University Minneapolis</i> 1997
W92	HELPP syndrome	-	+	<i>Zwanenburg</i> 1994
X	FEMALE GENITAL SYSTEM			
X05	menstruation absent/scanty	-	+	Bijl et al 1996; <i>NHG standard 'amenorrhoea'</i>
X06-08	menstruation excessive/irregular	-	+	<i>Aletta</i> 1993





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## 10.2 TARGET GROUPS IN GENERAL PRACTICE CARE

Age–sex registers were key element in data collection. Analyses related to children, gender issues and elderly were therefore foreseen. With the extra socio–demographic variables included in the data collection extensive studies related to social networks, occupational groups and migrants were feasible.

### 10.2.1 Children

(Bruijnzeels et al., 1993; van Suijlekom–Smit & Crone–Kraaijeveld, 1994; Bruijnzeels et al., 1995; van Suijlekom–Smit et al., 1995; Suijlekom–Smit et al., 1997; Bruijnzeels 1997; Bruijnzeels et al., 1998a, 1998b, 1998c, 1998d, 1998e; Bruijnzeels et al., 1999a, 1999b, 1999c)

#### Policy context

Illness in children differs from adult morbidity and should be studied separately for two reasons. Firstly, illness in childhood is associated with the child's development, especially with the child's age and gender. Young children (boys more than girls) experience more problems than older children (girls more than boys). Secondly, children do not make their own decisions regarding health matters, especially at young ages. Parents, mostly mothers, deal with their health and illness. Most often this illness is of a self limiting nature and medical attention is not necessary. Yet most children attend a medical doctor and therefore are important clients. In the Netherlands patients have no direct access to a pediatrician. Therefore general practice plays a key role in child health care. Several studies have been performed in collaboration with the Departments of General Practice and Pediatrics of Erasmus University / Sophia Child Hospital Rotterdam.

#### Research questions

- what are the parental responses to illness in childhood, and what are socio–demographic determinants?
- what are the health problems, reasons for encounter and diagnoses of children between 0 and 15 years presented in general practice, which factors determine this presentation and what actions were taken?

## Results

### *Illness in children and parental response*

Based on diary data, it has been demonstrated that 60% of the children suffered from an episode of illness during a three week period. More young children (0–4 years) and children in the large cities suffered from any illness. The most commonly reported illnesses were problems of the respiratory tract (e.g. colds/flu), followed by diarrhoea, musculoskeletal problems especially injuries and headaches. The general practitioner was consulted on behalf of 11% of all children and encompassed 13% of all episodes of illness.

The largest influence on the decision whether to consult the general practitioner, either at the beginning or later in the episode, was a combination of (increased) concern, irritation and novelty together with a perceived non self-limiting character of the illness. Ear and respiratory problems prompted parents, especially in the lower socio-economic status group, to consult the general practitioner more often.

### *Child health problems in general practice*

In total, over 50.000 consultations with children (16% of the total) were recorded, the majority (78%) during consultation hours, 11% during house calls and the rest by phone. Most episodes of care consist of just one consultation. Children from the lower socio-economic strata, especially in inner cities, have a higher chance of not meeting the general practitioner, while they suffer from more diseases. The educational level of the father was found to have the greatest and inverse relation to medical utilization, which was even more pronounced in young children (0–4 years). For ethnicity, adjusted for socio-economic status, no differences in utilization rates were found.

Children see the general practitioner mainly for problems of the respiratory tract, skin, gastro-intestinal tract and specific childhood problems. Children from single-parent families present twice as many social problems such as material problems, loss of family members and loneliness, compared to children from complete families. Migrant children present most respiratory tract problems. Injuries are relatively common among adolescents from low socio-economic status families. Disease management by general practitioners is in concordance with presented morbidity. There is limited use of laboratory investigations and a high rate of antibiotic prescriptions. In 8.5% of the episodes the children were referred.

## Relevance

The general practitioner manages 90% of health problems in children. Social

differences play an important role in (using) child health care. Children in cities, especially migrant children, suffer more from problems of the respiratory tract, but seem to consult the general practitioner less often.

### **Policy implication**

The increased number of children from broken families and the increased number of migrant children lead to more morbidity which is not always presented in general practice. This requires well-directed health promotion campaigns.

### **10.2.2 Gender differences**

(Meeuwesen et al., 1991; de Bakker et al., 1992; Bensing et al., 1992; Bensing et al., 1993; van den Brink-Muinen et al., 1994; Bensing et al., 1995; van den Brink-Muinen et al., 1996a, 1996b; van den Brink-Muinen et al., 1997; van den Brink-Muinen et al., 1998a, 1998b; Bensing et al., 1999)

### **Policy context**

Gender differences in health (care) are well known: men have higher mortality rates, women report more health complaints and higher medical consumption. This phenomenon, summarised in the phrase 'women get sick, men die' may be explained by biological, psychological and societal factors. Present research is hampered by the limitation of data sets used: data collections in the Netherlands rarely include socio-economic status, and there is often no link between population-based information and care registries. These problems were attended to in the National Survey. The Survey could therefore contribute to our further knowledge on the issue.

### **Research questions**

- what gender-specific differences are there in perceived health, health problems presented in general practice and allied medical consumption, and if gender differences are found what is the contribution of gender-specific health problems and/or of socio-economic or living conditions?
- do gender-specific differences occur in general practice in respect of the following subquestions:
  - \* do female patients prefer female doctors?
  - \* are female doctors confronted with other health problems than male doctors?
  - \* are female doctors different from male doctors with respect to services provided?



- what differences in care provision are there between female general practitioners providing women's health care, and female/male general practitioners providing regular care?

## Results

### *Gender differences in health and medical consumption*

Gender differences in subjective health assessed in combination with living situation, occupation resp education indicate that men are at the extremes. Men with a partner and a job or high level of education feel healthier than women, yet feel less healthy than women if lacking a partner and a job or if boasting only a low level of education.

Gender differences in medical consumption assessed in combination with living situation, occupation resp education the study indicate that men from all social backgrounds have lower consulting rates in general practice than women. Within these groups of men and women the patterns are the same: men, or respectively women with a partner and a job have a lower medical consumption compared to men and women without a partner and a job. Education appears to be the strongest explanatory factor for gender differences in medical consumption: the higher the level of education, the lower the medical consumption.

### *Gender differences in general practice care provided*

The existing dominance of male general practitioners is over. Female patients tend to choose female general practitioners, a choice which is strengthened if the female general practitioner works more hours per week. Younger women were more likely than older women to select female general practitioners. The female general practitioners see more women's health problems such as menstrual and menopausal problems, vaginal discharge, and perform more cervical cytology and breast examination, but also see more endocrinologic, metabolic and social problems. Female doctors had longer consultations than their male colleagues, mainly because more problems were presented per consultation. Male doctors had particularly shorter consultations with male patients. The least fruitful consultations were between a male doctor and a female patient.

### *Women's health care*

The principles of women's health care, in the Netherlands provided at the general practice 'Aletta' in Utrecht, were assessed by comparing female populations of female general practitioners providing women health care in Aletta with female and male general practitioners providing regular health care. First, the female populations of the practices were compared. A woman choosing for

women's health care in Aletta can be characterized as young, urban, single, highly educated, working and childless. She is more androgynous than women consulting other doctors, less inclined to seek help from her general practitioner, suffers more from psychosomatic/psychosocial problems. This results in higher use of mental health care, and also of alternative care. Women choosing regular care by a female doctor or male doctor hardly differ from one other in the described characteristics. On videotape doctors providing women's health care display better non verbal behaviour, i.e. more verbal attentiveness and warmth, than colleagues providing regular care. These doctors also give more medical information and advice. Patients of male doctors talk least and feel the least at ease.

### **Relevance**

Gender differences proved to be important: patterns of subjective health and recorded diseases in general practice go hand in hand with patterns of choice of doctor. The preference of many female patients for a female doctor derives from the easier and more friendly communication between women. Female doctors order more diagnostic tests, give fewer prescriptions, but stimulate OTC medicines and regimens.

### **Policy implication**

The Health For All target aimed at reducing health differences between groups by improving the health of disadvantaged groups is dependent on choices of individuals and/or groups and on the care provided. Reduction in gender differences in health can be attained most effectively by offering appropriate care provision in general practice for the different groups. The results on the care provided by female and male doctors indicate that there is room for improvement.

However, before measures are taken to increase the number of female doctors, more research should be carried out with regard to the quality and cost of care by female doctors, especially those providing women's health care. Certain aspects of the principles of women health care should already be further disseminated in patient's programmes, in education for and standards of care in general practice, and in hospital care, starting with the department of obstetrics and gynaecology.

### **10.2.3 Marital status and social networks**

(Querido, 1991; van Leeuwen et al., 1992; Tjihuis et al., 1992a, 1992b; Tjihuis, 1994; Tjihuis et al., 1994; Tjihuis et al., 1995; Tjihuis et al., 1998)

#### **Policy context**

Living alone is not healthy: it has been known for a long time that marriage and having children protects people, especially men, from an unhealthy lifestyle, resulting in higher life expectancy, but health selection may also play a role. How do the mechanisms behind this work?

#### **Research questions**

- what is the relation between social networks and health?
- what are possible and actual mechanisms which can explain this relationship?

#### **Results**

Marital status and social network have a strong influence on health indicators. Social networks consist for 40% of family members; this percentage is higher in rural areas compared with urban areas, while those with a higher educational background have fewer family members in their network than do the lower educated groups. On average, each Dutchman claims to have 6 close friends and 4 persons who actually provide support in case of difficulties. The type of network seems to be important: people belonging to a religious group or to a club, or people with numerous 'real' friends report better health status, but people with a chronic condition are the exception: the more health problems they report, the more social support they receive. The duration of the chronic disease does not play an important role.

In general practice widowed and divorced people present most health problems. These include acute, chronic as well as psychosocial problems. Among the divorced other injuries, skin and genital infections, stomach problems, malignancies, addictions, psychoses and neuroses are most common, whereas among the widowed coronary heart diseases, respiratory tract infections, chronic headache and chronic eye problems predominate.

#### **Relevance**

It is an established fact that the social network is important as an independent determinant of health, but a disease may also undermine the social network. Serious social consequences of a disease, such as not being able to work or to walk have a negative impact on the social network, although mild consequences do not. Mechanisms in the relationship between social network and health reveal

that social support provided by a network may buffer stress arising from poor health, while social regulation as part of the network may lead to better health as it influences the health behaviour of an individual.

### **Policy implication**

Experimental programmes aimed at strengthening social networks and preventing isolation are required for younger no longer or unmarried people, especially divorced women, widows and widowers, and the elderly in particular elderly bachelors. The material circumstances of single parent families and widowed people under 65 years and the health effects should be monitored. Research in this field will be helped if sociological and psychological studies are integrated in order to obtain a better theoretical framework.

## **10.2.4 Occupation and health**

(Bensing et al. 1991; Van der Velden et al. 1993; Kruidenier et al. 1995; Ten Doeschate et al. 1993; Van der Velden et al. 1995; Van der Velden et al. 1996)

### **Policy context**

The strict separation between curative and occupational health care in the Netherlands restricts the tasks of general practitioners in work-related diseases, although general practitioners have expressed their interest in dealing with these problems. The chance that a worker will consult a general practitioner is rather high, but will the general practitioner recognize the health problem as being work-related? In this study, the amount of work-related information about the population aged 15–64 available in general practice was assessed.

### **Research questions**

- which diseases are presented to general practitioners by the working people, the unemployed and those receiving disability benefits and what work-related actions are taken by general practitioners?
- how strong is the association between a particular occupational group and a specific disease presented to the general practitioner?

### **Results**

*Diseases in working people, the unemployed and those receiving disability benefit*  
People at work are a relatively healthy group but are exposed to certain acute diseases, such as injuries, gastro-intestinal and respiratory tract problems; people without a job present more problems to the general practitioner especially

musculoskeletal disorders, social problems and fear of disease; recipients of disability benefits are the most unhealthy in many ways although chronic diseases are the most significant. Cardiovascular diseases, musculoskeletal disorders, psychological and social problems are most frequently recorded; during consultations of the population aged 18–64 with their general practitioner, the subject of stopping or restarting work comes up in less than 2% of all cases. This age group rarely consulted an occupational health doctor.

*Association of occupational group and specific disease*

High occupational risks are seen in general practice for cooks, waiters and buffet servants presenting with angina pectoris, while cleaning personnel and butchers suffer skin infections, engineers have joint problems and loaders/unloaders/warehouse servants wrestle with problems of the vertebral column. Farmers have been studied separately: at a younger age they present fewer problems but at older age they have more psychological problems and hypertension compared with the total population.

**Relevance**

An abundance of work-related diseases are presented in general practice, although these diseases are most likely not presented and/or treated as work-related. The pattern is similar, compared to population-based information. The question remains whether the general practitioner recognizes work-related problems as such and acts accordingly.

**Policy implication**

It is clear that general practitioners see an ample number of work-related health problems, and have much information on people at work, jobless people and those receiving disability benefit. General practitioners can contribute to the solution of many work-related problems but should collaborate more with occupational health doctors. Initiatives in that direction have already been taken.

### **10.2.5 Migrants**

(Geomini, 1992; Sweep et al., 1994; NRV, 1995; Versluis-van Winkel et al. 1996; Weide et al. 1997a, 1997b; Weide et al. 1998a, 1998b, 1998c)

#### **Policy context**

The number of migrants in the general practice population has increased over the last twenty years in the Netherlands. In most practices there are but a few migrant patients and/or families, but in some areas the majority of the practice population consists of migrants. Turkish, Moroccan and Surinam and Caribbean people dominate the migrant scene in the Netherlands. Health care for migrants is intensive not only because of cultural and language barriers, but also because migrants often belong to the socially disadvantaged groups. As hitherto only practice-based or region-oriented research had been carried out, the data of the National Survey offered excellent opportunity to look at the problem in a wider perspective

#### **Research questions**

- are there differences in health and medical consumption between migrants and Dutch residents?
- if differences exist can these be explained by socio-demographic characteristics?

#### **Results**

Children of migrants do not consult their general practitioner more frequently than other children, but the reasons for these encounters differ. Compared with Dutch children, matched for age, sex, socio-economic status and level of urbanization, Turkish children consulted the general practitioner more often for gastro-intestinal and respiratory problems, less often for ear problems. Also, Moroccan children saw the general practitioners less often for ear problems. Surinam children consulted the general practitioner more often for respiratory problems, less often for musculoskeletal problems.

Adult migrants consult their general practitioner more frequently than Dutch residents, with Turkish and Surinam adults heading the list. The morbidity pattern differs per migrant group compared to the Dutch population, even after correction for socio-demographic parameters: all three ethnic groups suffer more from gastro-intestinal problems, eye problems, myalgia, respiratory tract infections, eczema and social problems. Turks and Moroccans had less hypertension, Turks presented more smoking addiction, obesitas, coronary heart diseases and neck complaints, patients from Moroccan and Surinam background

suffered more headache and diabetes mellitus and finally Surinam people had more diseases of blood & blood organs. Turks and especially Moroccans received less patient education and counselling from general practitioners, but were prescribed more medicines. There were no significant differences between the different migrants and Dutch people with regard to laboratory investigations, X-rays, minor surgery and referrals.

### **Relevance**

It is clear that language and cultural barriers impede the care of migrants in general practice. Turks and Moroccans receive less patient education/counselling than Dutch residents. The uncertainty of general practitioners in caring for these patients is shown by lower rates of the wait and see policy and higher prescription rates.

### **Policy implication**

The Health For All target aimed at reducing health differences between groups by improving health of disadvantaged groups such as migrant groups studied requires a comprehensive strategy. General policy measures must coincide with health measures like health promotion, guarantee to access of general practice care, specific doctor–patient communication training, and the production of leaflets focussing on the target groups.

## **10.2.6 The elderly**

(Bakker et al. 1995; Linschoten et al. 1996; van der Velden et al. 1998)

### **Policy context**

Although the Netherlands has one of the youngest populations of the European Union, the process of population aging is clearly visible. Over 23% of the whole Dutch population is older than 55, 13 % older than 65, 6 % is older than 75 and 1% is older than 85 years. Elderly have more diseases, more than one disease and more disability. The demand for general practitioner care by the elderly will therefore most likely increase.

### **Research questions**

- what are health problems of elderly people over the age of 55 presented in general practice, which factors determine this presentation and what are the actions taken by the general practitioners?
- do elderly people living in old people's homes have more psychosocial prob-

lems?

- what are the consequences for the general practitioner's workload if outpatient nursing home care is provided at home?

## **Results**

### *General*

In the National Survey 73,688 persons of 55 and over were registered, of which 57% were female and 42% male. Most were covered by the public insurance scheme, had little education; 24% was living alone. Over a period of three months some 143,389 consultations were registered for this group with general practice, 65.6% with the general practitioner and 34.4% with the practice assistant. Most common health problems in the elderly are cardiovascular diseases, COPD, diabetes mellitus, dementia and intercurrent morbidity. Comorbidity is common feature. An elderly patient with one chronic disease has a 50% chance of having another chronic disease. The use of medicine is high, often resulting in polypharmacy. More than 25% of the elderly is under supervision of a medical specialist.

### *Psychosocial problems in people in old people's homes*

In the National Survey 9.3% of the elderly people over the age of 65, lived in an old people's home, of which 25.7% men and 74.3% women. Their average age was 81.9 years and most lived alone. Of these people 62% consulted a general practitioner for chronic somatic diseases, of which 42% were serious conditions, and 36% for psychosocial problems. Both figures are higher compared with people of 65 and over who are not residents in old people's homes. The main important psychosocial problems are sleeping disturbances, irritability, memory disorders, depression, psychosis, dementia and loneliness. These problems were strongly linked with having a chronic somatic disease. These patients have an average of 2,2 consultations with a general practitioner per three months, mostly with the practice assistant, and if with the general practitioner usually a house call. The management of these problems involves a combination of counselling, prescription of antipsychotics, anxiolytics or hypnotics, in respect of which there is no difference between residents and non-residents of homes for the elderly.

### *Consequences of outpatient nursing home care for general practitioner workload*

A consultation with a nursing home patient at home was almost always a house call. The reason for visit was most frequently dementia, stroke, diabetes mellitus or urinary tract infection. The workload of a general practitioner for nursing home patients at home is 67% higher per patient per year compared to a repre-



sentative population of people aged 75 years and over. On the other hand, general practitioners spend less time (about 30% less) on patients receiving nursing home care in a home for the elderly compared to a sample of other old people living in such institution.

### **Relevance**

Elderly people constitute a larger part of the population than in the past. This group has high morbidity figures and therefore requires much in the way of medical services. Although access to general practice appeared good, little is known about certain subgroups. Because of the increased availability of technology the elderly are more prone to surgical procedures than in the past, for which more aftercare at home is requested. At the same time, preventive care such as influenza vaccination, increasingly takes up more time as does the supportive home care required by various patient groups such as those suffering from a stroke, diabetes mellitus and dementia. In many instances the general practitioner plays a coordinating role but needs more supportive personnel.

### **Policy context**

In the near future general practitioners will increasingly deal with an elderly population. Although healthier than in the past this aging population will make heavier demands on the general practitioner. Prevention is the key word, also in general practice. Primary prevention should focus on life style factors, such as physical activity, more safety at home and expanded coverage of influenza vaccination. Secondary prevention should focus on screening for hypertension and atrial fibrillation by case finding; other screening programmes, such as for prostate cancer, hearing loss and diabetes mellitus are still under debate. As for curative care, interventions should focus on improvement of functional status, better aftercare especially after a myocardial infarction or stroke, implementation of a protocol for diabetes mellitus, early detection of and stronger support for informal carers of patients with senile dementia. Incorrect use of medicines must be prevented. Good collaboration between primary and secondary care, improved prescription behaviour of medical professionals including prevention of polypharmacy and more patient education are crucial.

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## 10.3 QUALITY ASSURANCE IN GENERAL PRACTICE CARE

Many aspects of primary health care were the focus of attention in subprojects of the National Survey. A large number were related to quality assurance, including access to care (house calls and out of hours care), quality of care (quality of medico-technical skills, quality of the attitude of the professional and quality of the organisation of the profession resp management of the practice) and cost of care.

### 10.3.1 House and emergency calls

(Verhaak et al., 1991; de Melker et al., 1994; Schellevis, 1994; de Melker et al., 1995; de Bakker et al., 1999)

#### Policy context

House calls are an essential element of general practice. This is inherent in the Dutch word for general practitioner, huisarts. The doctor gets to know the living environment of the patient and can anticipate on this knowledge in treatment. However traffic, bureaucratization of the job and sometimes violence prevent general practitioners going out. Emergency calls outside office hours are considered one of the most difficult elements of general practice care, but surprisingly little information is available.

#### Research questions

- to what extent do the various health problems such as acute respiratory infections, chronic disease and social visits to the elderly account for the house calls made by the general practitioner?
- to what extent do the various reasons for encounter, diagnosis and treatment account for the emergency calls made by the general practitioner?

#### Results

##### *Acute respiratory infections*

General practitioners made house calls in 15% of patients with a respiratory tract infection. Relatively high rates of house calls were seen in which fever was reason for encounter, lower respiratory tract infection was the diagnosis and the patients were mainly infants and elderly people. The percentage of house calls does not correlate with region, or surprisingly with the level of urbanization. Overall, general practitioners seem to be rational in their deciding on a house call if this group of diseases has been diagnosed.

### *Chronic diseases*

General practitioners made house calls in 28% of patients with chronic diseases; mostly for patients with cerebrovascular accidents, (pre) senile dementia or cancer. Women and people living alone were more frequently visited, but age appeared to be the only decisive factor. During house calls, other chronic diseases were frequently dealt with such as heart failure, depression and anaemia. Physical examination (incl blood pressure measurement) was common, while as far as treatment was concerned counselling played a more prominent role than prescription or referral.

### *Social visits elderly*

Almost 5% of the elderly population aged 65 years and over are visited by the general practitioner for social purposes. Widowed men have the most chance of a visit. The older the patient the greater the chance of a visit. The type of insurance of the patient makes no difference. In rural areas general practitioners are more likely to visit. Hypertension, heart failure, senile dementia, lung cancer and death of partner are the most frequently recorded diagnoses during a visit. There is a large variation among general practitioners with regard to these visits: between 2% and 20% of all elderly persons see their doctor at least once in three months at home.

### *Emergency calls*

General practitioners made on average 2 emergency calls per week, especially in young children and in the elderly. Most emergency calls are taking place during office hours and are handled by the own general practitioner of the patient. Most important reason for encounter is dyspnoea (in 12% of the cases), followed by acute abdominal pain, fever, injury, syncope and symptoms/complaints chest. The diagnosis is mostly a cardiovascular disease. In general the general practitioner does not prescribe more medicines during emergency calls compared with other consultations. Analgesics, psycholeptics, spasmolytics, diuretics and cardiacs are prescribed more frequently. The general practitioner refers four times more often in emergency calls than in normal consultations.

### **Relevance**

In 1987/88 house calls were still an important part of general practice care. It is a doctor-related activity: for acute respiratory tract infections no inter doctor variation was observed, whereas for chronic disease and social visits huge variations appear. For the first time an overview of emergency calls made by general practitioners at national level is available.

### **Policy implication**

Despite the fact that house calls are time-consuming activities general practitioners considered this activity important. To halt the reduction of house calls in the inner city, measures should be taken that make it easier for a general practitioner to visit patients in their home, such as a parking place at the practice, improved traffic infrastructure and easy access to houses. To help general practitioners in their –important– decision to go or not to go on a emergency call guidelines are urgently needed.

### **10.3.2 Out of hours services**

(de Bakker et al. 1994)

#### **Policy context**

Out of hours services has been a hot issue in general practice for years. Debates about the high workload at night and during weekends, combined with the increasing aggression of patients have forced general practitioners to review their position. At the same time, experiments with city-wide organized duty rosters have been received with scepticism.

#### **Research questions**

- what are the arrangements on out-of-hours services?
- what kind of service is provided during out-of-hours services?

#### **Results**

##### *Arrangements*

General practitioner in the National Survey averaged one evening/night of duty per week in the rural areas and one evening/night of duty per two weeks in the more urban areas; weekend duty was on average once per 4–5 weeks in the rural areas and once per 6–7 weeks in the urban areas.

##### *Services provided*

The number of consultations were shown to be 2.1 per evening and 0.6 per night during the week; in the weekend during the day 2.3, during the evening 3 and during the night 1 consultations. Infections, injuries and hyperventilation were most frequently recorded. Infants and elderly patients receive most attention.

#### **Relevance**

Out-of-hours arrangements are changing rapidly. In more and more cities ser-



vices after hours are organized at city level, whereby one general practitioner is on post and one general practitioner making house calls in a taxi. In rural areas, the situation has not changed very much.

### **Policy implication**

To maintain the continuity of care in general practice, services must continue to be provided after hours. To run effectively these services general practitioners must organize themselves, optimize telecommunication and learn how to assess a problem at long distance and how to deal with aggression in the encounter.

### **10.3.3 Standards and quality of care in general practice**

(van der Velden et al. 1993; van der Wouden, 1993; Sixma et al. 1994; Sixma et al. 1998; Hutten, 1998)

#### **Policy context**

Since the mid eighties the quality of general practice care has received much attention. Moreover the responsibility for quality of care has been placed squarely with the profession. The Dutch College of General Practitioners in particular has been entrusted with this responsibility. A quality system has been developed, based on the following: a job description, a curriculum for training, the so-called NHG standards of care and a well-balanced system of audit/peer review. In this system knowledge about actual care is indispensable, but requires comprehensive patient-related information. Using data from the National Survey, an attempt has been made to assess patient satisfaction and doctor's task conception in a more appropriate way. In another study, data about actual care were compared with the NHG standards of care just after these were published. An additional objective was to develop simple and measurable indicators of general practice care. Fourteen NHG standards of care, published in the period 1989-1993, were carefully selected for study. From these standards crucial and auditable elements were considered. However, not all these elements were included in the data collection. The study was therefore limited to the available information of the relevant cases.

## Research questions

- do we measure patient satisfaction and doctors' task conception in the right way?
- was Dutch general practice in the pre-standard period already compatible with the NHG standards of care and was it possible to develop indicators to measure the implementation of the NHG standards of care?

## Results

### *Patient satisfaction and doctor's task conception*

Using ordinary analysis techniques patients are shown to be very satisfied about the accessibility and treatment they receive. If, however, multi-level analysis techniques are used, in which patient and doctor levels are integrated in a single model, a more differentiated picture emerges. It would appear that the older the patient, the more satisfied, while people with one or more chronic diseases are less satisfied than in the old analysis model, especially in the previous model using the doctor level. The part of the task conception questionnaire assessing the general judgement of the general practitioner of his role in relation to that of the medical specialist was studied. Few general practitioners chose categories giving the specialist more control. More recently established general practitioners desire more, but general practitioners working alone less influence in specialist care than other respondents.

### *Compatibility with NHG standards of care*

Analyses related to the NHG standards of care on hypertension, asthma in children, COPD(2x), urinary tract infection, acute otitis media, sore throat, ankle sprain, migraine, diabetes mellitus and acne vulgaris reveal that Dutch general practitioners were already following the guidelines before these were published. This is especially true for the prescription of medicines. These guidelines can be judged as common practice. Analyses related to the NHG standards on cholesterol and peripheral arterial diseases indicated that Dutch general practitioners had not yet started to follow these guidelines both on making the diagnoses and starting treatment. One could call these guidelines revolutionary. The comparison between the actual care and the standard mammography reflected the confusion amongst general practitioners about the national policy on screening for breast cancer. Besides this general picture, discrepancies were observed for specific aspects: general practitioner prescribe medicines of which the effects were doubted in the standard. Health education, an important element in many standards is differently recorded by general practitioners: some have almost no activities in this area, others record in all the encounters. Some discrepancies

(differentiation in age categories for certain diseases/follow-up care/repeat prescription in face to face encounter) are caused by excessively optimistic views in the standards on practical implementation.

#### *Indicators*

A list of 60 indicators had been developed from the 14 NHG standards, varying from 2–8 indicators per standard. These indicators have been shown and agreed to by an advisory panel of general practitioners for judgement. The indicators were used in a study on workload and quality of care in general practice.

#### **Relevance**

Insight was gained into several aspects related to the quality of general practice care. Patient satisfaction based on multi-level analysis yields other results than more commonly used techniques. More uniformity is needed in the measurement of task conception, which should also be better investigated at practice level.

NHG standards of care are sometimes a simplification of the real world. Practical aspects seem to be forgotten in some standards. Even large information systems such as the Dutch National Survey have shortcomings in investigating whether standards of care are followed by general practitioners. For example, not included were history taking, not an unimportant element, and the results of the physical examination. Besides, a recording period of three months is too short to judge the outcome of general practitioner interventions.

#### **Policy implications**

The implementation of NHG standards of care is a next and important step in the improvement of the quality of general practice care. However, demands of patients must be taken into account in a balanced way. Transmural protocols are a following challenge to create a complete quality system for good clinical services.

### **10.3.4 Side effects of interventions in general practice**

(Dorresteijn, 1992; Veenhuizen, 1992; Hoek et al., 1995; Visser et al., 1995; Conradi et al., 1996)

#### **Policy context**

Although as part of disease management general practitioners in the Netherlands have a profile of as few interventions as possible ("in dubio abstine"), yet take a lot of decisions on interventions, especially with regard to prescription of medi-

cines and referral. A study into side effects of these interventions looked normal, but was not easy to carry out.

### **Research questions**

- can side effects of interventions in general practice be determined?
- can specific adverse drug reactions be determined?

### **Results**

#### *Side effects of interventions*

The routine registration of consultations in the National Survey provided an opportunity to assess unexpected and undesirable effects of general practitioner care. A study showed however the limitations of this exercise: the relevant ICPC code is not suited for this purpose and an assessment of process and results is difficult to execute. Notwithstanding these limitations a general practitioner in the Netherlands consider or make the diagnosis 'side effect' or 'complications' in 2% of all contacts i.e. on average every one or two working days. Further analysis revealed that the patients concerned suffered twice more often serious invalidation or danger of life. Women and older people are over represented in these diagnoses.

#### *Adverse drug reaction*

A study was performed with regard to the frequency and the kind of adverse drug reactions in general practice as recorded in the National Survey. During the study period of three months a total of 4436 possible adverse drug reactions in 2891 patients were observed, from which 213 (4.8%) were serious. Almost all (96.2%) adverse drug reactions were already known. Women experience more adverse drug reactions; for older people the analyses do not provide a clear answer. Most adverse reactions were seen with oral contraceptives and antimicrobial agents. Spotting, amenorrhoea, allergy, abdominal pain, pruritus, headache, diarrhoea are most frequently recorded reactions. Serious reactions included chest pain, hyper/hypotension, melaena/gastro-intestinal haemorrhage, extrapyramidal disorder, hematuria and hypokalaemia. The risk that a patient will have an adverse drug reaction increases with an increasing number of consultations with general practice, presented complaints, diagnoses and pre-scribed medicines.

Separately a specific case-control study analysed the risk for coughing as an adverse reaction to angiotensin converting enzyme(ACE)-inhibitors. The results showed that the risk for coughing is increased two or threefold among ACE-inhibitor users. Although the odds ratio for females is higher than the odds ratio

for males, the difference is modest.

### **Relevance**

This study showed that general practice based information is extremely useful to identify side effects or drugs adverse reactions. With the increasing importance and cost of drugs the need for a stricter control of side effects is recognized. A national registry using general practice reports(LAREB) has been developed. Yet there is little insight on the role of side effects on the number of hospital admissions and/or traffic accidents.

### **Policy implication**

Modern health care depends more than ever on high quality medicines. A strict control system during the introduction of a medicine on the health market should be combined with appropriate monitoring systems reporting side effects. A well-organized collaboration between general practitioners, medical specialists and pharmacists is an absolute prerequisite to prevent more harm.

## **10.3.5 The practice assistant**

(Nijland et al., 1990; Nijland, 1991; Nijland et al., 1991a, 1991b, 1991c)

### **Policy context**

Ancillary staff in general practice in the Netherlands consists by and large of one or more practice assistants, though a male general practitioner practising single handedly, still 50% of all practices in the Netherlands, is often supported by his wife. Qualified practice assistants are capable of performing a large number of tasks, but little research has been carried out to explore the potential of ancillary staff in a general practice. This study set out to discover more about the practice assistants: who are they, what range of tasks do they perform, what are the predictors for and general practitioner attitudes towards task delegation and is delegation feasible?

### **Research questions**

- what are the social and professional determinants of practice assistants?
- what activities do practice assistants carry out in general practice?

## **Results**

### *Social and professional determinants*

All practice assistants interviewed in the Survey were female and 60% were married. The average age was 33 years. On average, the practice assistant had been working for 8,2 years and had been employed in the same practice for 6,7 years. Nearly half of the respondents were fully qualified as practice assistants. About 30% percent of the other half had paramedical training, while the remainder had no formal or relevant training. Excluding the spouses, two-thirds of the practice assistants had a written contract. On average, each practice employed 0.8 WTE ancillary staff. Two-thirds of the practice assistants had a treatment room at their disposal. 46% expressed the wish to extent their role, especially to include more medico-technical activities. The main factors preventing the extension of their role were lack of time, lack of space and general practitioner attitude. The most important predicting factors for task delegation were the availability of a treatment room, the type of the practice, being qualified as a practice assistant and a written contract of employment. A 'traditional working style' (= not showing feelings of uncertainty to patients/ not calling colleagues for advice/attempting to solve a problem through medication first) of a general practitioner shows a negative correlation with the delegation index. Over 80 per cent of general practitioners were favourably inclined towards task delegation. Younger general practitioners, general practitioners who had received vocational training, and general practitioners working in group practices were most in favour. A majority of general practitioners believed that task delegation would increase both the job satisfaction of both the practice assistant and the general practitioner himself.

### *Activities*

The practice assistant was shown to deal with some 23 percent of all patient consultation. Her main tasks were executing repeat prescription, diagnostic tests, administrative issues and health education/injections.

### **Relevance**

Insight has been gained into the role and position of the practice assistants. Large differences appear per practice and attitude of general practitioners. A stronger role for practice assistants would allow general practice to play a more important role in substitution of care for complex patients and preventive programmes.

### **Policy implication**

The increasing workload of general practitioners has made the delegation of tasks to practice assistants a more important issue than ever. It requires, however, more and better practice management skills of general practitioners, and further professionalization of the practice assistants.

### **10.3.6 Practice type**

(Sixma et al. 1991; de Bakker et al. 1992; Sixma et al. 1992, Sixma et al. 1993a, 1993b; de Veer et al. 1993; Sixma, 1997)

#### **Policy context**

Since the mid seventies the Dutch government has stimulated collaboration of general practices in group practices and/or health centres. Doubts, however, lingered, not the least among the practitioners themselves, about the positive effects such as lower referral rates to medical specialists, or lower prescription rates. The new health care system in the new city of Almere, based on an almost complete and coordinated network of health centres, provided an unique opportunity to study the phenomenon of health centres. A separate 'Almere' subproject was therefore designed and incorporated into the Dutch National Survey, so that comparisons could be made between Almere and the rest of the Netherlands.

#### **Research questions**

- does the new health centre-based care system of Almere reach the targets set?
- what are the effects of working in a health centre versus other practice types?

#### **Results**

##### *Subproject Almere*

The Almere population was younger and healthier compared with the rest of the population of the Dutch National Survey, except for the number of women reporting more psychosocial problems. Satisfaction with general practice care in Almere was in general fine, but patients complained about accessibility to their own doctor and the organisation of after hours care. The health centre-based care system of Almere provided a good quality of care, when compared with the NHG standards of care.

##### *Comparison health centres - other practice types*

General practitioners in health centres in the Dutch National Survey reported a higher participation in peer review activities, more frequent consultation with

colleagues and other health professionals and displayed a broader task interpretation. This different attitude is not visible in the output data of these practitioners. Although general practitioners in health centres more frequently request laboratory tests in their own practice and refer more frequently to physiotherapists, surprisingly they talk less to their patients than their colleagues outside health centres.

### **Relevance**

Working in health centres leads to different attitudes of general practitioners, and a good quality of care, resulting in lower prescription and referral rates. If the problems with regard to access can be solved and bureaucratization can be avoided health centers should be stimulated again.

### **Policy implication**

Collaboration between primary health care professionals has received a lot of attention over time in the Netherlands, but there was little evidence on whether the desired effects were being reached. The general practitioners in health centres within the National Survey showed that it is worthwhile investing in this type of practice.

## **10.3.7 Urban-rural variations in health and health care**

(Verheij et al. 1992; Verheij, 1993; Luijten et al. 1995; Verheij, 1996; Verheij, 1997; Verheij 1999a, 1999b)

### **Policy context**

Since the early eighties signals that the position of general practice in the inner cities have been on the rise. Changing and mobile practice populations, coinciding with the crumbling away of tasks, with the language and cultural barriers accompanying the increasing number of migrants and with a complex health care infrastructure were leading to a high workload. Lacking good coping strategies many general practitioners ended up suffering from burn-out. The general practitioner in the city was therefore compared with the general practitioner in less urbanized and rural areas to determine the causes of these problems.



### Research question

- how do practice populations, their perceived health, the health problems presented and disease management differ in inner city practices compared with less urbanized practices?
- what is the extent of place variation for the utilization of alternative medicine and physiotherapy?

### Results

#### *Inner city and less urbanized practices*

In the inner cities, more general practitioners work alone in less comfortable buildings and with fewer practice assistants compared to commuter towns and rural areas. Contrary to general belief, there is little to no rural–urban difference with regard to consultation rates. The morbidity pattern reveals higher rates for sexually transmitted diseases, chronic diseases, psychological problems and loneliness in the population. Despite a higher medical consumption general practice is not the option for injuries, chronic diseases and psychosocial problems. Disease management focuses more on counselling and laboratory investigations, less on minor surgery. The practice assistant has a limited role.

#### *Place variation for alternative medicine and physiotherapy*

Place variation for the utilization of homeopathy, paranormal healing and manual therapy indeed occur. For homeopathy and paranormal healing, place variation is mainly explained by population characteristics, while place variation seen in the case of manual therapy remains largely unclear.

Place variation for the utilization of physiotherapy also emerges and can to a large extent, be explained by a combination of level of urbanization and availability of services. Surprisingly, the severity of health problems and lower socio-economic status play a limited role in the explanation. The role of referral and the cultural dimension require further attention.

### Relevance

For the first time, evidence of large differences between general practitioners working in urban versus rural areas in the Netherlands has emerged while enormous differences were found inside urban areas between general practitioners serving wealthy versus deprived areas. Understanding the mechanisms behind these differences is not easy but has high priority. A subsequent strategy to overcome these differences should include general practice-specific measures, such as a better organisation of after hours services or more support structures.

### **Policy implication**

The situation of general practitioners working in rural areas differs widely from their colleagues in the cities. A different composition of the practice population coincides with higher morbidity rates, higher medical consumption and a higher workload. At the same time the health care infrastructure and payment is less favourable in urban areas compared with rural areas. To ensure that working in urban areas does not become too unpopular, leaving certain areas without general practitioner services, it may be wise to look for compensation mechanisms in general practitioner payment systems and practice support structures.

### **10.3.8 Physician payment systems**

(Flierman, 1991; Flierman et al. 1992; Calnan et al. 1992; Delnoij, 1994; Delnoij et al. 1994)

#### **Policy context**

The physician payment system is under permanent debate, yet implementing changes is not easy, as this may have large consequences for daily care. The main question is how should the provision of medical care be structured in order to obtain efficiency at micro level and cost control on the macro level. In the Netherlands the debate focused during the late 1980s and early 1990s on a change from the capitation fee system for those insured under the public schemes towards a fee for services on top of this capitation system for a set of 17 services. The underlying assumption is that in a fee for service system physicians perform more services which at the same time, are a substitute for a referral to a medical specialist. With the help of data from the National Survey, both assumptions were hypothesized and tested for 12 services all of which met the criteria set.

#### **Research questions**

- what is the substitution potential of services which could be delivered from general practice, but are frequently performed at secondary care level, and what determines this potential?
- if a partial fee for the selected services on top of the capitation payment should be introduced what were the effects on daily care?

#### **Results**

There was strong consensus among general practitioners about where to perform the selected services, but less about when to refer for these services. Out of 26

medical technical procedures only four, i.e. stitching a wound, adjusting pessary, bandaging a sprained ankle and excision of a nevus/lipoma were considered by all general practitioners to be good candidates for substitution. Doctors in partnerships added excision of the skin for pathology, excision of a sebaceous cyst and therapy for an ingrown toenail, although they refer more patients with a sprained ankle. Two experiments whereby partial fees for the 26 services, or respectively specific topics were introduced on top of the capitation payment for general practitioners were introduced yielded only a very minor substitution effect as measured by referral rates.

### **Relevance**

Changing the physician's payment system to stimulate substitution of care requires careful preparation. Differentiation of the general practitioner payment system, based on a selection of minor surgery-oriented services did not yield large effects.

### **Policy implication**

A better approach is to identify indicators of high workload and use these as basis for a new payment system. Extra incentives could be provided for solving certain problematic issues.

## **10.3.9 Cost of general practice**

(van Roijen et al., 1993; de Bakker et al., 1994a, 1994b; de Bakker et al., 1995; de Bakker et al., 1996a, 1996b; Groenewegen et al., 1997)

### **Policy context**

The Ministry of Health provides figures on the cost of general practice and other health care institutions on an annual basis in the Health Budget Report. The figures on general practice are based on calculations using data on medical consumption, collected in the National Health Interview Survey managed by Statistics Netherlands. A discrepancy between these data and the person consulting rates, calculated from general practice-based information systems, was observed. The Ministry requested that this discrepancy be investigated using data from the National Survey and that the costs of general practice be recalculated.

### **Research questions**

- what are the determinants of the cost of general practice?
- what are the cost of general practice?

### **Results**

The costs of general practice are determined by the costs of persons consulting. For those insured under the public scheme a capitation fee payment system applies, which renders knowledge about person consulting rates irrelevant to any cost calculation. The person consulting rate of privately insured patients is an important figure in the calculation of cost of general practice. In this study, the discrepancy between population-based and practice-based information was studied. A discrepancy was found between these two sources. An overreporting of consultations in the health interview survey was found, i.e. patients reported to have consulted their general practitioner more frequently in the past fortnight than actually recorded in the contact registration of the same patients. Besides, contact with a practice assistant were reported as consultation with a general practitioner.

There may be some underreporting in the contact registration, but altogether the costs of general practice were lower than estimated by the government. Another aspect of the cost of general practice is that countries where general practitioners function as gatekeeper to specialist care have cheaper health care than countries where this is not the case. Cost-of-illness studies have proven that psychosocial problems in general practice are the source of the greatest cost.

### **Relevance**

Few studies have looked into the real cost of general practice. Most studies looked at person consulting rates. The National Survey made it possible to calculate the complete cost of consultation, including diagnostic tests, prescription and referral. Several cost of illness studies have been carried out with the available data (e.g. migraine, herpes Zoster)

### **Policy implication**

The total budget for general practice has increased slightly over the years. The striving is a stable person consulting rate is combined with a rational prescribing pattern with an emphasis on generic prescriptions and rational referral pattern.

### **10.3.10 Media and general practice**

(Elie, 1992; Foets et al., 1993)

#### **Policy context**

The media were considered to have a major impact on medical consumption in the Netherlands. As far as these serve to heighten patient awareness, there is no problem, but physicians believed that radio/TV programmes and newspapers dealing with certain topics immediately led to higher consultation rates and demanding attitude of patients. Is it true that doctors' waiting rooms are full after a TV coverage or a newspaper article on a certain topic?

#### **Research questions**

- have the mass media a direct impact on consultation rates in general practice?
- are there effects on the functioning of the practice?

#### **Results**

In only 6 out of 44 selected topics covered by mass media was a significant increase in complaints' presentation observed. Five cases concerned a new technology, the sixth case was the threat of a measles epidemic.

The increase was of short duration. There were limited effects on the functioning of the practice.

#### **Relevance**

There are no direct signs of a major impact of media on medical consumption in general practice. The supposed impact should be sought more in the doctor-patient communication or doctor's attitude.

#### **Policy implication**

Medical programmes on radio/TV and articles in newspapers may be an outstanding means to explain existing health problems, new health threats and the availability of new technology, but prudence is required. Otherwise unnecessary fears and demands for care are created. The resilience of the human body should be emphasized.

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## 10.4 THE HEALTH CARE CHAIN

With the introduction of information technology, the search for a better insight into the complete health care chain became a realistic option. The Dutch National Survey of General Practice is the first and only one survey at national scale, which was potentially able to provide a picture of his chain. This chapter goes from informal care to hospital care and ends with a future perspective.

### 10.4.1 Self care and mutual care

(Foets et al., 1991; Foets, 1992; van der Velden et al., 1993; Kooiker 1994a, 1994b; Kooiker et al., 1995a, 1995b; Kooiker 1996a, 1996b, 1996c, 1996d, 1996e, 1996f, 1996g; Weide et al., 1996; Schellevis et al., 1999)

#### Policy context

The aging population of western societies has caused health policy concern to shift from length of life to quality of life, in which day-to-day symptoms play an important role. Not only because the high burden of common symptoms lead to a high consumption of OTC medicines, but also because these may contribute to inequalities in health. Yet most research is focused on the 'big' diseases and is very much interested in risk factors and unhealthy behaviour, but not yet in its first outcome: common symptoms. Logically, the next step would be to link the occurrence of common symptoms to this health/illness behaviour. In addition, a baseline measurement of the effect of possible demand reducing measures on person consulting rates in general practice was requested.

#### Research questions

- what is the perceived health status of the population?
- which factors determine health behaviour?
- how do we deal with illness in everyday life including the measurement of common symptoms occurrence, the association of symptom occurrence with social determinants and illness behavior and the seeking of care in response to these symptoms?

#### Results

##### *Perceived health status*

Most people state that they feel healthy, despite the fact that they report a plethora of minor ailments during a period of two weeks. Headache, fatigue, cough, common cold, psychological complaints and musculoskeletal complaints are

most common. Of the chronic diseases to be reported on a checklist, back problems were reported most (11,9%), followed by migraine/serious headache (8.4%) and asthma/COPD (8.1%). Measured according to the OECD indicator, 18% of the population experienced two or more disabilities. Screening of mental health by GHQ showed that 13% had a serious chance of severe psychological problems (= GHQ score>5). Health differences according to age, gender, marital status/social network, social class, occupational status and by urban–rural variation were seen. The occurrence of comorbidity was studied in the population. In a selection of thirteen diseases from the health interview survey, more than 30% of the patients reported suffering from more than one chronic condition.

#### *Health behaviour*

In the literature good health is associated with a healthy life style: little alcohol, no smoking, physical activity, enough sleep and healthy food. In our survey between 35 and 40% of respondents smoked, on average 15 cigarettes per day. Heavy smokers were men aged 25–64 with lower socio–economic status. More than 60% of the respondents drank alcohol on a regular basis, 6% drank too much by national standards. Sleeping is no problem. 39% of the people is active in sport. Good and bad habits can be found in the same person. Smoking youngsters and overweight, physically inactive people aged 25–44 feel the most unhealthy. Light drinking seemed to be related to good health, as abstainers showed worse health.

#### *Illness in everyday life*

The measurement of the occurrence of common symptoms carried out in both the health interview survey and the health diary of the National Survey were compared. The health interview survey showed a higher frequency of symptoms than the health diary, especially among the lower educated, smokers and people reporting a chronic disease. In addition, the interview method picked up more psychological problems. The relationship with social determinants was clear: the cumulation of social disadvantages was consistently related to self–reported ill health and unhealthy lifestyle (with the exception of drinking habits) and an accumulation of 'privilege' was a reliable predictor of good health and a healthy lifestyle. Awareness of symptoms is considered the important trigger for seeking care when ill. Once symptoms are recognized as signs of illness, there is little difference in seeking care between different groups. A general practitioner is likely to be visited when symptoms are new/unknown, irritating, or worrying, while patients appear to cope more easily with long–lasting symptoms. A strong faith in medicine, in combination with the lay advice from peers further

increases the probability of seeking professional care.

### **Relevance**

The study confirmed that a cumulation of social and material disadvantage is not accompanied by poor health but also poor health habits. Further analysis revealed, for instance, that smokers pay scant attention to the warning signals of their body and consider these as 'part of the deal'. Unhealthy behaviour is changed, not because of the abstract knowledge of health risks involved, but because of personal experience of health deterioration.

### **Policy implication**

The results indicate that health promotion policy should aim at changing social circumstances and fostering social integration rather than campaigning for changes in individual behaviour. Medicalization of common symptoms, caused by simultaneous inflation of the seriousness of harmless symptoms and overestimation of treatment possibilities, should be prevented through educational programmes for patients on self care. Experiments show promising results.

## **10.4.2 Healthy life expectancy and chronic diseases**

(van den Bos et al., 1994; Nusselder et al., 1994a, 1994b; Nusselder et al., 1996; van der Velden et al., 1998)

### **Policy context**

With the life expectancy in the Netherlands increasing, attention is increasingly being focused on the quality of life with the help of the indicator for healthy life expectancy, i.e. the number of years spent in good health. This indicator can be calculated from mortality statistics combined with information about subjective health status, the number of chronic diseases and/or the number of impairments/disabilities. Life expectancy at birth is 74 years for males and over 80 years for females ; life expectancy in good health is 61 years for males and almost 65 years for females, life expectancy without chronic diseases is 51 years for males and 53 years for females, whereas life expectancy without disabilities is 53 years for males and 58 years for females.

### **Research question**

- what are the effects on healthy life expectancy on simulating the elimination of a particular chronic condition?

## **Results**

The gain in healthy life expectancy is largest if chronic pulmonary diseases, chronic degenerative musculoskeletal disorders and diabetes mellitus are eliminated, not so much in years of life as in years without disability. The main gain in years to live is if cardiovascular diseases or cancer are eliminated.

## **Relevance**

The number of unhealthy years may increase in the near future, as preventive care will logically and technically focus more on lethal diseases such as cardiovascular diseases and cancer than on non-lethal, chronic conditions such as musculoskeletal disorders, visual and hearing impairments, neurological and psychiatric disorders and asthma/COPD. Lack of knowledge about the causes of non-lethal chronic conditions limits the potentialities of their prevention.

## **Policy implication**

More investment in research into the causes of non-lethal chronic conditions is required. Data on people from the higher social classes not only reveal lower death rates, but also lower rates for non-lethal chronic conditions; this proves that life expectancy can be lengthened, in combination with a reduction of the total number of unhealthy years.

### **10.4.3 Obstetrics: the choice between home and hospital**

(van der Velden, 1991; Foets et al., 1993)

#### **Policy context**

Dutch health policy with regard to obstetric care is concentrated on fostering physiological deliveries at home under supervision of a midwife. At the same time the share of the gynaecologist in the number of deliveries increased. The role of the general practitioner is being eroded. The key question for general practitioners is that of how essential the presence of the general practitioner during pregnancy, delivery or post natal period is for the further lives of mother and child. General practitioners themselves are divided on this issue. One group sees it as an essential part of their work and acts accordingly, and another group does not regard it as crucial for their task. It must be noted that there is not always a choice: the presence of a midwife, and lack of experience in young general practitioners have induced doctors to give up obstetrical practice.

### **Research questions**

- what is the opinion of the population on the place of confinement and what is their obstetrical history?
- what obstetric activities does a general practitioner perform ?

### **Results**

#### *Opinion population on the place of confinement*

In the health interview survey about 5000 men and women aged 20–44 years were interviewed about the place of confinement: almost 40% had a preference for home confinement and 36% for hospital confinement. The preference for home confinement is higher among younger and higher educated people and is associated with the place of previous confinement: women whose delivery took place in hospital will again elect for a hospital delivery in 38% of the cases and women delivered at home opt to do so again in 57% of the cases.

#### *Obstetric activities*

The registration of contacts showed that most general practitioners have a limited role in obstetric care, which is mainly reserved for the postnatal period and a minority of general practitioners, mostly in rural areas, is fully responsible for maternal health care.

### **Relevance**

Home confinement is more popular among the better educated people than those with a lower level of education. The preference for hospital confinement is determined by the previous experience combined with expected safety in the hospital. Obstetrically active general practitioners are a small group, working in places where there is no midwife.

### **Policy implication**

The influence of the previous place of confinement on further preferences, combined with an increasing number of transfers from home to hospital during delivery makes the future of home confinements, especially for primiparae, uncertain. There is no room to expand the present complementary role of most general practitioners in obstetric care into the substantial role played by a minority of general practitioners practising in rural areas.

#### **10.4.4 Prevention**

(van der Velden, 1989; van der Zee et al., 1989; Verhaak et al., 1991a, 1991b; Pater et al., 1994; van der Velden et al., 1999)

##### **Policy context**

In the mid eighties the Dutch government, emphasized the importance of prevention in its future policy of health care, based on a dual strategy. By means of health promoting measures, it was hoped that a positive influence on the general health status could be exerted, while circumstances with a negative impact on the general health status were to be avoided by means of health protecting measures. Like WHO, the government had high expectations from primary health care, including general practice. The emphasis was put on prevention and early detection of cardiovascular diseases and cancer, justified by the fact that these diseases are the major causes of death. How well prepared and experienced were the general practitioners for these tasks?

##### **Research questions**

- what are the conditions/means for prevention in general practice?
- which preventive activities are undertaken by general practitioners?

##### **Results**

###### *Conditions/means for prevention in general practice*

Although general practitioners are willing to carry out preventive activities, the average practice is not yet prepared for large-scale outreaching preventive programmes, especially in administrative respects and regarding the availability of enough practice assistants, despite the fact that most general practitioners have the opportunity to see their patients regularly, an important factor for high coverage. General practitioners as role models for a healthy lifestyle have also been making some changes for the better. For instance, the number of general practitioners who smoked decreased from 40% to 15%.

###### *Preventive activities undertaken by general practitioners*

The most important preventive activities are patient education, mostly directed at a health problem, opportunistic screening for hypertension, cervical cancer and breast cancer, influenza vaccination and social visits to the elderly people. A minority of general practitioners is active in child health clinics. The effect of these activities is undermined by the fact that quite frequently people are screened who do not belong to the population at risk or the reverse. Younger, female general practitioners do more preventive work than older, male colleagues.



### **Relevance**

In Dutch general practice prevention in 1987/88 was person-based, not population based. The general practitioner reacted to a reason for encounter and rendering prevention directed towards an individual's health. In respect of the majority of activities there is a discrepancy between what general practitioners say they wish to do with regard to prevention and what they actually do. Doctors who claim to screen the whole practice population for certain conditions achieve the same result as doctors who say they do not carry out systematic screening.

### **Policy implication**

Prevention remains an area of controversy among general practitioners in the Netherlands. In theory general practitioners are willing to carry out so-called programmatic prevention, but the output in practice is limited. Screening of hypertension through case-finding is most common, but screening for cervical and breast cancer tend to be haphazard. Given the strong orientation of the Dutch general practitioner towards the individual patient, a successful prevention strategy requires an alliance of different parties: a combination of the strong elements of general practice, homecare organisation and municipal health services will provide the best results with regard to identification of the population at risk, administrative matters, technical know-how, response and follow-up.

## **10.4.5 Morbidity in general practice**

(van der Velden et al., 1991; van der Velden et al., 1992; van der Velden et al., 1993; Bruijnzeels et al., 1993; van der Velden et al., 1998)

### **Policy context**

For a good allocation of resources in health care, it was necessary to know which illnesses occur and to what degree, in which patients where and when. General practice is an optimal source for procuring this information. Since the National Morbidity Survey in the 1960s no national figures had been made available about morbidity presented in general practice. The existing region-based projects did not give a clear and uniform picture. The National Survey proposed to carry out a morbidity registration on a national scale for the first time in twenty years. Linking morbidity to socio-demographic indicators makes detection of high risk groups feasible. Linking morbidity to different interventions offers a picture of disease management in general practice.

### **Research questions:**

- how are health problems presented in general practice?
- what is the epidemiology of diseases in general practice in the Netherlands per three months?

### **Results**

#### *Presentation of health problems*

In 54% of all consultations a single health problem is dealt with, in 25% more than one health problem, and in the remainder a request for a specific intervention (laboratory test, screening activity, repeat prescription, or a referral chart) is made; in 12% of the cases the general practitioner recorded a psychosomatic or psychosocial origin of the presented health problem, and in 25% the presented health problem was related to an underlying condition.

#### *Age-sex distribution per chapter*

The morbidity pattern in general practice according to age and sex shows that both the cumulative incidence and period prevalence per three months were higher for women than for men. This applied more strongly to the ICPC chapters general and unspecified, blood, digestive, circulatory, psychological, endocrine and urology. After childhood the cumulative incidence and period prevalence strongly increase with age. There are marked differences between the chapters. Problems with ears and respiratory tract are common in young children, while of all chapters that of circulatory disorders increased most strongly with increasing age.

#### *Top 20 incidence of diseases*

Upper respiratory tract infection is in the first place in the top 20 incidence of individual diagnoses, followed by myalgia, cystitis/other non venereal urinary tract infection, 'no disease' (presented symptoms could not be objectified) and acute bronchitis. In the interpretation of this information the classification of diseases plays an important role. In our classification, for instance, all sprains/strains are broken down by localization. However, as one group they would certainly have ended in the top ten.

### **Relevance**

The epidemiological description clarified the prevailing picture on general practice. The discrepancy in occurrence of health problems in the population and presentation of health problems in general practice as observed for inner city practices, combined with a local situation of high mobility of the practice popu-

lation and fragmented health care provision, indicated major obstacles for appropriate care in these practices compared to practices in other areas. Symptom diagnoses are highly prevalent and can not be ignored. With the aging of the population the high rates of co-morbidity demand more attention. Common symptoms are more important than expected.

### **Policy implication**

With the increased knowledge of the epidemiology of diseases in general practice, a better understanding of the effects of population ageing, certain sociocultural and socioeconomic developments and medical technology on health status can be achieved. This is a prerequisite for priority setting and efficiency measures in health care. Choices between prevention versus cure of diseases should be made, whereby prevention of avoidable death, increased quality of life and reduction of health inequalities are major objectives.

### **10.4.6 Comorbidity of and quality of care in chronic diseases in general practice**

(Martens et al., 1987; Hoogbergen, 1991; Schellevis et al., 1990a, 1991b; Schellevis, 1991; Van der Velden, 1991; Vriens et al., 1992; Schellevis, 1993; Schellevis et al., 1993a, 1993b, 1993c; Van der Velden et al., 1993; Schellevis et al., 1994a, 1994b, 1994c)

### **Policy context**

As population ages not only the prevalence of chronic diseases but also the occurrence of comorbidity, the manifestation of more than one chronic disease in one person, will increase. Comorbidity has negative consequences on the quality of life and daily activities of patients. This will lead to a higher demand for medical, nursing and rehabilitative care, all of which are geared towards the treatment of separate clinical entities. Understanding the pattern of comorbidity is relevant for prevention and the improvement of the quality of care. A major problem is that patients with comorbidity are usually excluded from clinical research. Even the famous NHG standards of care are based on single morbidity.

### **Research questions**

- what is the validity of diagnoses of chronic diseases?
- what is the definition and the operationalization of co-morbidity?
- what is the prevalence of co-morbidity of five common chronic diseases, the intercurrent morbidity and related medical consumption in general practice?

- what are the effects of the formulation and implementation of guidelines for follow-up care of patient with chronic diseases?

## **Results**

### *The validity of the diagnoses*

It was established that the agreement between diagnostic criteria and the diagnosis was the highest for diabetes mellitus (96%) and the lowest for chronic pulmonary diseases (58%).

### *Definition and operationalization*

A literature review was used to design a practical classification of co-morbidity, based on the type of relationship between diseases: concurrence, clustering, causality and complication.

### *Prevalence of comorbidity, intercurrent morbidity and related consumption*

Based on a selection of five chronic diseases seen in general practice, comorbidity appeared to be highly prevalent among the elderly: 23% of those of 65 and over had one of the five diseases, and 15% had more than one of these diseases. Patients with more than one disease had more consultations with the general practitioner than patients with one disease; moreover these patients had more intercurrent morbidity presented to the general practitioner. This intercurrent morbidity particularly concerned myalgia, respiratory and urinary tract infections.

### *Guidelines in chronic diseases*

With respect to the quality of care, a clear association was found between good compliance and well-managed hypertension, and appropriate treatment prescribed by general practitioners and well-managed diabetes mellitus. Further outcome indicators yielded no results, which indicates that better indicators should be developed.

## **Relevance**

The general practitioner has an important position in the care for patients with a chronic disease. Chronic diseases are mostly diagnosed by general practitioners. Comorbidity is a quantitatively important phenomenon in patients over 65 years old. These patients consult their general practitioner frequently, especially for intercurrent morbidity. The general practitioner has the most complete overview of all the problems, and is in the best position to manage these complex situations. Improving the quality of care for this group of patients is time consuming

and the outcome is not easy measurable.

### **Policy implication**

Comorbidity requires more attention, not only in daily care but also in training and research. The quality of care will benefit from recording the performance, appropriate guidelines, including notions of comorbidity and an meticulous feedback on actually delivered care. Longitudinal studies are required to measure the true outcome of care for patients with chronic diseases .

### **10.4.7 Diagnostic procedures**

(Kluijt, 1990; Kluijt et al., 1991; Zaat, 1991; Zaat et al., 1992; Kluijt et al., 1992; Zaat et al., 1995)

#### **Policy context**

The use of laboratory investigations, X rays and other tests differs between the medical specialist and the general practitioner. A medical specialist justifies the diagnosis by a test, while the general practitioner justifies a test by his diagnosis, which is in fact his working hypothesis. Doctors have little knowledge of the cost and effect of use of diagnostic tests. Unlike the prescription of medicines until recently no national guidelines had been issued for the use of diagnostic tests.

#### **Research questions**

- what is the use of laboratory investigation, X rays/ultrasound and other tests by the general practitioner?
- for which diagnoses are these laboratory investigation, X rays and other tests most frequently used?

### **Results**

#### *Laboratory investigation*

In 4% of all problems presented in general practice one or more laboratory investigations are performed. The top 10 laboratory tests include Hb/Ht, ESR, blood glucose, leucocytes + differentiation, creatinin, ALAT/ASAT, gamma-GT, ureum and alkalic phosphatase. The health problems by which tests are requested most frequently, are the following: general malaise, mononucleosis, anemia, surmenage, diabetes mellitus, RA, aspecific virus infections and abdominal pain. After laboratory investigations, 50% of the diagnoses were unchanged, but general practitioners feel more certain about the diagnosis. Interdoctor variation

in the requests for laboratory investigations is large: an eight-fold difference between the lowest and the highest requesting general practitioner was observed. The annual cost of this care, as of 1988, was estimated at 75 million guilders, or less than 1% of the total health budget.

#### *X-ray/ultrasound*

One or more X-rays/ultrasounds are performed in 1,7% of all problems presented in general practice. These are mainly X-skeleton, X-thorax and echography of abdominal organs. The annual cost of this type of care, as of 1988, was estimated at 72 million guilders, or less than 1% of the total health budget.

#### *ECG*

In the National Survey some 553 ECGs were made in- and outside the practice. The most important indications were angina pectoris, nervous complaints, hypertension and health checks. Less than half of the doctors had an ECG machine in their practice

#### *Other tests*

The single most important other test was that for cervical cytology, which is understandable as general practitioners are the main executors of the national screening programme for cervical cancer. Urine and fecal cultures constituted 6-10% of requests. Most practices made little use of bronchoscopy, gastroscopy, colo/rectoscopy, arthroscopy. One practice was specialized in functional tests like audiometry, fundoscopy, lung/heart function tests.

#### **Relevance**

The use of diagnostic tests by general practitioners is often based on working hypotheses. A large degree of interdoctor variation was observed in respect of requests for laboratory investigations and functional tests, but not for X rays. Most of the tests that are requested and performed, are simple and cheap ('little ticket examinations'), but their sheer quantity make the total costs relatively high (Zaat, 1991). Requests for X rays are limited and well indicated.

#### **Policy implication**

The overall picture on diagnostic testing in general practice indicates cautiousness on the part of general practitioners. Good guideline development and feedback for diagnostic procedures, however, remain important.

### 10.4.8 Prescription of medicines

(van Dijk, 1991; Peters et al., 1992; Stokx et al., 1992; van der Ven et al., 1992; Foets et al., 1993a, 1993b; Stokx et al., 1993; van der Waals et al., 1993; Foets et al. 1994; Koopmans, 1994; Stokx et al., 1994; van der Waals, 1995; van der Waals et al., 1995a, 1995b; Dijkers et al., 1997; van der Lisdonk et al., 1998)

#### Policy context

Prescribing medicines is the most common intervention in general practice. As the general practitioner accounts for three-quarters of all prescribed medicines he plays a very important role in the prescription of medicines. Half of all consultations end with a prescription. General practitioners in the Netherlands are low prescribers compared to other countries, both in prescription habits and the dosage. In international studies on the prescription of antibiotics Dutch general practitioners score by far the lowest prescription rates. Yet the variation in the prescribing pattern of general practitioners is considerable. At the same time, no comprehensive information on prescription habits in general practice is available at national level. Most information relates solely to patients insured under public schemes and often without indication.

#### Research questions

- is there convergence between the intention to prescribe and the actual prescription behaviour?
- what is the pattern of prescribing by general practitioners according to volume, quality and cost, including the relationship with morbidity?
- does pharmacy keeping by general practitioners influence their prescription pattern?
- how large is the variation in the pattern of prescribing by general practitioners and what are the consequences in terms of quality and cost?

#### Results

##### *Intention to prescribe versus actual prescription behaviour*

The comparison of answers of doctors on six written vignettes with their actual prescription behaviour as from the contact registration showed a high degree of agreement on the question of whether or not to prescribe, but far less agreement about the medicine prescribed. This discrepancy was especially true for the higher prescription percentage in daily practice of benzodiazepines in patients with depression and of antibiotics in patients with a sore throat.

### *Prescription pattern*

Regarding the 40 most frequently prescribed medicines, general practitioners followed the national guidelines of the 'Pharmaceutical Kompas' very well, including dosage. Exceptions were vitamin B (complex) and cough mixtures. Interestingly, these 40 medicines were all introduced long ago. The indication spectrum differed considerably per medicine: contraceptives, antibiotics and even benzodiazepines are strongly tied to a limited number of diagnoses but analgesics and NSAIDS were prescribed for a wider range of health problems.

Homeopathic agents were frequently prescribed by a 20% minority of general practitioners. One out of three general practitioners did not prescribe a homeopathic agent at all, while the remaining 50% of the participating general practitioners did so in less than 11% of the number of prescriptions.

Children under 14 years and privately insured patients more frequently received a homeopathic agent, the diagnosis often being rather unspecified such as general complaints, myalgia. Common prescribers of homeopathic agents can be found more frequently in the big cities.

Placebo's or medicines applied to create a placebo-effect are prescribed by 61% of the general practitioners. Only 18% are wholly against the use of placebo's. The numbers of patients receiving a placebo differ from one to 15% of all patients on the list per year. The most frequently prescribed placebo's are the vitamins. Common prescribers of placebo's usually work alone, claim to have a narrow jobdescription, and believe that patients expect a prescription anyway during consultation. The anti-placebo general practitioners can be found more frequently in group practices/health centres.

Repeat prescription without patient-doctor contact includes 42% of all prescriptions in general practice. Repeat prescription are written equally frequently for men and women. The number of repeat prescriptions rises with increasing age. The most important diagnoses for which repeat prescription are provided, are hypertension, sleeping disturbances and nervousity. General practitioners in health centers/group practices, established in urban areas have a lower number of repeat prescriptions than dispensing general practitioners and general practitioners who are longer established.

### *Dispensing versus non-dispensing general practitioners*

With 15% of all general practitioners running a pharmacy in 1988 an evaluation of their contribution was worthwhile. Twenty-six dispensing practices in the National Survey were compared with the 76 non-dispensing practices with regard to the prescription rate for 73 important diagnoses. After correction for specialist-initiated prescriptions, prescription rates showed no difference in 80%



of the diagnoses, while prescription rates for the dispensing general practitioners were lower in 15% of the cases and higher in 5%. Dispensing general practices stick more to the national guidelines of the 'Pharmaceutical Kompas' than non-dispensing practices.

#### *Cost*

The total cost of pharmaceutical care provided through general practice based on the National Survey has been estimated at 1,9 billion guilders. This is about 46.7% of the total cost of pharmaceutical care as estimated in the Annual Health Budget Report on health care of the Dutch Government(1990). The key diagnoses impacting on the cost of pharmaceutical care are hypertension, ischaemic heart diseases, birth control, chronic pulmonary diseases and diabetes mellitus.

#### **Relevance**

General practitioners mainly prescribe well established rather than brand new medicines. The guidelines in the 'Pharmaceutical Kompas' are followed. Repeat prescriptions, either initiated by the medical specialist or the general practitioner, are mostly dealt with by the practice assistant. Doctors need medicines, which may be not so rationally effective. General practitioners running a pharmacy prescribe no more than could be expected.

#### **Policy implication**

Dutch general practitioners, the main source of prescription for medicines, are generally reticent and rational in their prescription behaviour. The national drug policy in the Netherlands could therefore better focus on controlling the price of medicines. This was behind the introduction of the 'medicine-reimbursement system' (1991) and later the Price Act (1996).

### **10.9 Referral to primary care, mental health care, secondary care**

(Uunk et al., 1991; Stokx et al., 1992; Uunk et al., 1992; Verhaak, 1993; Gloerich et al., 1992; Delnoij et al., 1997)

#### **Policy context**

Until the mid 1980s, the crude referral rate of public insured people (the so-called gross Sick Fund referral rate) was one of the most important parameters of Dutch health care, although it has been acknowledged that because of its heterogenous character, this rate is unsuited to play its role. The problem of the

denominator (population or consultation), the lack of information on privately insured people, and of the indication for referral in particular create problems regarding the correct interpretation of data.

### **Research questions**

- to what extent, in which way and in what proportion can the different referral ratios in general practice be attributed to need or necessity?

### **Results**

#### *Physiotherapy*

In 1988 general practitioners referred per three months 2,6% of their patients to the physiotherapists. Interdoctor variation in referral rate is mainly determined by the morbidity recorded: the more a general practitioner detects musculo-skeletal disorders the more this general practitioner will refer to a physiotherapist. Highly educated people are more frequently referred. If general practitioners have a physiotherapist in their family or among friends they refer more frequently. Other aspects such as practice size, workload, type of practice, number of years in practice, number of physiotherapists around do not affect referral rates per practice.

#### *Mental health care*

In 1988, general practitioners referred per three months 6% of all mental health problems recorded to social work, ambulant mental health care, psychiatric OPD/hospital or private psychiatrists/psychotherapists. Men are more frequently referred than women, younger people more frequently than elderly people. People in urban areas are more frequently referred than people in the rural area. General practitioners in health centres refer more frequently than their lone colleagues, but this is most likely caused by their higher referral rate to social workers. Good personal relationship of general practitioners with certain mental health care centres determined the referral rate.

The referral rate for detected psychoses is higher than for neuroses, relationships, material problems and symptoms diagnoses. Psychoses are mainly referred to psychiatric OPD/hospitals and material problems mainly to social workers. All other problems are distributed to the different disciplines/institutions.

### *Medical specialist*

In 1988, general practitioners referred per three months 6.8% of all patients to medical specialists. About 1 in 30 consultations ended with a referral. An important aspect of the research into referrals is the denominator. Patterns of referral rate per 1000 persons consulting the general practitioner differ from patterns of referral rate per 1000 consultations. Women score higher than men if the referral rate per 1000 persons consulting is used, but lower than men if the referral rate is examined per 1000 population. Privately insured patients, especially those without general practitioner coverage, visit their doctor substantially less often than publicly insured patients, but on reaching the general practitioner visiting they have an equal chance of being referred. This mechanism causes the substantially lower referral rates if calculated per 1000 population. Practice size and person consulting rates are therefore important factors. Practice type also plays an important role. General practitioners in health centers/group-practices have lower referral rates per 1000 consultations and lower medical specialists initiated referral rate as they have lower person consulting rates or compensate for this by consulting the medical specialists more frequently. General practitioners in one man practices have higher referral rates per 1000 consultations and higher medical specialists initiated referral rate, caused by the delegation of referral to the practice assistant and by the lack of infrastructure for consultation with a general practitioner colleague or medical specialist. Finally the role of the specialist initiated referral rate should not be underestimated.

### **Relevance**

The threshold to visit a general practitioner plays a crucial role in what happens next, from repeat consultation to prescription and referrals. Patients without general practitioner insurance, a still existing but decreasing option in the Netherlands, are apparently more hesitant about consulting a general practitioner. This behaviour influences the referral (and prescription) rate. Consulting rates are a key variable in general practice research.

### **Policy implication**

Should one increase the threshold for initial visits to general practice? There is an element of self selection in having no general practitioner insurance coverage or a high deductible. The results can however not be transferred to less well off publicly insured people, but the results indicate that for private patients (40% in the Netherlands) the automatic inclusion of general practitioner services should be discouraged, if the aim is to reduce the rate of referral to medical specialists.

#### **10.4.10 Primary/secondary care interface**

(Kerkstra et al., 1990; Kersten et al., 1990; Kersten, 1991; Kersten et al., 1992a, 1992b, 1992c; De Lege, 1999)

##### **Policy context**

Continuity of care is an important paradigm of primary care in the Netherlands. It includes not only services at primary care level but also beyond when patients are referred to a medical specialist. The reason for that is twofold: to create a co-ordinated and uninterrupted successions of events between primary and secondary care, and to prevent unnecessary long term specialist care. There was however limited information about the actual situation regarding the influence of the general practitioner at hospital level. In the National Survey this has been a specific topic of research, in which the general practitioner questionnaire and a specific registration form has been used to assess the different communication lines.

##### **Research questions**

- what do patients expect from primary health care professionals during and after a hospitalization?
- in which way the general practitioner is involved in intramural care, including after care?

##### **Results**

###### *Expectations of patients*

Of the hospitalized patients, 56% expressed a need for after care, especially with regard to the activities of daily living.(ADL) The need for after care is felt particularly strongly by well educated female patients, who had been in hospital for a protracted period. More than 50% of the respondents had had contact with a general practitioner and 26% received care from other professionals. Approximately 10% have some need for care, but did not receive any; this 10% includes more male, younger and less well educated people.

###### *General practitioner involvement in intramural and after care*

There is discrepancy between the opinion of general practitioners when they claim to have a monitoring role in the hospital care of their patients and the actual situation which indicates they have little influence on type and number of treatments in hospital. General practitioners, however, take but little advantage of the opportunities to gain more influence. The referral letter could easily serve as a strong tool to steer the treatment. General practitioners, however, failed

often to be precise enough in telling the medical specialist what they believe to be the diagnosis and moreover made few proposals for treatment. Another opportunity, the arrangement of an acute admission of a patient, is better used for consultation with a specialist. However, following the admission of such a patient no consultation occurs, even if the General practitioner visits the patient in the hospital. Finally, general practitioners initiate aftercare in (only) 32% of all patients admitted to hospital, usually a house call.

### **Relevance**

Ten years ago, general practitioners actually exerted much less continuity influence on the care of their referred and admitted patients than they considered desirable. One of the most important reasons for this discrepancy seems to be the virtually complete absence of material benefits for general practitioners in respect of this continuity influence. Moreover medical specialists are not dependent on referrals of individual general practitioners.

### **Policy implication**

Substitution of care can be further enhanced by improving the communication between hospital and primary care with regard to admitted patients. Both the general practitioners and specialist should be more aware of shared responsibilities. General practitioners should cooperate more for making a joint referral policy. Transmural care may be a good option.

## **10.4.11 Workload in general practice**

(Groenewegen et al., 1992; Groenewegen et al., 1994; Groenewegen et al., 1995; Hutten, 1998)

### **Policy context**

There has been much discussion about the relationship between workload and payment in general practice. One of the major problems in studying the workload of the general practitioner is that the capitation fee payment system for publicly insured patients is poorly equipped for this. It has, therefore, been extremely difficult to decide on alternative payment systems without knowing the impact which alterations of the workload could have effect on accessibility and the quality of care. Determinants of workload can be found on both the demand and the supply side of health care. While it has been possible to study the demand side, little information was available on the supply side regarding issues like practice organization, attitude of the general practitioner and how the gen-

eral practitioner deals with the patient load.

### **Research questions**

- which factors, on both the demand and supply side, determine workload in general practice?
- what is the relationship between list size, workload and quality of care?
- what are the coping mechanisms on workload in general practice?

### **Results**

#### *Determinants of workload*

Fluctuation in daily workload is determined by the percentage of young children and poorly educated people in the practice, running a free-flow consultation hour and performing home deliveries: the more of these factors present the higher the workload. These factors have in common that they restrict the general practitioner's own possibilities for planning workload. A higher workload has a positive effect on the time spent on direct patient care and a negative effect on the hours spent on continuing medical education. This mechanism is the strongest in general practitioners with a high percentage privately insured people on their list. Several coping mechanisms have been observed. On busy working days consultations tended to be shorter, especially when relatively more psychosocial problems were presented. Permanently busy general practitioners had longer consultations when the educational level of the patients was lower. The more certain general practitioners were about the diagnosis and the less severe they considered a health problem the lower the workload. In a partnership, coping mechanisms work stronger.

#### *Quality of care*

Permanently busy general practitioners do fewer technical procedures (eg injections, minor surgery), prescribe more and have higher referral rates to physiotherapists, especially for privately insured patients. A busy day featuring a high percentage psychosocial problems means fewer time consuming activities (e.g. physical examination, counselling). A busy day also means that activities were postponed: on busy days with numerous publicly insured patients more out of office diagnostic tests are requested, while confronted numerous less severe problems the general practitioner decided more often to wait and see. A large number of problems with a high level of uncertainty means more follow-up appointments. Higher referral rates to the medical specialist, as a tool to reduce the workload, are seen on working days with more patients with a lower level of education.

*Payment system*

In capitation fee payment systems, the number of hours spent on direct patient care is relatively unaffected by a higher workload. Increase in list size for more income does not necessarily increase the number of hours worked proportionally. In a fee for services system there is a more direct relationship between the workload and the number of hours worked: more consultations lead to more income limited by the amount of time available. However, no differences were observed between the length of time spent on publicly and privately insured patients.

**Relevance**

Determinants of workload have been identified. Medical considerations are most important. Coping strategies for the workload in general practice include increasing the number working hours or reducing the length of consultations. The choice between these strategies depends on aspects such as physical well-being and social approval, which is determined by available resources (payment system, availability other health professionals) and constraints (avoiding deviation of professional standards of care, dependency on patient in stead of colleagues for social approval, characteristic of consultation)

**Policy implication**

Unlike an incidentally (= on a certain day) high workload, a systematically (= permanent) high work-load has implications for the quality of care. A higher workload leads to higher prescription and referral rates and less time for counselling and technical medical procedures. Alterations in the remuneration system could tackle this problem; the new payment system includes a differentiation towards the elderly and deprived areas. Whether or not this approach would yield the desired result is not certain.

**10.4.12 Public health forecast and future projection on general practice care**

(STG, 1991a, 1991b, 1991c; STG, 1992; SCP, 1992; Ruwaard et al., 1993; SCP, 1994; de Bakker et al., 1996; Weide et al., 1996; Ruwaard et al., 1997)

**Policy context**

In the mid-eighties, the Dutch government launched a research programme into Future Health Scenarios including forecasts on specific health problems and on specific health care topics. Especially the scenarios on primary and home care

and on chronic diseases made use of data from the Dutch National Survey. Later, the National Institute of Public Health and Environment was assigned the task of designing a public health forecast on a four yearly basis. Again, the Dutch National Survey contributed exclusively to both reports. Finally, the Dutch Association of General Practitioners requested a future projection of general practice care in the year 2010.

### **Research questions**

- will there be changes in health/disease patterns in the Netherlands in the period 1990–2015;
- will demographic/epidemiological developments and the same list size cause a change in consultation rate, the length of consultation and the number of interventions in the period 1990–2010.

### **Results**

#### *Public health forecast*

Lost life years will be dominated by cardiovascular diseases and cancer. Incidence figures are high for upper respiratory tract infections, dorsopathies and injuries and prevalence rates for hearing loss, visual impairment asthma/COPD and osteoarthritis. A large number of these problems are dealt with by the general practitioner and are presented as single health problem or intercurrent morbidity of a chronic condition.

#### *Future projection GP care*

Demographic projections indicate an increase in the number of consultations with the practice assistants and the number of house calls; epidemiological projections of the ten most common conditions has only a limited effect.

### **Relevance**

General practice-based information is essential for the composition of a public health forecast. According to the projections, diseases requiring care instead of cure are becoming more important.

### **Policy implication**

Although general practice-based information is acknowledged to contribute substantially to such reports, further standardization of general practice-based information systems is an absolute necessity. More investment in supportive staff is needed to ensure the quality of general practice care.



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## REFLECTION

If the original objectives are compared with the outcomes, the National Survey has been a success. For the first time comprehensive information on episode-oriented recording in general practice is provided on a national level. (Van der Zandt 1990) The question of 'what has been done with this information?' determined its success, whereby three elements dominated: study design, certain methodological aspects and impact of findings.

### Study Design

The general approach of working in subprojects has been very effective. All the original subprojects resulted in scientific publications, including five PhD theses and numerous articles in peer reviewed journals. The new subprojects resulted in another 13 PhD theses and an extensive list of publications.

It would be an interesting exercise to make a cost benefit analysis on this approach. If the total production of 18 separate PhD theses is estimated at about 120 scientific articles with a budget of 9 million guilders (= 18 x 0.5 million per PhD project), the production of the National Survey of over 260 scientific articles, 18 PhD theses, 70 reports with a budget of 12 million guilders looks more favorable. Moreover, the existing database had been used intensely to answer actual policy questions and provided reference information for many purposes such as for standards of care, mass media and even court cases.

### Methodology

The combination of a health interview survey, health diary and morbidity registration in a single general practice-based population provided good insight into the relation between perceived health problems in the population and the presentation of health problems in general practice (i.e. the iceberg phenomenon) Most measuring instruments proved to be of good to excellent value. Some areas offer room for improvement. 'Soft' data such as the reason for a diagnostic test or referral in the contact registration should not be collected in this kind of survey. The health diary needs rethinking. The length of the registration period should be anyhow longer, especially for the recording and calculation of the incidence rate of rare diseases and the prevalence figures of chronic diseases.

The logistic part of the survey in general and in particular the census could be

considerably improved with better telecommunication and more use of the practice computer. Collaboration with other researchers outside NIVEL proved to be fruitful and should be stimulated further, and at an earlier stage.

### **Impact of findings**

The high number of reports requested by government officials and contributions to policy documents indicate that the Survey provided important strategic information. In this perspective the survey has been complementary to the regional registration networks of the Academic Departments of General Practice, where the emphasis is put more on clinical aspects of general practice. The most essential topics are summarized.

#### *\* programmatic prevention*

The report on prevention proved one of the backbones for currently running large scale preventive programmes. The project researchers organized the initial conference on the topic (Verhaak et al., 1991).

#### *\* social epidemiological research*

The scientific articles produced under this heading had immediate effect on both health and social policies of the Dutch government and professional bodies. A publication about the health status of people receiving disability benefits received nation-wide media attention and indirectly impacted on the discussion about the disability benefit measures, initiated by the Dutch government. (Bensing et al., 1991) The study on occupational health in general practice stimulated collaboration projects between the general practitioners and occupational health doctors (Van der Velden et al., 1993). The survey team was involved in several studies on general practitioners in inner city deprived areas and later supported the development of the deprivation index for extra resource allocation (Verheij et al., 1992; Van der Velden et al., 1997; Verheij, 1999). The positive evaluation of women's health care provided in the Aletta practice had impact on the policy of professional bodies, insurance schemes and the government (Van den Brink-Muinen, 1996). The study on health complaints after the Bijlmer Airplane Crash used the data from the National Survey as reference information (IJzermans et al., 1999).

#### *\* health policy*

The clearer picture of general practice allowed health policy to become more focused on strengthening primary care. The survey brought evidence that a single scheme for publicly and privately insured people would increase overall

medical consumption, but have limited effects on cost. At the same time the cost sharing idea of specialist referral (het 'specialistengeeltje') was shown not to work at all (van der Zee, 1990). The Survey contributed to several health financing reports such as the Health Budget Report and background documents of governmental committees such as The Committee Modernization Curative Care (de Bakker et al., 1994) and professional working parties such as 'De huisarts van morgen' (de Bakker et al., 1995, 1996a, 1996b). The criteria for the new differentiated payment system were tested with data from the Survey.

*\* information strategy*

With the Survey as a major draught-horse, the importance of a general practitioner-based information system for a national comprehensive information strategy has been recognized in several reports (NRV 1995; Ruwaard et al., 1997). The roots of the National Information Network General Practice Care, in which four essential partners on general practice participate, can be traced into the Survey. (Stokx et al., 1994) General practice is ahead of all other medical disciplines and currently under way towards the complete automation of episode-oriented registration.

In an international perspective, support was provided to (the development of) morbidity surveys in general practice / family medicine within EU countries such as in Basq province, Catalonia, Denmark and Flandres, and in CEE countries such as Hungary, Slovak Republic, Romania, Ukraine and Belarus (Van der Velden et al., 1992; Van Weel et al., 1992; Makoi et al., 1996; Van Es 1997; Boerma et al., 1998; Olariou et al., 1998)

*\* research*

The survey has led to several methodological studies related to health interview studies, the health diary and morbidity registration. Conceptual studies were published inter alia on 'episode of care', 'comorbidity' and 'PDD-DDD ratio'. Participation occurred in large-scale research programmes such Committee Socio-Economic Health Differences and the Committee Health Determinants. The quality of care was assessed in several ways such as a retrospective comparison with NHG standards of care, doctor-patient communication and on practice management. Last but not least, there were extensive contributions to several Scenario Studies (STG 1991a, 1991b, 1991c, 1992) and Public Health Forecasts for the years 1993 and 1997 including specific studies on psychosocial problems, comorbidity and cost of illness (Ruwaard et al., 1993, 1997).

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**PART THREE**  
**SOCIO-ECONOMIC HEALTH DIFFERENCES**  
**AND GENERAL PRACTICE**





**GENERAL PRACTICE CONSULTATION  
IN THE NETHERLANDS:  
DO DIFFERING SOCIAL CLASSES MAKE  
QUALITATIVELY DIFFERENT USE OF CARE?**

**Abstract**

*Objective:* to describe general practice consultation for different socio-economic groups and to examine the potential impact on quality of care for these groups.

*Methods:* secondary analysis of data derived from Dutch National Survey of General Practice, in particular the recording of consultations, linked with socio-demographic data.

*Results:* the pattern of rising rates of consultation in general practice with falling level of education has been confirmed. Addition of variables such as partner status and type of health insurance further differentiate this pattern. A poorly educated, single elderly male insured under a public health scheme has an almost three times as high a chance of consulting his general practitioner in three months, compared with a highly educated, privately insured young man. Partner status is a differing determinant for men and women. Privately insured, and to a lesser extent, more educated people spend more time with the general practitioner during consultation, except when more than one health problem is presented. The role of the practice assistant is important.

*Conclusion:* large differences in rates of consultation in general practice appear between different socio-economic subgroups. In addition, a qualitatively different use of general practice services was established. Awareness of these differences is required and appropriate measures in and outside general practice should be taken.

**Introduction**

It goes almost without saying that an unequal utilization of generally accessible health facilities stemming from socio-economic health differences is unacceptable and should be avoided as much as possible<sup>1</sup>. There is, however, far less certainty on whether this unequal utilization exists for general practice.

The Black Report described inequalities in utilization of general practice care and these were, generally speaking, not to the advantage of those in less people in less privileged socio-economic circumstances.<sup>1</sup> In a reaction to the Report,

this conclusion was challenged by a study indicating that there was no evidence of such underutilization of general practitioner services, except possibly for the uptake of preventive programmes.<sup>2</sup> This result was later confirmed in a study for the Netherlands.<sup>3</sup> Latest evidence showed that the uptake of general practice run opportunistic screening programmes was similar for all socio-economic groups, but that the uptake of general practice run mass screening programmes could suffer from bias.<sup>4</sup>

All these studies are based on simple rates of consultation in general practice, available from health interview surveys or from national morbidity surveys in general practice.

The crucial question is the relation of use to need, however. Different operationalizations of indicators of use and need have hitherto failed to clarify the debate.<sup>5-7</sup> One of the problems is that a consultation in general practice covers many different things, which may be confused in aggregated rates. Consultations may be for trivial or serious conditions. Any one patient may consult his general practitioner many times for a single episode of disease or once for many different episodes. In this situation it is may be more profitable to consider the content or nature of consultations expressed through indicators such as duration of the consultation, and the number and type of problems presented. This study investigates rates of persons consulting, consultation frequency and the duration of consultation in relation to socio-economic variables.

## **Data and methods**

### *Data*

A secondary analysis was performed on data of the Dutch National Survey of General Practice.<sup>8</sup> A non-proportional stratified sample of 161 general practitioners (and 191 practice assistants) at 103 locations participated in this survey, serving a total practice population of 335,000 people. Stratification variables were region, level of urbanization and distance between the practice and the nearest hospital. In the period between 1 April 1987 and 31 March 1988 4 consecutive groups of 40 general practitioners (and their practice assistants) recorded data on consultations with patients, such as time and duration of the encounter, reasons for encounter, diagnosis, interventions and follow-up appointments for a term of 3 months. This data collection resulted in 386,000 consultations. Census data, such as age, gender, living situation (including partner/marital status), education, housing, ethnicity, insurance and mobility were obtained from the total practice population. Age and gender was known for the whole population, while for the other variables the response rate was 91.2%. Non

response analysis indicated small differences for age, gender, stratification variables and season.<sup>9</sup>

Consultations between patient and general practice include face to face consultation at the surgery, home and hospital visits, phone calls and other. Consultations with the practice assistant were included (general practitioner+ass) and excluded (general practitioner only) in the analyses to assess their effect.

Four measurements describing consultation patterns were examined:

- the percentage of people seen by the general practitioner during these three months;
- the number of contacts of patients with the general practitioner during these three months;
- the number of contacts lasting longer than 10 minutes;
- the number of contacts lasting longer than 10 minutes with more than one health problem presented.

Independent variables were age, sex, the highest achieved educational level, type of health insurance, in addition to being single or having a partner and the level of urbanisation. Educational level was divided into low (no/primary school), middle (secondary school/lower and secondary professional education) and high (higher professional education/university). Health insurance is divided into the two categories public insurance and private insurance. The main difference between public and private insurance is based on income and employment. All employees with a gross annual income below about 64,000 guilders (1998) are compulsorily insured by the public health scheme. Having no partner means 'not married', 'divorced' and 'widowed', while partner means 'married' or 'living together'. Level of urbanisation was divided into three categories of municipalities with respectively <30,000, between 30,000 and 50,000 and >50,000 inhabitants.

### *Analyses*

To find out whether there are differences, the percentage of men and women seeing the general practitioner during a particular three-month period according to age and highest achieved level of education was computed. In addition it was calculated whether the differences in consulting rates between socio-economic groups persisted after adding a number of variables known to be influential, such as living with or without a partner and type of health insurance. The analyses were restricted to people aged 25 years and over (N=211,452) as those under 25

generally had never married and/or had not yet finished their education.

We computed (with SPSS) and compared odds ratios (OR) resulting from bivariate logistic regressions and a multivariate logistic regression to assess the contribution of all socio-demographic determinants. We started with the percentage of men and women respectively who had seen the general practitioner and/or the practice assistant during this three-month period. We went on to analyse the percentage people consulting the general practitioner and/or the practice assistant more than once in this three month period, the number of consultations lasting longer than 10 minutes and the number of consultations lasting longer than 10 minutes and during which more than one health problem was examined.

## Results

### *Percentage people having consulted the general practitioner*

General practice consulting rates are low for men during adolescence and increase with age. Highly educated men have less contact with the general practitioner on the whole than men from less well educated backgrounds (fig 12.1a). For women a different pattern emerges in which rates are seen to rise just after adolescence until a plateau is reached, at which level rates remain constant for an extensive period. Highly educated women see their general practitioners less frequently than less well-educated women (fig 12.1b). Home visits are important for patients at the extreme ends of the age scale, but no major differences with regard to educational level were identified (not in figure).

The addition of variables such as partner status and type of health insurance shows more differentiation (table 12.1). The table illustrates that almost 70% of all poorly educated, single males aged 65 and over insured under a public scheme consulted the general practitioner at least once during three months whereas only 29% of the highly educated, privately insured men aged 25-44 with partner did so. For women, the differences are less extreme. The type of insurance contributes to further differences in frequency of consulting a general practitioner, especially in the group with a lower educational background.

### *The role of the practice assistant, the number of contacts and time spent with the general practitioner*

As shown in table 12.2 the bivariate analysis confirms that elderly people, single women, men and women from lower educational background, and men and women insured under a public scheme consulted the general practitioner more often. Excluding the consultations with the practice assistant reduces the differ-

ences, except for men and women living in the larger cities.

In the multivariate analysis, the association between women having no partner and consulting a general practitioner decreases.

If we look at the percentage of men and women consulting the general practitioner more than once, the differences between groups according to age, level of education and type of insurance remain, but are diminished when broken down according to partner status and level of urbanisation.

Highly educated and privately insured men and women were granted more time with the general practitioner during a consultation, although elderly, poorly educated men and women insured under a public scheme also have more consultations lasting longer than 10 minutes, yet more than one health problem is then presented during the consultation.

## Discussion

There are large differences in patient consulting rates between different sub-groups. Age, level of education and type of health insurance are strong determinants for consulting a general practitioner, whereas partner status or an urban or rural living environment is less important. Patients with lower educational background and/or insured under a public health scheme, and elderly patients were shown to have the highest chance of consulting the general practitioner, but highly educated and privately insured patients were found to have the highest chance of a longer consultation time with the general practitioner. The practice

Figure 12.1 a+b Percentage 25+ males and females, consulting the general practitioner in 3 months by age and level of education

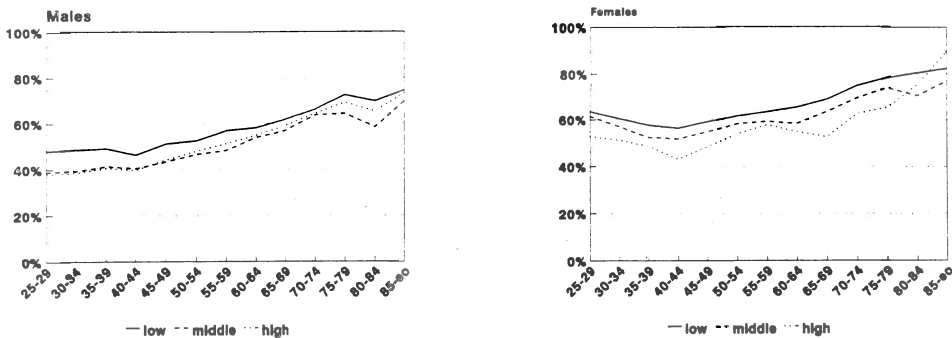


Table 12.1 Percentages of 25+ people who consulted the general practitioner for all health problems in relation to sex, partner status, level of education and health insurance. (N=161,255 consultations)

		low		medium		high		total		
		public	private	public	private	public	private	public	private	
Men	25-44	no partner <sup>1</sup>	47,8	43,4	39,8	31,7	34,5	29,2	40,6	31,4
		partner <sup>2</sup>	50,4	35,5	43,2	35,3	34,9	29,9	43,8	33,3
	45-64	no partner	56,2	40,8	50,8	45,3	53,3	37,4	54,1	41,8
	partner	56,8	47,1	52,3	40,8	51,9	37,9	54,6	40,9	
65 and over	no partner	69,4	63,2	60,1	63,8	56,1	54,0	67,0	61,7	
	partner	68,1	60,6	65,8	55,6	66,2	53,8	67,5	56,4	
total	no partner	58,5	51,6	43,2	39,9	36,9	33,4	48,5	39,4	
	partner	58,8	49,1	47,3	39,6	39,1	34,2	51,1	38,9	
Women	25-44	no partner	65,5	41,9	58,7	48,7	50,3	47,2	58,3	47,6
		partner	59,2	51,0	58,3	51,0	53,5	48,3	58,1	50,5
	45-64	no partner	68,8	58,9	63,1	53,4	60,5	52,0	66,0	54,0
	partner	63,4	55,7	59,9	52,4	61,7	49,0	62,0	53,0	
65 and over	no partner	78,0	74,2	72,6	71,2	73,1	66,5	77,0	72,1	
	partner	74,3	66,7	71,1	60,0	53,3	55,6	73,6	63,0	
total	no partner	74,5	69,7	62,5	60,2	52,9	51,4	68,1	60,3	
	partner	65,1	57,5	59,2	52,2	54,4	48,7	61,2	52,7	

<sup>1</sup> unmarried, divorced, widowed

<sup>2</sup> married, living together

Table 12.2 Bivariate and multivariate odds ratios (OR) of 25+ people who consulted the general practitioner for all health problems in relation to sex, age, partner status, level of education, health insurance and urbanisation

	Bivariate OR % with contact <sup>1</sup>		Multivariate OR % with contact <sup>1</sup>		Multivariate OR % with >1 contact <sup>2</sup>		Multivariate OR % with contact >10min <sup>3</sup> +>1 rfe <sup>4</sup>	
	GP+ass	GP only	GP+ass <sup>5</sup>	GP only <sup>5</sup>	GP+ass	GP only	GP only	GP only
Men								
Age								
25-44	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
45-64	1.50**	1.26**	1.41**	1.20**	1.37**	1.29**	1.15**	1.28**
65+	2.75**	1.96**	2.43**	1.77**	2.13**	1.67**	1.32**	1.83**
Partner								
with	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
without	0.99NS	1.01NS	0.93**	0.95NS	1.09*	1.08*	1.15**	1.10*
Education								
high	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
middle	1.45**	1.39**	1.24**	1.25**	1.26**	1.18**	0.92NS	1.15*
low	2.48**	1.97**	1.54**	1.44**	1.57**	1.41**	0.85NS	1.34**
Insurance								
private	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
public	1.60**	1.43**	1.44**	1.30**	1.19**	1.18**	0.81**	1.14**
Urbanisation								
<30,000	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
30,000-50,000	0.93**	0.99NS	0.94*	1.00NS	0.88**	0.99NS	0.84**	0.94NS
>50,000	1.03NS	1.12**	1.08**	1.16**	0.89**	0.98NS	0.95NS	0.93NS

- table 12.2 continuation -

	Bivariate OR % with contact <sup>1</sup>		Multivariate OR % with contact <sup>1</sup>		Multivariate OR % with >1 contact <sup>2</sup>		Multivariate OR % with contact >10min <sup>3</sup> +>1 rfe <sup>4</sup>	
	GP+ass	GP only	GP+ass <sup>4</sup>	GP only <sup>5</sup>	GP+ass	GP only	GP only	GP only
Women								
Age								
25-44	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
45-64	1.19**	1.05**	1.12**	1.02NS	1.28**	1.12**	1.17**	1.14**
65+	2.20**	1.68**	1.90**	1.53**	1.91**	1.51**	1.41**	1.59**
Partner								
with	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
without	1.41**	1.31**	1.11**	1.09**	1.16**	1.13**	1.24**	1.14**
Education								
high	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
middle	1.29**	1.20**	1.21**	1.19**	1.20**	1.22**	0.86NS	1.15**
low	1.95**	1.52**	1.39**	1.26**	1.42**	1.35**	0.73**	1.27**
Insurance								
private	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
public	1.46**	1.28**	1.35**	1.22**	1.16**	1.06NS	0.83**	1.04NS
Urbanisation								
<30,000	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
30,000-50,000	0.91**	1.00NS	0.90**	0.99NS	0.88**	0.93NS	0.89*	0.90**
>50,000	1.07**	1.19**	1.07**	1.18**	0.88**	0.98NS	1.05NS	0.96NS

NS, not significant; p<0.1; \*\* p<.001

<sup>1</sup> % with contact = percentage men or women that is consulting a general practitioner in three months;

<sup>2</sup> % with > 1 contact = percentage men or women that has more than one consultation per three months;

<sup>3</sup> % with contact > 10 min = percentage men or women that has consultation lasting longer than 10 minutes;

<sup>4</sup> % with contact > 10 min + 1 rfe = percentage men or women that has consultation lasting longer than 10 minutes, but presents more than one health problem;

<sup>5</sup> GP+ass = concerns consultations with both general practitioner and practice assistant

GP only = concerns consultations with only general practitioner.



assistant contributes much to ensuring good access by the less well-educated, those insured under the public scheme and the elderly to care.

The relative unimportance of living with or without partner and urbanicity for consulting a general practitioner requires further explanation, as these variables are considered influential in the literature. Having a partner means on average a healthier life and lower medical consumption. This was not borne out by our study, in so far as consulting rates in general practice are concerned. Another study in the Netherlands also showed only minor differences in medical consumption between the various groups, even when these were further narrowed by eliminating the group of never marrieds/singles from the aggregate group of patients without a partner, in the literature considered the lowest consumers.<sup>10</sup> Possibly the association of partner status and medical consumption has changed. With regard to the association between consulting rate and urbanisation, a more complex picture emerges. The overall consulting rate in the urban areas is lower than in the rural areas, which is in contradiction with most population interview-based literature. This is explained for a large part by the significantly lower number of consultations with the practice assistant in the urban practices, simply because there are more practices in the urban areas without a practice assistant. The lower number of home visits and consultations during out-of-hours duty in urban practices, further contributes to the differences. The chance of having a consultation with the general practitioner is no different between urban and rural areas, whereas the average number of consultations and the number of problems presented during a single consultation per patient is higher in urban general practice.<sup>11</sup> Moreover, it is important to realize that contrasts between practice populations are far more extreme in urban practices than in rural practices. Urban practices include both the wealthiest and the most deprived part of the population, resulting in completely different patterns of medical consumption. Thus, overall general practice consulting rates in urban areas are exposed to a mix of influences which may lead to the aspecific pattern described.

Our results clearly demonstrate that different social classes make a qualitatively different use of general practice. At first sight, general practice would appear to meet the needs of people suffering from most health problems and to compensate for socio-economic health differences, but further analysis leads to a different outcome. People from a high socio-economic class present fewer and less serious health problems to general practice.<sup>12</sup> However, these people undergo proportionally more time consuming activities such as physical examination or therapeutic counselling during the consultation, given their health problem than

people from the lower socio-economic class, who make do with less time consuming (and communication intensive?) activities such as prescription of medicines and referral.<sup>13</sup> It is yet unclear whether this mechanism is the result of a coping strategy at practice level of an individual general practitioner or the result of cultural and financial phenomena at society level. The delegation of tasks to the practice assistant, at the time of the survey mainly consisting of preparing numerous repeat prescriptions and executing repeat referrals, is an example of the first category, while the serious problems of general practitioners in inner city deprived areas represent the issues of the second category.

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## SCREENING IN PRIMARY CARE: HEALTH FOR ALL? A STUDY IN DUTCH GENERAL PRACTICE

### **Abstract**

*Background.* In recent years there has been an increasing emphasis on the delivery of preventive care in general practice. At the same time, available evidence suggests people from lower social classes receive less preventive care compared with people from higher social class. The objective of this study was to assess the uptake of screening by blood pressure measurement, cervical cytology and manual breast examination in risk populations by patients attending their general practitioners and relate the findings to levels of educational attainment and type of health insurance.

*Methods.* The study was based on data gathered in the Dutch National Survey of General Practice in which 161 general practitioners recorded socio-demographic data, reasons for encounter, diagnoses and interventions during a 3 month period. Persons receiving the above procedures as screening measures were counted and expressed as rates per 1,000 persons registered and per 1,000 persons consulting. These rates were examined at three levels of educational attainment and according to the health insurance of the patient using logistic regression methods.

*Results.* When analysed by educational attainment, high levels of blood pressure measurement were found in persons of lower educational attainment in both males and females (30–59 years) while for cervical cytology (35–54 years) higher levels were found amongst the better educated and for breast examination (40–69 years) the rates were similar regardless of educational attainment. When analysed by insurance status parallel trends were observed, with higher rates for blood pressure measurement among the publicly insured and higher rates for cervical cytology among the privately insured.

*Conclusions.* The results, whether based on persons registered or persons consulting, suggest no important social bias in the extent to which persons are screened by blood pressure measurement or breast examination. There were strong social gradients for cervical cytology favouring the better educated and privately insured. More effective targeting of women with low educational attainment and publicly insured is called for.

## Introduction

Differences in health status and health care utilization by socio-economic group are well documented.<sup>1-4</sup> Social gradients are evident in mortality statistics from several countries. For example, in The Netherlands males in lower social classes showed a significant increase in risk of death from cardiovascular diseases compared with higher social classes.<sup>5</sup> Women in lowest social class are more likely to die of cancer of the cervix than those in highest social class.<sup>6</sup> For a few cancers, however, including breast cancer, there is a greater risk of death in higher social classes.<sup>6</sup> It is clear that in the prevention of avoidable mortality and morbidity, strategies should address the problems of differing patterns according to socio-economic group.

In recent years, much attention has been given to the implementation of screening programmes through general practices.<sup>7-14</sup> Screening is achieved either by the systematic screening of persons approached proactively or the opportunistic screening of persons contacting a health facility for a purpose unrelated to the screening activity.<sup>15-16</sup> Particular initiatives have been taken in Canada, the UK and The Netherlands, all exploiting the fact that general practitioners have frequent contact with patients from all sections of society. Many general practitioners are willing to run preventive programmes in their practices. However, general practitioners can be inconsistent and sometimes even paradoxical in their views and actions on prevention.<sup>17,18</sup> Practice automation, practice management and supportive staff are not always optimal. It remains unclear whether and to what extent general practitioners succeed in reaching all sections of society. Theoretically, increased frequency of contact provides increased opportunities for delivering preventive care and it is known that persons in lower social classes consult their general practitioners more frequently than those in higher classes.<sup>19,20</sup> However, there is evidence that persons in low income groups or of low educational level do not take advantage of preventive health care services.<sup>2,3,12,21</sup>

In this study our aim was to investigate the uptake of screening activities of Dutch general practitioners and to examine these findings in relation to the education and health insurance status of the patient.

## Methods

### *Subjects and measurements*

Data from the Dutch National Survey of General Practice were used.<sup>21</sup> Recording for this study involved a random, non-proportionally stratified sample of 161 general practitioners. Age and sex data were obtained for the entire study population (N = 335,000) as well as a set of socio-demographic data for

91.2%.<sup>22</sup> The 161 general practitioners were divided into four groups and each was required to register every contact between the practice and patients for three consecutive months, thereby covering a whole year. Registration included reason(s) for encounter, diagnosis and interventions. Altogether 386,000 consultations were registered and the morbidity data were coded according to the *International Classification of Primary Care*.<sup>23</sup> Information on practitioner activities in the survey period included records of blood pressure measurement, cervical smear tests and manual breast examination.

Records of males and females aged 30–59 years were examined for evidence of recorded blood pressure; those of women aged 35–54 years for records of a cervical smear test and those of women aged 40–69 years for records of manual breast examination undertaken as part of a preventive care programme. At the time of the study the Dutch National Breast Cancer Screening Programme had not yet started.

Educational attainment was categorized as low (no education/primary school education), middle (secondary school with limited higher professional education) or high (high professional education, usually university). Health insurance was categorized as public insurance, private insurance inclusive (inc.) of general practitioner services and private insurance exclusive (exc.) of general practitioner services. Insurance arrangements in The Netherlands are mainly determined by income (employment related).

#### *Statistical analysis*

Person consulting rates (all causes) and screening uptake rates per registered population were calculated in the relevant age and sex groups. Persons with pre-existing high blood pressure or known hypertension, with known cervical cancer or consulting for a gynaecological reason and persons with breast cancer or other symptoms of breast disease which would prompt the doctor to undertake a breast examination were excluded from both numerator and denominator. Screening uptake rates per persons consulting were also calculated.

These rates were examined in relation to education and health insurance applying logistic regression methods using SPSS to obtain odds ratios with 95% confidence intervals (CI), whereby the influence of each variable could be examined separately. Bivariate and multivariate logistic regression procedures were used, controlling for age (5 year bands). The results presented are solely for the multivariate analyses, as those for the bivariate analyses were very similar.

## Results

In the 3 months reference period, 45.1% of the males and 57.3% of the females aged 30–69 years consulted at least once. There were inverse associations with educational level and inverse associations with the type of health insurance in both males and females (table 13.1).

With regard to the population eligible for screening for hypertension (age group 30–59 years), more men than women had high levels of education and more were privately insured. In total there were twice as many women with reported measurements of blood pressure. The socio-economic compositions of the female populations eligible for the three screening activities by educational attainment and type of insurance were similar except for breast examination, where less women in the high education group were eligible.

Table 13.1 Registered population (30–69 years) and persons' consulting rates (all causes) in 3 months by level of education and type of health insurance: multivariate odds ratios with 95% CI

	Males		Females	
	Registered population (n =)	OR CI	Registered population (n =)	OR CI
<b>Education</b>				
Low	16,090	1.00	20,659	1.00
Middle	34,397	0.86 (0.82–0.89)	35,875	0.88 (0.84–0.91) <sup>a</sup>
High	9,688	0.73 (0.69–0.77) <sup>a</sup>	5,378	0.80 (0.75–0.85) <sup>a</sup>
<b>Insurance</b>				
Public	36,527	1.00	41,508	1.00
Private (inc.)	18,386	0.71 (0.68–0.74) <sup>a</sup>	15,871	0.76 (0.74–0.80) <sup>a</sup>
Private (exc.)	5,262	0.52 (0.48–0.55) <sup>a</sup>	4,533	0.56 (0.53–0.60) <sup>a</sup>
Total persons	60,175		61,912	

<sup>a</sup> P < 0.01

The relative probability of screening provision by education and insurance groups analysed by the registered population and by persons consulting is given in table 13.2. Examining first the probabilities based on the registered population, for blood pressure measure meant there was an inverse trend with educa-

tional level evident in both males and females; for cervical cytology a strong positive trend and for breast examination no trend. When assessed by insurance status, both males and females with exclusive private insurance were least likely to have been screened for blood pressure. For cervical cytology, the highest probability existed in persons insured in the inclusive private programme: both categories of private insurance reported higher rates for this preventive measure than were found in publicly insured patients. There were no significant differences for breast examination, although a trend is visible.

When examined by persons consulting, no differences were observed in the analysis of blood pressure measurement by education for male or female patients or for breast examination. However, for cervical cytology the probability was considerably higher the better educated the woman. When assessed by health insurance, the probability of screening uptake was higher for those in private insurance schemes (both types) for blood pressure measurement and cervical cytology and almost for breast examination.

Screening uptake rates were obviously much higher when expressed per person consulting compared with per registered population (not in table).

## Discussion

This study has shown higher person consulting rates (all causes) in both sexes among persons with low levels of education and persons insured within the public insurance system. These findings are in keeping with the Fourth Morbidity Survey in General Practice, which was undertaken in England and Wales in 1991–1992, in which there were higher rates of persons consulting in social classes III, IV and V.<sup>24</sup> Loss of consultation data for selected groups of the population is unlikely though some persons in the exclusive private insurance sector may have gone directly to specialists, bypassing the general practitioner. The number for whom this may have occurred is sufficiently small that the impact on the study results and their interpretation can be ignored.

It is important to note that the risk populations defined in this study are not identical to those specified in the guidelines of the Dutch College of General Practitioners.<sup>25</sup> These were defined later. The age groups studied here were those generally considered appropriate at the time of the study. Routine mammography was not available.

In the assessment of screening activities, population-based rates for blood pressure screening were lower among the better educated and privately insured. Using rates based on persons consulting, the situation was reversed, with higher rates among privately insured and little difference in the rates associated with different levels of education. The benefits of screening for hypertension could



Table 13.2 Uptake of screening activities per 1,000 registered population and per 1,000 persons consulting in relation to education and health insurance: multivariate odds ratios with 95% CI

	Blood pressure		Cervical cytology	Breast examination
	Males	Females		
Per 1,000 registered population				
Education				
Low	1.00	1.00	1.00	1.00
Middle	0.93 (0.84–1.03)	0.92 (0.85–0.99) <sup>a</sup>	1.41 (1.13–1.76) <sup>b</sup>	1.03 (0.78–1.35)
High	0.77 (0.66–0.91) <sup>b</sup>	0.83 (0.73–0.94) <sup>b</sup>	1.52 (1.10–2.08) <sup>b</sup>	1.04 (0.61–1.77)
Insurance				
Public	1.00	1.00	1.00	1.00
Private (inc.)	0.98 (0.88–1.08)	0.98 (0.91–1.05)	1.48 (1.24–1.77) <sup>b</sup>	1.15 (0.86–1.53)
Private (exc.)	0.78 (0.65–0.92) <sup>a</sup>	0.87 (0.77–0.97) <sup>a</sup>	1.39 (1.04–1.85) <sup>a</sup>	1.17 (0.75–1.82)
Per 1,000 persons consulting				
Education				
Low	1.00	1.00	1.00	1.00
Middle	1.02 (0.93–1.14)	0.97 (0.90–1.05)	1.49 (1.19–1.86) <sup>b</sup>	1.07 (0.81–1.41)
High	0.93 (0.79–1.09)	0.93 (0.81–1.05)	1.68 (1.21–2.31) <sup>b</sup>	1.15 (0.68–1.97)
Insurance				
Public	1.00	1.00	1.00	1.00
Private (inc.)	1.22 (1.10–1.35) <sup>b</sup>	1.11 (1.03–1.20) <sup>b</sup>	1.70 (1.42–2.04) <sup>b</sup>	1.31 (0.98–1.74)
Private (exc.)	1.21 (1.01–1.45) <sup>a</sup>	1.18 (1.03–1.35) <sup>a</sup>	1.94 (1.45–2.60) <sup>b</sup>	1.54 (0.99–2.39)

<sup>a</sup> P < 0.05

<sup>b</sup> P < 0.01

largely be expected in the spheres of ischaemic heart disease and cerebrovascular disease both of which are more frequent in socially disadvantaged groups.<sup>3,4</sup> It is certainly encouraging to find higher population-based rates in the comparatively disadvantaged group but analysis based on persons consulting showed higher rates among the privately insured, indicating greater attention given by general practitioners to this aspect of medical care when privately insured persons consult. This finding suggests room for improvement in the delivery of this screening programme to the educationally and economically disadvantaged. Though the relativity of the result was similar in both male and female patients, the absolute numbers of persons with recorded blood pressure were considerably higher among females. This was due to the increased potential for measuring the blood pressure of women as they consulted for family planning.

The results of screening cervical cytology showed consistently higher rates among the educationally advantaged and privately insured. Considerable care was taken to exclude persons having a cervical cytology examination because of gynaecological symptoms. However, we could not identify women who had had a hysterectomy, most of whom should have been excluded from the denominator. A recent survey in The Netherlands indicated that, of all women in the age group 35–54 years, 7.7% have had a hysterectomy.<sup>13</sup> This percentage is not likely to be less in the educationally advantaged and privately insured. Accordingly, the results presented may even underestimate the differences between the educational levels and health insurance groups. These results are disturbing though they may truly reflect an increased wish of well-educated women to take advantage of this preventive measure. In 1997 screening policy changed to include women aged 30–59 years with routine screening repeated every 5 years. The results for breast examination disclosed no significant differences in the various subgroups analysed. It has been pointed out that mortality from breast cancer is higher in women from higher social classes. It is also the case that screening the asymptomatic patient by manual breast examination has not been scientifically validated. It has largely been replaced by mammography though the technique of breast self-examination has to be taught and may be useful in identifying breast lumps at an early stage. For these reasons, the results for this screening programme are not the matter of concern generated by the other two. There are various possible ways in which screening could be improved in general practice to address the deficiencies identified in this paper. It reinforces the need for health education in the widest sense of the public at large and of health professionals. The administration and organization of general practice in The Netherlands is conducive to the delivery of preventive care because of the patient registration arrangements and because most practices have now employed practice nurses. All three items of preventive care described in this paper could be delivered by practice nurses, as successfully implemented in the UK in recent years. Another finding, that some women would find these screening measures more acceptable when provided by a female doctor, should also be taken into consideration.<sup>26</sup> Responsibility for providing preventive care needs to be defined more precisely. There is a difference between guidelines for good practice and a contractual responsibility to make specified services readily available. Doctors need to be appropriately trained in population risk assessment and in strategies for effective screening. Continuous audit and feedback are necessary to monitor achievements. Where there are agreed national policies for screening there needs to be matching reimbursement.<sup>27</sup> This principle has worked well in the UK for cervical cytology and childhood immunization. This study has clearly identified

some limitations of opportunistic screening in general practice. Only systematic screening can really make a big impact on mortality and morbidity in a population. General practice has a role in prevention and health promotion, but its contribution is only part of a comprehensive health policy.<sup>28</sup>

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## SOCIAL DIFFERENCES IN MORBIDITY AND INTERVENTIONS IN GENERAL PRACTICE

### Abstract

*Aim:* To determine the extent of social differences in *registered* morbidity and in the frequency of diagnostic and therapeutic interventions for health problems in general practice.

*Method:* A secondary analysis of data from the Dutch National Survey of Morbidity and Interventions in General Practice in persons aged 25 years and over. This population was grouped into three social classes based on level of education.

*Results:* General practitioners registered morbidity in the age group 25–64 years significantly more often in patients with a low level of education. The pattern was stronger among men than women. The trend was absent in the elderly. Physical examinations were carried out equally frequently for all educational classes of patients presenting with the four most frequent reasons for encounter. Supplementary laboratory investigations were requested more frequently for the higher educated. A prescription was given more frequently to the lower educated.

*Conclusion:* Social differences influence health care. General practitioners need to recognize social problems, facilitate good access to health care for all social groups and take active steps to provide preventive care for defined target groups.

### Introduction

Social differences in health are well documented, particularly in the United Kingdom.<sup>1-7</sup> People in the highest social class almost always have the most favourable statistics for mortality, health status and well-being. At the same time they make the most efficient use of health care services, in particular of preventive care.<sup>4,6,8,9</sup>

The interpretation of the differences found is not straightforward. On the one hand genetic and social deprivation are often difficult to differentiate. On the other hand there is sometimes evidence of methodological confusion, because for example health care provision and morbidity problems were registered together. There is general agreement however that many factors contribute to explaining the differences in health. A strategy directed to the reduction of social differences in health must therefore be directed to the conditions under which people

live and work.<sup>10</sup>

General practitioners are well placed to study these differences.<sup>11</sup> They have learned to orient themselves to the immediate environment of their patients (family, social network, living environment), to specific target groups in the practice population (children, women, the unemployed, refugees), and sometimes also to the local community. In the second place, in recent years general practitioners have been increasingly confronted with social problems, because these are frequently translated into health problems.<sup>12</sup> This is particularly the case for doctors whose practices are in underprivileged areas.<sup>13-18</sup> Unfortunately the interest of general practitioners in social differences in health seems to have waned, apart from a few notable exceptions.<sup>13,19-22</sup> This study addresses two fundamental questions:

- are there social differences in (registered) morbidity in general practice, and
- are there social differences with respect to diagnostic and therapeutic interventions in general practice?

## Methods

### *Data*

We undertook a secondary analysis of the data in the Dutch National Survey of Morbidity and Interventions in General Practice.<sup>23</sup> The participants in this registration were a random non-proportional stratified sample of general practitioners established in the Netherlands in 1985. The stratification variables were region, distance from the practice address to the hospital, and level of urbanization. The recruitment resulted in the participation of 161 general practitioners from 103 general practices with a joint practice population of 335,000 people. Data for these people were assembled in terms of age, gender, living situation, level of education, employment situation/profession and place of residence.<sup>23</sup>

The general practitioners (and their practice assistants) were distributed over four groups and registered data from all doctor-patient contacts occurring between 1 April 1987 and 31 March 1988 in four consecutive periods of three months. The reasons for encounter and the consequent diagnoses were coded in an adapted, but completely compatible version of the ICPC and were processed in episodes of care.<sup>24,25</sup> One practice that registered these data for only 6 weeks was eliminated from the analyses. The highest level of education attained was chosen to determine social differences, since that is a reasonably stable indicator of socioeconomic status which, moreover, is known for most of the population. The three categories into which patients were divided were low(no or primary school/low vocational training), intermediate(secondary school/intermediate vocational) and high (university/high vocational) level of education.

### *Calculations*

The analyses relate to the population aged 25 years or older. The diagnoses were clustered for the calculations.<sup>26</sup> The twelve clusters were made more precise with data concerning specific diagnoses with a minimum of three cases in one of the three educational levels. All the morbidity data were expressed as cumulative incidence per 1000 registered persons per three months.

First of all an overview was made of the morbidity in relation to educational level for those aged from 25 to 64 years and for those aged 65 or older. This calculation was carried out by means of bivariate logistic regression techniques with a correction for age. The results are expressed as relative morbidity risks with 95% confidence limit intervals (B1) in which the group with the highest educational level is consistently taken as the reference category.

An investigation of the presence of social differences in the work of the general practitioners followed. A selection from the database was taken of all the patients who in their first contact in a new episode had one of the following reasons for consultation: cough(RO5), back symptoms and complaints (LO2/LO3), abdominal pain and cramps (DO1/DO6), and headache (NO1). Then the final diagnoses of these new episodes were identified as far as was known within the registration period of three months. With respect to the three most important final diagnoses, whether the general practitioner had or had not carried out a particular intervention during the episode was reported: the result was reflected as a percentage of the total number of new cases. The analyses were carried out according to the three educational levels standardized for age and gender. The Mantel-Haenszel statistical test was used.

## **Results**

The study population was representative of the population of the Netherlands in 1987 (table 14.1).<sup>27</sup> The non-responses for level of education amounted to 15.6 %, evenly distributed over the three categories. From the table it can be seen that the less well educated were predominantly elderly and the highly educated predominantly young, the difference being greater in women. There were large differences in living situations and working conditions: the highly educated lived more often in the cities and the less well educated in the country.

### *Differences in morbidity*

The relative morbidity risks for persons aged between 25 and 64 years are given in table 14.2a. For both men and women, general practitioners consistently registered a higher risk of morbidity for people with only primary, and to a lesser degree secondary education than for the highly educated. This contrast

Table 14.1 Socio-demographic data study population 25 years and older by sex and educational level (in %)

	men			women		
	low	intermediate	high	low	intermediate	high
<i>total</i>	N=2224	N=45268	N=12380	N=31123	N=48679	N=7782
<i>age</i>						
25–44	24,6	62,7	66,6	19,4	65,3	76,5
45–64	42,8	27,9	26,1	39,9	25,0	17,5
>65	32,6	9,4	7,2	40,7	9,8	6,0
<i>living situation</i>						
single+	12,8	7,8	12,1	24,2	11,6	23,7
+ partner/ – child	37,4	28,8	28,3	31,6	24,7	26,5
+ partner/+ child	43,1	58,8	54,7	34,8	56,1	40,9
– partner/ + child	3,0	2,1	1,6	5,3	4,8	4,8
other/unknown	3,7	2,5	3,3	4,1	2,7	4,1
<i>paid employment/profession*</i>						
non-manual	5,5	30,1	72,4	2,8	25,6	60,5
self-employed	4,4	9,7	2,8	0,4	1,0	0,4
manual	27,7	32,4	3,0	7,6	10,1	1,7
<i>not paid in employment</i>						
disability benefit*	13,9	5,4	2,0	2,4	1,8	1,4
jobless/social benefit*	5,6	3,5	3,2	1,1	1,7	4,8
(pre-)pension	37,5	12,0	10,3	42,8	10,8	7,4
houseman/–wife	1,0	1,2	0,7	36,0	42,6	18,0
other/unknown	4,4	5,6	5,6	6,8	6,4	5,8
<i>urbanisationlevel</i>						
<30.000	44,0	39,6	28,0	42,1	37,1	21,6
30.000–50.000	38,3	39,9	39,7	37,8	40,3	33,3
50.000–250.000	12,7	16,1	24,8	14,5	17,9	
>250.000	5,0	4,4	7,5	5,6	4,8	13,1

\* professional population 25–64 years

was most marked for a number of symptoms/complaints and for chronic disorders of the stomach and musculo-skeletal system. For men this was also true for injury, asthma/COPD, disorders of fat metabolism and addiction (not taken up as a separate category in the table). For women similar differences were found for neurological disorders and psycho-social problems.

For men the relative risks for other heart diseases (in particular, rhythm disorders, valve abnormalities), other vascular problems (in particular, haemorrhoids/varicose veins) and depression/other neuroses were lower in the less well-educated. Also the dominant pattern did not apply to women for all disorders. Few differences were found for general symptoms/complaints, eye infections and other infectious diseases, cataract/glaucoma/other eye disorders. The relative risks for chronic ear problems (in particular, cerumen), other heart diseases (in particular, rhythm disorders, valve abnormalities), neoplasms, eye injury, family planning and pregnancy were even less for the low and intermedi-



ate educational levels.

The differences in morbidity risks between the various educational levels were greater for men than for women for practically all disorders, except cardiovascular diseases, neurological complaints, and psycho-social problems. The numbers of persons in the 58 sickness categories reported varied from 57 for other cardiovascular diseases in men to 5175 for respiratory infections in women; only 15 categories included less than 100 cases.

A similar analysis for people aged 65 or older produces a more differentiated picture (table 14.2b). For men high relative risks for the less well-educated were found for cardiovascular diseases, skin symptoms/complaints, cataract/glaucoma and ischaemic heart diseases, and high relative risk in the well educated for injury. The high relative risk of registered morbidity for the highly educated was more pronounced for older women than for older men. There were high relative risks for the less well educated for only a few symptoms/complaints (including upper and lower extremities, neurology, respiratory and urinary tract), peripheral arterial and other vascular diseases and consequences of care. The numbers of persons in the 50 sickness categories reported varied from 33 for anxiety in men to 1016 for respiratory infections in women; there were 19 categories with more than 100 cases in men and 33 in women.

### *Differences in disease management*

Analyses to study differences in disease management were based upon reason for encounter of the first consultation of an episode, the final diagnosis and interventions. The reasons for encounter investigated occur mostly with the less well educated, just as practically all the associated important final diagnoses (table 14.3). The pattern is also consistent with respect to the interventions. Physical examination was carried out for most complaints equally frequently for all educational levels. Additional investigations were carried out more frequently for the highly educated, except for the final diagnoses which were derived from backache as the reason for encounter. Counselling and patient education were provided with practically the same frequency for all final diagnoses, except for myalgia and back symptoms/complaints. Prescriptions for almost all final diagnoses were given more frequently to the less well educated. Referral within primary care and to secondary care varied. Referral to a physiotherapist for back problems and for tension headaches occurred most frequently in the highly educated. A comparison of the 25–64 age group with those aged 65 or older showed no clear differences.

## **Discussion**

Most research into the relationship between socio-economic factors and health suggests that the care provided can contribute at most only marginally to the reduction of social differences in health.<sup>4</sup>

This research study shows that clear social patterns can be distinguished in the morbidity which general practitioners register and in the treatments they give. For the less well-educated patients, particularly the men, the general practitioner recorded more problems than for the highly educated. For a few disorders the pattern was reversed. These results conform with analyses of comparable data from the United Kingdom.<sup>6,7</sup> Other differences between the social classes were observed. Physical examination occurred with equal frequency, but there were differences in the provision of investigations, counselling and patient education, prescription and referral. Our observations are for the most part in line with those reported in previous studies which have concluded that, for a given morbidity, highly educated people more frequently undergo physical examinations and additional investigations and receive information, and less well-educated people more frequently receive a prescription, or a referral to a medical specialist.<sup>28</sup>

The high risk of osteoarthritis and injury for the less well educated 25– to 64–year-old men compared with the marginal differences in risks for the 25–

64-year-old women and those aged 65 or older, and the fact that these men predominantly do manual labour confirms the results of earlier research.<sup>29</sup> The high risk of stomach problems, disorders in fat metabolism and addiction among less well-educated men *and* women is undoubtedly related to differences in their health behaviour.<sup>4,30</sup> This accords with the high risk of ischaemic heart diseases, CVA/TIA/other vascular disorders and asthma/COPD among less well-educated men and the high percentage of heavy smokers in this group.<sup>4</sup> A considerable proportion of these less well educated men are unemployed, or receive a benefit allowance under the provisions of the disability or unemployment legislation (see table 1)<sup>29</sup> In addition, the less favourable living circumstances of this group contributes to the differences in their health behaviour.<sup>31</sup> Taken together, there

Tabel 14.2a Relative morbidity risks (RR) of clusters of diagnoses in men and women aged 25–64 based upon cumulative incidence per 1000 persons per three months current educational level (95% confidence interval=CI), adjusted for age with the highest educated group as reference category

	men		women	
	low RR(95% CI)	intermediate RR(95% CI)	low RR(95% CI)	intermediate RR(95% CI)
<i>Total (one or more clusters)</i>	1.59 (1.51-1.68)	1.31 (1.24-1.38)	1.36 (1.28-1.44)	1.26 (1.19-1.32)
<i>No disease</i>	0.98 (0.73-1.30)	1.06 (0.84-1.35)	1.56 (1.21-2.07)	1.37 (1.09-1.73)
<i>Symptoms/complaints</i>	2.14 (1.90-2.41)	1.62 (1.45-1.80)	1.52 (1.37-1.69)	1.31 (1.19-1.44)
General	1.73 (1.11-2.68)	1.32 (0.89-1.96)	1.00 (0.68-1.48)	0.92 (0.66-1.29)
Gastro-intestinal system	2.67 (1.87-3.80)	1.83 (1.31-2.54)	1.90 (1.39-2.60)	1.39 (1.04-1.85)
Cardiovascular system	1.02 (0.49-2.11)	0.90 (0.47-1.71)	2.80 (1.26-6.23)	1.82 (0.84-3.94)
Upper/lower extremity	2.15 (1.42-3.24)	1.96 (1.36-2.82)	2.29 (1.37-3.84)	1.74 (1.07-2.82)
Muscles/joints	2.49 (2.04-3.04)	1.81 (1.51-2.17)	1.87 (1.50-2.33)	1.75 (1.43-2.15)
Neurological (excl headache)	1.09 (0.62-1.90)	1.40 (0.86-2.26)	2.18 (1.22-3.89)	1.21 (0.69-2.12)
Respiratory tract	2.15 (1.60-2.88)	1.64 (1.25-2.14)	1.82 (1.38-2.40)	1.45 (1.10-1.92)
Skin (excl wounds)	2.46 (1.54-3.92)	1.54 (1.00-2.36)	2.15 (1.45-3.18)	1.25 (0.87-1.79)
Urinary tract/genital organs	1.02 (0.63-1.66)	0.82 (0.53-1.24)	1.05 (0.87-1.26)	1.12 (0.96-1.31)
Other symptoms/complaints	1.79 (1.34-2.38)	1.25 (0.97-1.61)	1.51 (1.17-1.95)	1.10 (0.87-1.38)
<i>Infectious diseases</i>	1.40 (1.29-1.52)	1.13 (1.05-1.21)	1.39 (1.28-1.52)	1.21 (1.12-1.31)
Gastro-intestinal	1.57 (1.18-2.10)	1.26 (0.98-1.61)	1.72 (1.22-2.43)	1.36 (1.00-1.84)
Eyes	1.71 (1.27-2.31)	1.37 (1.05-1.79)	0.91 (0.68-1.22)	1.03 (0.80-1.33)
Respiratory tract/ears	1.58 (1.42-1.75)	1.22 (1.12-1.34)	1.67 (1.48-1.87)	1.34 (1.21-1.49)
Skin	0.94 (0.78-1.12)	0.84 (0.72-0.96)	1.13 (0.91-1.39)	1.13 (0.94-1.36)
Urinary tract/genital organs	1.09 (0.80-1.47)	0.91 (0.69-1.18)	1.14 (0.96-1.37)	1.05 (0.90-1.23)
Other infectious diseases	1.28 (0.91-1.80)	1.19 (0.90-1.58)	1.10 (0.79-1.54)	0.92 (0.69-1.22)
<i>Injuries</i>	1.98 (1.72-2.28)	1.68 (1.49-1.89)	1.39 (1.16-1.66)	1.29 (1.09-1.51)
Eyes	4.56 (2.82-7.36)	3.50 (2.24-5.46)	0.89 (0.38-2.10)	0.80 (0.39-1.66)
Fracture/sprains/dislocation	1.80 (1.50-2.16)	1.53 (1.31-1.79)	1.25 (0.99-1.58)	1.27 (1.03-1.57)
Wounds	1.73 (1.34-2.22)	1.40 (1.13-1.74)	1.51 (1.10-2.08)	1.22 (0.91-1.63)
Other injuries	2.86 (1.48-5.55)	3.44 (1.91-6.20)	2.40 (1.15-4.99)	1.89 (0.96-3.75)
<i>Chronic diseases(ex neoplasm)</i>	1.47 (1.35-1.59)	1.26 (1.17-1.35)	1.27 (1.16-1.38)	1.22 (1.13-1.32)
Stomach	2.70 (1.89-3.87)	1.54 (1.10-2.16)	2.39 (1.47-3.89)	1.74 (1.10-2.76)
Intestines/liver/gall/pancreas	1.37 (0.94-1.98)	1.31 (0.95-1.81)	1.35 (0.99-1.84)	1.07 (0.81-1.42)
Cataract/glaucoma/other eye	1.11 (0.64-1.91)	0.90 (0.56-1.45)	1.07 (0.60-1.92)	0.96 (0.56-1.63)
Deafness/other ear	0.90 (0.73-1.12)	0.93 (0.77-1.11)	0.76 (0.59-0.99)	0.92 (0.74-1.15)
Ischaemic heart disease	2.48 (1.33-4.60)	1.66 (0.90-3.05)	1.10 (0.72-1.68) <sup>†</sup>	1.00 <sup>†</sup>
Other coronary disease	0.60 (0.26-1.37)	0.76 (0.39-1.47)	0.65 (0.32-1.32)	0.65 (0.34-1.22)
Bloodpressure	0.97 (0.66-1.42)	1.04 (0.74-1.45)	1.53 (0.92-2.54)	1.61 (0.99-2.60)
CVA/TIA/other per art vase dis	2.93 (1.03-8.28)	2.23 (0.79-6.29)	1.13 (0.38-3.32)	1.71 (0.61-4.73)
Other vascular diseases	0.77 (0.53-1.12)	0.83 (0.61-1.14)	1.19 (0.82-1.72)	1.24 (0.89-1.74)
Dorsopathies	1.99 (1.66-2.39)	1.61 (1.37-1.90)	1.78 (1.40-2.27)	1.76 (1.41-2.20)
Osteoarthritis/RA/osteoporosis	3.12 (1.59-6.12)	2.45 (1.28-4.71)	1.15 (0.66-2.04)	1.45 (0.83-2.50)
Other musculoskeletal system	1.52 (1.26-1.83)	1.39 (1.18-1.63)	1.34 (1.08-1.68)	1.39 (1.14-1.70)
Migrain/other headache	1.62 (1.09-2.41)	1.23 (0.87-1.72)	1.80 (1.27-2.57)	1.44 (1.05-1.98)
MS/Park/epil/other neurology	1.40 (0.93-2.09)	1.40 (0.99-1.98)	2.25 (1.34-3.76)	2.09 (1.29-3.38)
Asthma/COPD	2.65 (1.35-5.19)	2.15 (1.15-4.02)	1.50 (0.74-3.03)	1.10 (0.58-2.08)
Diabetes mellitus	1.69 (0.77-3.71)	0.71 (0.33-1.53)	1.03 (0.34-3.09)	1.29 (0.46-3.62)
Fat/disorders	4.13 (1.55-11.0)	2.30 (0.91-5.82)	2.19 (1.16-4.15)	1.72 (0.95-3.12)
Other chronic diseases	1.15 (0.99-1.33)	1.04 (0.91-1.17)	1.08 (0.95-1.24)	1.04 (0.92-1.17)
<i>Neoplasms</i>	0.81 (0.58-1.14)	0.92 (0.70-1.22)	0.76 (0.56-1.02)	0.84 (0.65-1.08)
Malignant	1.08 (0.52-2.23)	0.74 (0.36-1.53)	0.47 (0.23-0.97)	0.59 (0.31-1.15)
Benign/non specified	0.68 (0.46-1.00)	0.94 (0.70-1.27)	0.82 (0.59-1.13)	0.89 (0.68-1.16)
<i>Psychic/social problems</i>	1.22 (1.04-1.42)	1.05 (0.92-1.19)	1.46 (1.25-1.71)	1.26 (1.10-1.45)
Psychic complaints/addiction	1.67 (1.30-2.13)	1.21 (0.97-1.50)	1.76 (1.38-2.26)	1.48 (1.18-1.86)
Psychoses	1.19 (0.59-2.40)	0.75 (0.40-1.42)	2.81 (1.06-7.46)	1.74 (0.69-4.38)
Depression/other neuroses	0.84 (0.64-1.10)	0.94 (0.76-1.17)	1.04 (0.79-1.36)	1.15 (0.92-1.45)
Problems social network	1.51 (0.98-2.33)	1.20 (0.82-1.77)	1.91 (1.34-2.73)	1.39 (0.99-1.94)
Other psych/soc problems	0.96 (0.63-1.47)	0.90 (0.64-1.27)	1.00 (0.62-1.62)	0.61 (0.40-0.93)
<i>Family planning</i>	1.17 (0.54-2.55)	1.76 (0.98-3.17)	0.82 (0.58-1.15)	0.91 (0.71-1.15)
<i>Pregnancy, delivery, post natal</i>	- <sup>‡</sup>	- <sup>‡</sup>	0.77 (0.60-0.98)	1.01 (0.86-1.19)
<i>Fear of disease</i>	0.87 (0.52-1.44)	1.06 (0.71-1.59)	1.01 (0.65-1.56)	1.15 (0.79-1.68)
<i>Consequences of care</i>	1.49 (0.85-2.64)	1.13 (0.67-1.89)	1.51 (1.03-2.22)	1.15 (0.81-1.63)
<i>Other</i>	1.13 (0.67-1.92)	1.07 (0.69-1.64)	0.81 (0.52-1.27)	0.91 (0.63-1.31)

<sup>†</sup> only comparison low–intermediate/high has been made with intermediate/high as reference category;

Table 14.2b Relative morbidity risks (RR) of clusters of diagnoses in men and women aged 65 and over based upon cumulative incidence per 1000 persons per three months, current educational level (95% confidence interval=CI), adjusted for age with the highest educated group as reference category. (1987–1988)

	men low RR(95% CI)	intermediate RR(95% CI)	women low RR(95% CI)	intermediate RR(95% CI)
<i>Total(one or more clusters)</i>	1,03 (0,88-1,18)	0,96 (0,82-1,11)	0,85 (0,71-1,03)	0,85 (0,70-1,04)
<i>No disease</i>	0,65 (0,36-1,15)	0,92 (0,51-1,65)	1,04 (0,48-2,22)	1,20 (0,55-2,61)
<i>Symptoms/complaints</i>	1,19 (0,91-1,57)	0,94 (0,71-1,25)	0,96 (0,71-1,32)	0,92 (0,67-1,27)
General	0,85 (0,36-1,99)	0,86 (0,35-2,10)	0,44 (0,22-0,87)	0,53 (0,26-1,08)
Gastro-intestinal	0,87 (0,46-1,64)	0,91 (0,47-1,75)	1,40 (0,57-3,41)	1,37 (0,55-3,42)
Cardiovascular	3,34 (0,45-24,6)	1,04 (0,12-8,91)	0,62 (0,23-1,71)	0,40 (0,15-1,11)
Upper/lower extremities	0,60 (0,23-1,58)	0,43 (0,14-1,25)	2,69 (0,37-19,3)	2,92 (0,40-21,4)
Muscles/joints	1,37 (0,75-2,49)	1,02 (0,54-1,91)	0,90 (0,47-1,70)	1,05 (0,54-2,02)
Neurological (excl headache)	0,93 (0,36-2,37)	1,05 (0,40-2,75)	4,34 (1,48-43,9)	2,14 (1,05-2,33)
Respiratory	1,53 (0,85-2,78)	1,08 (0,58-2,02)	2,78 (0,89-8,71)	2,01 (0,63-6,44)
Skin (excl wounds)	2,75 (0,67-11,3)	1,46 (0,33-6,40)	0,66 (0,24-1,80)	1,03 (0,37-2,88)
Urinary tract/genital organs	1,50 (0,78-3,14)	1,62 (0,49-5,40)	2,79 (0,39-20,0)	2,93 (0,40-21,6)
Other symptoms/complaints	1,35 (0,65-2,80)	0,89 (0,41-1,94)	0,53 (0,29-0,99)	0,65 (0,34-1,24)
<i>Infectious diseases</i>	1,14 (0,89-1,46)	1,13 (0,87-1,45)	1,04 (0,78-1,38)	0,88 (0,66-1,17)
Gastro-intestinal	1,03 (0,36-2,91)	1,10 (0,38-3,21)	0,87 (0,32-2,38)	0,71 (0,25-2,02)
Eyes	0,73 (0,36-1,48)	1,01 (0,49-2,09)	1,28 (0,47-3,46)	1,17 (0,42-3,26)
Respiratory tract/ears	1,26 (0,92-1,72)	1,02 (0,73-1,42)	1,05 (0,71-1,56)	0,82 (0,55-1,24)
Skin	1,09 (0,58-2,05)	1,24 (0,65-2,36)	0,77 (0,42-1,42)	0,66 (0,35-1,25)
Urinary tract/genital organs	0,99 (0,51-1,92)	1,35 (0,69-2,63)	1,15 (0,67-1,97)	0,98 (0,56-1,71)
Other infectious diseases	1,08 (0,32-3,58)	1,78 (0,54-5,91)	1,10 (0,27-4,52)	1,79 (0,43-7,46)
<i>Injuries</i>	0,74 (0,49-1,11)	0,67 (0,43-1,04)	0,60 (0,40-0,91)	0,67 (0,44-1,03)
Fracture/sprains/dislocation	0,48 (0,28-0,82)	0,65 (0,37-1,12)	0,66 (0,37-1,19)	0,89 (0,49-1,64)
Wounds	1,07 (0,54-2,15)	0,58 (0,27-1,25)	0,53 (0,29-0,99)	0,45 (0,24-0,83)
Other injuries	1,28 (0,30-5,47)	1,04 (0,23-4,76)	0,91 (0,22-3,75)	0,77 (0,18-3,40)
<i>Chronic diseases (ex neoplasms)</i>	0,98 (0,81-1,20)	0,97 (0,79-1,18)	0,80 (0,64-1,00)	0,85 (0,67-1,07)
Stomach	0,75 (0,35-1,59)	0,53 (0,23-1,20)	0,44 (0,19-1,01)	0,31 (0,12-0,77)
Intestine/liver/gall/pancreas	0,85 (0,33-2,17)	0,97 (0,37-2,57)	0,37 (0,20-0,70)	0,42 (0,21-0,81)
Cataract/glaucoma/other eye	2,02 (0,44-8,44)	2,15 (0,50-9,20)	0,88 (0,28-2,81)	0,84 (0,25-2,80)
Deafness/other ear	0,73 (0,50-1,08)	0,81 (0,54-1,21)	0,74 (0,43-1,28)	0,71 (0,40-1,25)
Ischaemic heart disease	2,10 (0,85-5,17)	2,05 (0,82-5,15)	0,62 (0,33-1,19)	0,52 (0,26-1,03)
Other heart diseases	0,56 (0,21-1,48)	0,42 (0,14-1,22)	0,62 (0,19-1,99)	0,48 (0,14-1,68)
Blood pressure	0,62 (0,33-1,15)	0,74 (0,39-1,41)	0,82 (0,38-1,76)	1,13 (0,52-2,46)
CVA/TIA/other per art vasc dis	1,36 (0,62-2,96)	1,25 (0,56-2,80)	1,64 (0,52-5,16)	1,61 (0,50-5,21)
Other vascular disease	0,82 (0,37-1,83)	1,03 (0,45-2,33)	2,00 (0,64-6,29)	1,81 (0,56-5,80)
Dorsopathies	1,41 (0,73-2,70)	1,33 (0,68-2,60)	0,70 (0,39-1,26)	0,68 (0,37-1,25)
Osteoarthritis/RA/osteoporosis	1,36 (0,54-3,41)	1,26 (0,49-3,24)	1,60 (0,71-3,62)	1,74 (0,76-3,98)
Other musculoskeletal system	1,09 (0,56-2,11)	1,16 (0,59-2,29)	0,65 (0,35-1,21)	0,84 (0,45-1,58)
Neurology(incl migraine/headache)	0,82 (0,37-1,82)	1,41 (0,64-3,14)	1,22 (0,45-3,31)	1,11 (0,40-3,11)
Other chronic diseases	0,92 (0,64-1,33)	0,90 (0,62-1,33)	0,79 (0,51-1,22)	0,89 (0,57-1,40)
<i>Neoplasms</i>	0,95 (0,49-1,84)	0,90 (0,45-1,79)	0,50 (0,22-1,15)	0,79 (0,34-1,85)
Malignant	1,03 (0,41-2,63)	1,02 (0,39-2,68)	0,36 (0,13-1,02)	0,60 (0,21-1,74)
Benign/non specified	0,86 (0,33-2,21)	0,77 (0,29-2,09)	0,81 (0,20-3,37)	1,17 (0,28-4,96)
<i>Psychische/social problems</i>	1,02 (0,63-1,65)	0,95 (0,57-1,57)	0,79 (0,51-1,21)	0,83 (0,53-1,29)
Psychic complaints/addiction	0,91 (0,45-1,83)	0,72 (0,34-1,53)	0,65 (0,36-1,17)	0,73 (0,40-1,35)
Psychoses/neuroses	0,81 (0,53-1,25)	0,91 (0,73-1,12)	1,06 (0,82-1,37)	1,16 (0,90-1,49)
Problems social network	1,45 (0,97-2,15)	1,25 (0,87-1,70)	1,86 (1,32-2,62)	1,47 (1,07-2,04)
Other psych/soc problems	0,93 (0,62-1,38)	0,92 (0,66-1,29)	0,82 (0,53-1,25)	0,55 (0,37-0,82)
<i>Fear of disease</i>	0,65 (0,18-2,26)	1,17 (0,34-4,02)	0,33 (0,10-1,10)	0,62 (0,18-2,10)
<i>Consequences care</i>	1,62 (0,50-5,24)	1,54 (0,46-5,15)	2,25 (0,55-9,12)	1,92 (0,46-7,99)
<i>Other</i>	1,03 (0,65-1,63)	1,04 (0,69-1,55)	0,69 (0,46-1,03)	0,85 (0,60-1,21)

Table 14.3 Reason for encounter in first consultation and final diagnosis, incidence per 1000 per 3 mnd) en interventions (in % all new cases) in general practice for persons 25 and older current educational level, adjusted for age and sex

	Low	Intermediate	High p-value
Cough (in 1st consultation)	42.8	33.1	24.3
→ <u>Upper respiratory tract infection (N=1955)</u>			
Incidence (/1000/3months)	15.5	10.5	6.8
Physical examination	69.3	75.2	79.1 <0.01
Additional investigations	3.9	5.0	7.0
Counselling/patient education	46.4	53.0	55.0 <0.01
Prescription	90.4	89.3	87.0
Referral primary/secondary care	.6	.1	-
→ <u>Acute bronchitis(N=1016)</u>			
Incidence (/1000/3months)	7.0	5.7	5.4
Physical examination	90.7	93.8	96.4 <0.05
Additional investigations	6.5	5.3	7.0
Counselling/patient education	60.5	65.1	60.9
Prescription	98.6	96.1	95.2 <0.05
Referral primary/secondary care	0.6	0.4	0.8
→ <u>Cough(N=860)</u>			
Incidence (/1000/3months)	6.3	4.9	3.1
Physical examination	52.0	52.1	60.8
Additional investigations	5.7	5.8	10.6
Counselling/patient education	40.8	39.9	35.3
Prescription	90.2	89.5	82.7
Referral primary/secondary care	1.0	.9	4.2
Back symptoms/complaints (in 1st consultation)	23.8	24.9	16.7
→ <u>Lumbago(N=1341)</u>			
Incidence (/1000/3months)	8.0	8.7	4.7
Physical examination	91.6	90.2	88.7
Additional investigations	9.9	6.9	4.5 <0.05
Counselling/patient education	70.7	69.4	67.0
Prescription	69.0	63.0	52.6 <0.01
Referral primary/secondary care	26.2	32.8	27.7
→ <u>Muscle pain/fibrositis(N=864)</u>			
Incidence (/1000/3months)	5.6	5.4	3.0
Physical examination	89.7	90.4	90.5
Additional investigations	4.1	6.6	4.5
Counselling/patient education	66.1	73.6	79.3 <0.01
Prescription	71.6	56.3	37.4 <0.001
Referral primary/secondary care	16.3	18.6	24.3
→ <u>Back symptoms/complaints(N=336)</u>			
Incidence (/1000/3months)	2.1	2.0	1.5
Physical examination	84.7	78.7	74.0
Additional investigations	20.0	14.3	6.3 <0.05
Counselling/patient education	68.1	70.7	78.6
Prescription	56.1	49.5	31.5 <0.05
Referral primary/secondary care	28.1	41.9	43.4 <0.05

- table 14.3 continuation -

	Low	Intermediate	High	p-value
Abdominal pain/- cramps (in 1st consultation)	23.9	21.7	14.9	
→ <u>Irritable bowel syndrome(N=596)</u>				
Incidence (/1000/3months)	3.9	3.5	2.7	
Physical examination	86.3	94.9	88.8	<0.05
Additional investigations	25.8	28.6	36.5	
Counselling/patient education	78.3	82.5	88.4	
Prescription	78.1	56.0	41.5	<0.001
Referral primary/secondary care	3.3	4.1	3.6	
→ <u>Abdominal pain/-cramps(N=403)</u>				
Incidence (/1000/3months)	3.2	2.2	1.2	
Physical examination	84.0	85.3	80.5	
Additional investigations	39.8	40.0	55.9	
Counselling/patient education	78.5	77.0	79.9	
Prescription	42.5	36.9	27.3	
Referral primary/secondary care	15.0	11.6	3.9	
→ <u>Other presumed gastro-enteritis(N=321)</u>				
Incidence (/1000/3months)	2.2	1.9	1.2	
Physical examination	87.1	84.2	78.7	
Additional investigations	8.6	14.9	27.7	<0.05
Counselling/patient education	76.7	79.8	81.6	
Prescription	65.4	55.2	42.9	<0.05
Referral primary/secondary care	-	1.1	-	
Headache (in 1st consultation)	18.9	20.0	13.3	
→ <u>Sinusitis(N=660)</u>				
Incidence (/1000/3months)	3.1	4.4	3.8	
Physical examination	94.5	92.4	90.8	
Additional investigations	8.2	9.8	17.2	
Counselling/patient education	69.1	72.3	54.1	
Prescription	92.9	94.3	94.2	
Referral primary/secondary care	5.5	3.2	-	<0.05
→ <u>Tension headache(N=349)</u>				
Incidence (/1000/3months)	2.4	2.1	1.0	
Physical examination	83.3	79.0	81.4	
Additional investigations	8.8	8.0	24.8	
Counselling/patient education	76.6	85.9	72.2	
Prescription	72.5	56.9	48.0	<0.01
Referral primary/secondary care	8.9	16.8	20.3	<0.05
→ <u>Headache(N=252)</u>				
Incidence (/1000/3months)	1.9	1.6	0.8	
Physical examination	71.3	69.7	82.9	
Additional investigations	13.5	15.0	22.7	
Counselling/patient education	67.6	75.1	87.4	
Prescription	52.7	57.0	56.3	
Referral primary/secondary care	10.8	12.9	6.1	

seems to be evidence of a cumulative effect.

More neoplasms were reported in highly educated men and women, while the available epidemiological information would not specifically indicate that to be the case.<sup>30</sup> This finding could suggest that within this group there is a greater awareness of cancer together with more importance being attached to physical appearance (for example, a dislike of undesirable pimples).<sup>7</sup>

The social differences identified in general practitioners' treatment gives us food for thought. For example in highly educated patients, headache, cough, stomach pains and cramps lead more often to further investigations, while back symptoms/complaints do not. With respect to treatments given there is more variation. For example, more frequent prescriptions for the less well-educated and more frequent referral (to the physiotherapist) for the highly educated (tension headaches and final diagnoses back symptoms/complaints); and similar differences for patients reported with stomach pain. On the basis of these results one wonders whether general practitioners treat patients presenting with the same disorders in the same way, or whether they base their treatment on the anticipated prognosis or seriousness of the problem.<sup>32</sup>

This study reports a global, descriptive research of the morbidity as it is registered by general practitioners. By no means all morbidity comes to the attention of general practitioners, and it is precisely factors such as the patients' education, health behaviour, living circumstances and financial security which influence the availability of and access to care, insurance, and the quality of the health care system.<sup>33</sup> This research emphasises the connection between socio-economic factors and health and its relevance to general practice. Working and living conditions may be related to health more often than one might suspect. It is important for general practitioners to recognize and to appreciate the influence these may have on general practitioner patterns of investigation and treatment. General practitioners need to ensure ready access to health care for all social groups and especially to introduce userfriendly facilities for the social disadvantaged to receive appropriate preventive health care ('early warning of social epidemics').<sup>34-35</sup> Sir James Mackenzie — a founding father of general practice medicine — emphasized that medical and social factors in general practice can not be separated from each other. During the last ten years general practice research in the Netherlands has been wholeheartedly engaged in a disease oriented approach. The time has come for a greater social orientation.



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*social differences in general practice*

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## OCCUPATION AND HEALTH: A PICTURE FROM GENERAL PRACTICE

### **Abstract**

The relationship between occupation and health problems is analysed with data from general practice. The data come from the Dutch National Survey of General Practice. Morbidity data from the encounters between general practitioners/practice-assistants and patients are linked with data on employment status and occupation. Incidence and prevalence figures and the probability of (the presentation) of a disease to general practice are calculated. Acute somatic complaints especially those related to the musculoskeletal system, injuries, infections specifically of the respiratory tract, chronic diseases and psycho-social problems dominate the morbidity pattern of both the employed, the unemployed and recipients of the disability benefit schemes, with higher rates in the latter group. The employed suffer a little more often from injuries, the unemployed from fear of disease while people receiving disability benefits have more chronic diseases including cardiovascular diseases, diseases of the musculoskeletal system and the nervous system, more malignant and benign tumours, psycho-social problems, side effects of care and preventive care, even after controlling for a number of socio-demographic and socio-economic variables. Manual and industrial workers run the highest relative risks of acute somatic complaints, injuries and infections. Large risk differences occur mainly among the manual and industrial workers, and especially with regard to chronic and psychosocial problems, also among professionals. Data from general practice offer a nice picture on health problems in relation to work.

### **Introduction**

There is a long tradition of research into the relationship between work and health, going back well before the Industrial Revolution. Originally, research was concerned mainly with combatting wretched working conditions, later with the organization and operation of occupational health services and still later with evaluation of the social insurance legislation. In parallel with this development the nature of work has also changed with time: heavy manual labour and appalling working conditions have largely been replaced by non-manual work, better pay and shorter hours. Similarly, the emphasis of research has shifted to the

quality of work, in which particular features can be distinguished:<sup>1,2</sup>

- *the content of work*: the nature and type of work (for example, repetitive work), the mental strain it imposes, the appropriateness of work to a person's training and experience, the pace of work and the degree of self satisfaction provided.
- *working conditions*; for example, physically onerous work, noise levels, vibration, climate/sick building syndrome, radiation, chemical conditions, dirty work, ventilation, biological agents and level of safety.
- *employee relations*; these include such indicators as relations with superiors and fellow-workers, opportunities for consultation and participation, and the style of management.
- *terms of employment*; opportunities for promotion, prospects, working hours, new patterns of work (temporary employment, standby contracts, home work) and shift work.

At present research in the area is hampered by a number of problems. The adoption and implementation of social welfare legislation has not only created a safety net for persons with serious health problems but has also operated as a component of employment policy with consequences for both healthy and sick people. To appreciate this, it should be remembered that, prior to their disablement, people receiving disability benefits were also part of the working population; a group which is constantly being selected in terms of health.<sup>3</sup> Selection mechanisms operate in such a way that the working environment may be both the cause of illness and an impediment to a return to work. A further complicating factor is the uncertain link between illness and incapacity for work, which categories are not necessarily mutually exclusive. Socio-economic factors act as possible 'confounders' or at least as 'effect modifiers'.<sup>4</sup> Health problems have many causes relating to the person, the nature of the illness and the environment. It is therefore difficult to obtain a clear understanding of what precisely the role of work is in matters of health.<sup>5</sup>

There is no national system of registration in the Netherlands which can be used to obtain a reliable insight into the impact of work on health. It is hard to obtain access to disability benefit records and the occupation of insured employees is unknown. Statistics Netherlands (CBS) does not keep a record of occupations, which could be related to the cause of death, nor is it possible to link hospital records with patients' occupations.

When considering the relationship between work and health, the term occupational disease is most frequently employed. There is statutory provision for reporting occupational diseases with 10,000 new cases reported each year, though

there is substantial under-reporting.<sup>6-7</sup> Questionnaire based surveys suggest that people receiving disability benefits are less healthy than those who are either unemployed or in work.<sup>8</sup> Using data from several countries Willems identified the following high-risk industries: the metal industry, construction, health services, the timber and furniture industries, hotels and catering, transport and the food industry.<sup>7</sup>

In the present study the relationship between work and health has for the first time been examined using representative national data from general practice. These data are immensely important. The general practitioner is the first and most frequently consulted professional in the health services for the majority of health problems. From his position and personal knowledge of patients, their medical history, home circumstances and sometimes work situation, the general practitioner is able to assess problems against the social background. Recent research suggests that the general practitioner might occupy a more important position in the spectrum of sickness absence, incapacity for work and unemployment than was previously thought.<sup>9</sup>

An answer was sought to the following research questions:

- which illnesses are presented to general practitioners by people according to the employment status (including recipients of disability benefits) and by occupational categories within the working population?
- what are the determinants and strength of the association between illnesses presented with employment and occupation characteristics?

## Methods

Data from the Dutch National Survey of General Practice were used.<sup>10</sup> One hundred and sixty-one general practitioners (and their practice assistants) from 103 practices took part in the data collection for this study, derived from a random, non-proportional stratified sample. These general practitioners (and their practice assistants) were divided into four groups who recorded data on all their contacts with patients between 1 April 1987 and 31 March 1988, in four consecutive periods of three months. The data included the reasons for encounter and the diagnoses, coded in an adapted but fully compatible version of the International Classification of Primary Care (ICPC) and processed in care episodes. An episode was defined as a period of illness in a patient over the whole period from its arising to its resolution.<sup>11</sup> In this study, the term episode is limited to the phase in which professional help is requested from the general practitioner. Census data such as age, sex, marital status, type of health insurance, education, employment status/occupation and ethnic background were collected for the total practice populations (N=335,000). One practice was excluded from the analyses

due to incomplete recording.

For this study, persons aged between 16 and 64 years were selected who at the time of registration were either in gainful employment or entitled to unemployment or disability benefits (N=105,000). Students, housewives/house-husbands, those doing national service and those on early retirement were excluded. All respondents were asked to indicate their (most recent) occupation. The classification of occupations was carried out by trained coding clerks using the Statistics Netherlands (CBS) Occupational Classification 1984.<sup>12</sup> A comparison of occupational data in the study population with national data collected by the CBS disclosed no important differences, so that the results of this study may be regarded as representative for the Dutch working population.<sup>13,14</sup>

Morbidity data were analyzed in clusters by diagnosis and expressed as the numbers of episodes per 1,000 persons registered in the practice. Where necessary these are further specified in the text with data based on organ systems. The clusters 'no disease', 'congenital defect', 'pregnancy/birth', 'family planning', 'handicap and death' have been classified under a category 'other disease', either because of their limited numbers or because of their specific nature. The cluster 'prevention' consists primarily of vaccination (in particular against influenza), other prophylaxis, requests for a cervical smear or mammography and a general periodic check-up. The cluster 'side-effects of care' includes misuse, intoxication and side effects of medication, toxic effects of other substances, and complications of medical care.

The cumulative incidence and period prevalence were then calculated per three months. A distinction was made between persons in work, the unemployed and those receiving disability benefits, and in addition the occupational sectors and occupational groups of those in work were noted. The following analyses were carried out.

– the analyses according to *employment status* (in work, unemployed, receiving disability benefits) first focused on descriptive data (cumulative incidence per 1,000 persons per three months, and the period prevalence per 1,000 persons) of the various groups. The data were standardized against the total working population for age and sex, using the direct method. Finally the odds ratio was calculated in a logistic regression analysis; this odds ratio is determined by the cumulative incidence of a cluster of diagnoses among those unemployed and those receiving disability benefits respectively and the cumulative incidence of the same cluster among those in work; the logistic regression analysis was used to check against age, sex, marital status (single/partner/partner and children/children but no partner), the highest form of completed education, type

of health insurance (public or private) and ethnic background (Dutch; Turkish and Moroccan; Surinam and Antillean; other).

Statistical significance was tested two-sided using a chi-square analysis with a p value of 0.001. The cluster 'other disease' was not included in this logistic regression analysis.

– the analyses per *occupational sector* focus on descriptive data (cumulative incidence per 1,000 persons per three months). The sector 'military service' and the 'group unknown' and the clusters of diagnosis 'side-effects of care' and 'other disease' were excluded from the analyses because of their specific composition.

– the analyses by *occupational group* focus on the probability of a specific occupational group presenting a specific disease in the general practitioner's practice in comparison with the probability among all other persons in work, expressed as the relative risk and the difference in risk for an occupational group. The relative risk (RR) is determined by the ratio of the cumulative incidence of disease in a specific occupational group and the cumulative incidence of disease within the group other persons in work. The risk difference (RD) is determined by deducting the cumulative incidence of disease within the group other persons in work from the cumulative incidence of disease in a specific occupational group. In both cases age-sex distribution were standardized by the indirect method.

Generally speaking only occupational groups including more than 100 persons and disorders involving at least 5 cases were analysed. A selection of occupational groups with the highest relative risk is reported deviating significantly from 1 and with showing statistically significant risk differences ( $p < 0.05$ ). Significance was tested using 'hypothesis testing with stratified person time data'.<sup>15</sup>

## Results

### *Diseases in general practice according to employment status*

The cumulative incidence and period prevalence of diseases, grouped in diagnostic clusters, are presented by employment status in table 15.1. Persons in work present fewer diseases than those unemployed or, particularly, those receiving disability benefits.

There are large differences in incidence between persons in work, those unemployed and those receiving disability benefits in respect of acute somatic complaints and psychosocial problems. Comparison of the prevalence figures confirms the large scale of chronic disease (particularly disorders of the gastro-



intestinal tract, cardiovascular diseases, disorders of the musculoskeletal system and the nervous system and endocrine and metabolic disorders) and psychosocial

Table 15.1 Cumulative incidence and period prevalence of clusters of diagnoses in general practice by working situation per 1000 persons per 3 months: standardized for age and sex

cluster	incidence			prevalence		
	employed	unemployed	disability benefit	employed	unemployed	disability benefit
Acute somatic complaint	92,6	105,6	126,0	131,4	151,9	215,8
Injury	42,7	38,4	42,4	48,2	44,5	49,8
Infectious disease	127,5	144,8	159,3	129,5	141,0	158,6
Chronic disease	117,7	127,2	144,5	214,4	236,0	343,2
Malign/benign neoplasm	6,0	8,3	8,8	10,2	12,7	24,3
Fear of disease	3,1	7,0	3,6	5,1	10,3	5,4
Psychological/social	34,8	49,2	57,9	87,3	133,8	218,9
Consequences of care	3,6	3,4	5,1	6,5	5,5	14,0
Preventive care	8,2	11,0	10,8	20,2	24,5	31,2
Other	28,8	33,0	23,3	86,5	96,9	71,2
Total 1 or more disease(s)	330,8	355,2	389,3	477,0	515,6	632,0
Total nr of pop (N=)	99950	7008	8140	99950	7008	8140

Table 15.2 Logistic regression analysis for the chance on a cluster of diagnoses in general practice expressed as cumulative incidence/period prevalence per 1000 persons per 3 months: unemployed, respectively disability benefit versus employed controlled for age, sex, type of insurance, living situation, education en ethnic origin expressed in statistically significant ( $p < 0,001$ ) odds ratios

cluster	odds ratio unemployed/employed		odds ratio disability benefit/employed	
	inc.	pre.	inc.	pre.
Acute somatic complaint	-	-	-	1,5
Injury	-	0,8	-	-
Infectious disease	-	-	1,2	1,2
Chronic disease	-	-	1,2	1,8
Malignant/benign neoplasm	-	-	-	2,0
Fear of disease	1,9	-	-	-
Psychological/social	1,5	1,4	-	1,3
Consequences of care	-	-	-	2,6
Preventive care	-	-	1,8	2,1

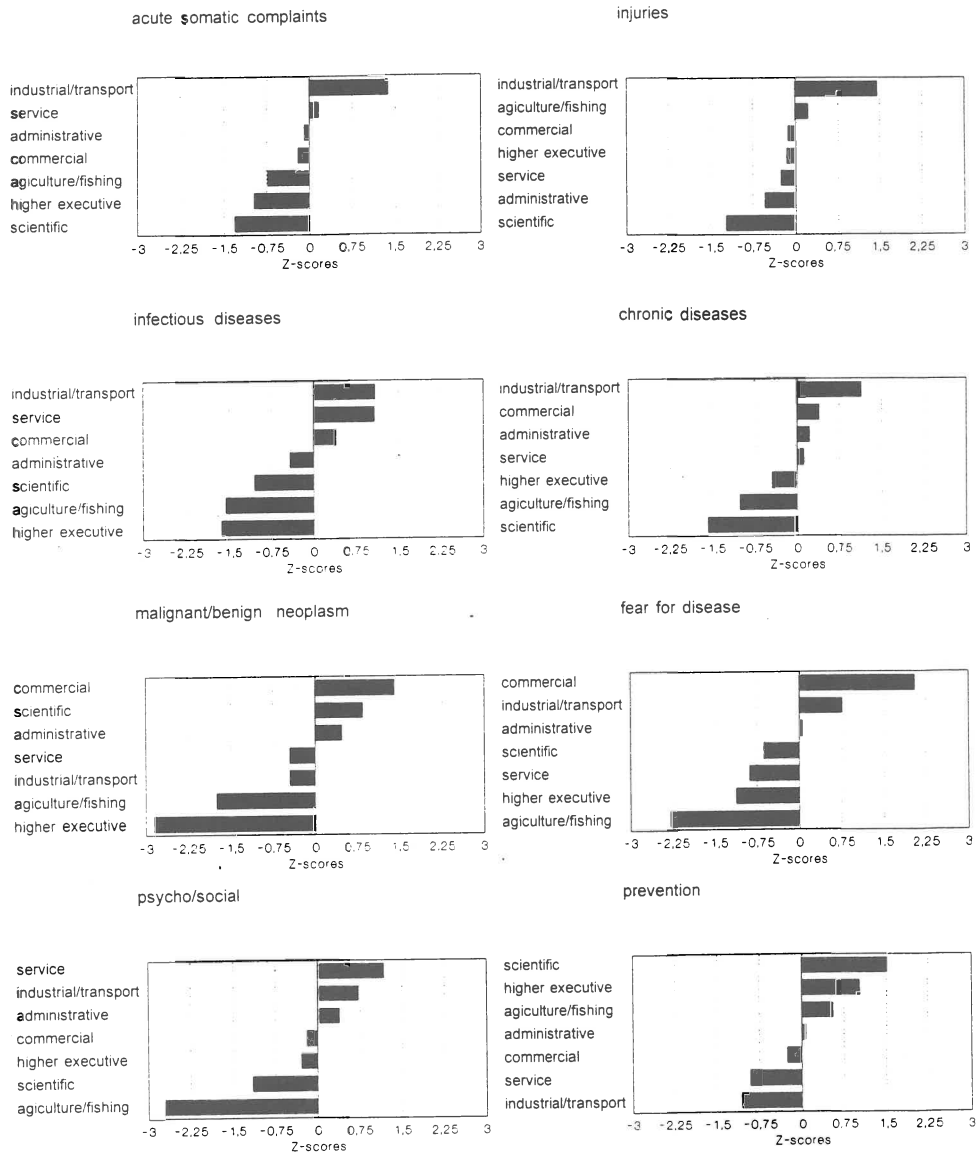
Table 15.3 Most important relative risk morbidity (RR) in general practice by occupational group in the Netherlands

<b>Acute somatic complaint</b>		<b>RR</b>
1 Slaughterman, butcher a.o	sympt/compl foot/toes	13,3
2 Thatcher	cough	6,1
3 Maintenance engineer	sympt/compl joints	6,0
4 Cleaning lady, window cleaner a.o	swallowing problems	4,6
5 Nurses	lump/mass breast	4,5
<b>Injury</b>		
1 Sheet metal worker	foreign body in eye	9,9
2 Slaughterman, butcher	laceration/cut	5,5
3 Metalworkers NEC	acute damage- meniscus of knee	5,4
4 Welder, burner, cutter	foreign body in eye	5,2
5 Road/rail workers	accident/injury NOS	4,6
<b>Infectious disease</b>		
1 Slaughterman, butcher a.o	local infection finger/toe	13,9
2 Fiber worker	URI	9,9
3 Physiotherapist	pneumonia	7,8
4 Programmer/computer expert	tubair catarrh/salpingitis	7,2
5 Baker, chocolatemaker	local infection finger/toe	6,9
<b>Chronic disease</b>		
1 Worker social workshop	duodenal ulcer	8,0
2 Distiller, evaporator	chronic bronchitis	7,9
3 Teacher, primary school	duodenal ulcer	5,8
4 Printers NEC	diseases peripheral nervous system NEC	5,5
5 House- , construction painter	duodenal ulcer	5,5
<b>Psychosocial</b>		
1 Other service worker	neurasthenia/surmenage	4,4
2 House-, construction painter	hyperventilation syndrome	3,7
3 Worker social workshop	feeling anxious/nervous/tense	3,5
4 Chemical, physical analist	tension headache	3,5
5 Teacher, secondary school	mental/psychological dis. NEC	3,2

Table 15.4 Risk differences (RD) for highly occurrent morbidity in general practice by occupational group

		RD		RD
Acute somatic complaint	lumbago		myalgia	
	carpenters	19,3	bricklayers a.o	14,7
	bricklayers a.o	13,7	carpenters	13,9
	drivers and tramdrivers	11,9	spec. construction workers nec	11,4
	cleaning lady, window cleaner a.o	10,8	waiter, barman a.o.	10,5
	road/rail workers	9,8	gardeners, public gardener a.o.	10,0
Injury	foreign body in eye		laceration/cut	
	carpenters	15,9	carpenters	8,5
	lathe operator–serviceman	13,1	lathe operator – serviceman	6,1
	sheet metal worker a.o	10,8	plumber, pipefitter, heating engineer	4,4
	plumber, pipefitter, heating engineer	10,0	spec. construction workers nec	4,0
	welder, burner, cutter a.o	8,9	sheet metal worker a.o	3,6
Infectious disease	URI		sinusitis acute/chronic	
	cleaning lady, window cleaner a.o	37,0	other salesman	7,9
	worker social workshop	25,0	lathe operator–serviceman	7,8
	drivers and tramdrivers	21,4	gardener, public gardener a.o	6,4
	loader, unloader, warehouse serv.	15,4	post–distribution employees	6,3
	welder, burner, cutter a.o	11,0	detectives, security employees a.o	3,9
Chronic disease	uncomplicated hypertension		Irritable bowel syndrome	
	other administrative functions	9,1	cleaning lady, window cleaner a.o	9,0
	care givers nec	5,9	operator, telegrapher a.o	6,1
	other salesman	4,7	baker, chocolatemaker a.o	5,6
	managers plc, Ltd, coöp., found.	4,1	road/rail worker	3,3
	distiller, evaporator a.o	3,7	spec. construction workers nec	3,2
Psychosocial	neurasthenia/surmenage		Feeling anxious/nervous/tense	
	white–collar workers	14,8	cleaning lady, window cleaner a.o	5,6
	social and cultural worker	9,5	waiter, barman a.o	5,0
	other administr. function	9,5	worker social workshop	4,3
	higher executive function nec	8,0	loader, unloader, warehouse serv.	4,0
	other salesman	4,8	maintenance engineer	3,6

Figure 15.1 Graphical presentation of ranking in occupational fields of cumulative incidence of clusters of diseases in general practice standardized for age and sex. The 'zero line' is the cumulative incidence of the total working population. Scores right of the zero line are disadvantageous, left of the zero line are advantageous



The size of the different occupational fields is as follows: scientific and other professionals a.o. (N=21283), higher executive functions, policymakers (N=4847), administrative functions (N=18824), commercial functions (N=8059), service functions (N=11142), agricultural professions, fishermen a.o. (N=4284), industrial-, transport workers, craftsmen and allied functions (N=27195).

problems among those receiving disability benefit, while acute somatic complaints, malignant and benign neoplasms and the side-effects of care also regularly occur among this group. Fear of disease, as judged by the doctor, is most frequently observed among the unemployed. Analysis by age and sex (not in table) shows that acute somatic complaints, injuries and infections occur most frequently in both sexes in the age group 15–24 years. Chronic diseases, neoplasms, fear of disease and preventive care score high among men and women aged 45–64 years. Psychosocial problems score high in men in the 25–44 age group, while among both working and unemployed women the increase continues to the age group 45–64 years. Women receiving disability benefits have many psychosocial problems at all ages.

In order to see whether employment status is connected with the presentation of disease logistic regression analyses were performed including the socio-demographic variables. The results for statistically significant odds ratios are presented in Table 15.2. Unemployed persons present disorders in the clusters 'fear of disease' and 'psychosocial problems' more often than people in work and less often in connection with injuries (particularly of the musculoskeletal system). Persons receiving disability benefits present disorders from all clusters except injuries and fear of disease more frequently than those in work.

#### *Diseases in general practice according to occupational sector*

The cumulative incidence of diseases examined in seven occupational sectors per 1,000 persons per three months (Figure 15.1) shows that 'craftsmen, industrial and transport workers and allied occupations' rank high in four of the eight clusters. This applies particularly to acute physical complaints and injuries. Persons in commercial occupations present relatively large numbers of malignant/benign neoplasms and fear of disease. Psychosocial problems occur in 'service occupations', while preventive care ranks high among 'scientific and other professional groups and artists'. The sector 'agricultural workers, fishermen etc.' generally scores low, except on injuries.

#### *Diseases in general practice according to occupational group*

Of the total 1966 relative risks (RR) and risk differences (RD) calculated for 146 occupational groups, 351 deviated significantly from 1. The 5 highest statistically significant RRs for the 5 most important clusters (Table 15.3) show high RRs in the clusters 'acute somatic complaints', 'injuries' and 'infections', while 'chronic disease' and 'psychosocial problems' show lower, though still impressive RRs. A large number of complaints were connected with occupational group. There are signs of physical occupational risks especially among slaughtermen,

butchers and other workers in the meat processing industry, bakers, chocolate makers and confectioners, welders, burners, cutters and sheet metal workers, road and railway workers, distillers and evaporators and printers. Signs of mental health occupational risks occur above all among workers in sheltered workshops for the handicapped, primary and secondary school teachers, other service occupations, decorators and laboratory technicians.

As far as the main acute somatic complaints, injuries and infections are concerned, risk differences were greatest in craftsmen, industrial and transport workers and allied occupations (Table 15.4). The risk differences for the two most frequent chronic diseases (hypertension and irritable bowel syndrome) and psychosocial problems were similar in all occupational groups. In general manual workers were more likely to consult than 'white collar' workers, except for being overworked or hypertension.

The size of the occupational groups mentioned in this study ranges between 193 in other service occupations to 3359 secondary school teachers; the majority of the occupational groups mentioned include more than 500 persons.

## Discussion

Work-related health problems are important for planning health care and for defining socio-economic policy. It is not easy to specify work-related factors which promote good health or cause ill health, not least because factors which have nothing to do with work play such an important part.<sup>16-18</sup> When interpreting data, important factors such as age, sex and education must always be taken into account. Besides it is not easy to translate important concepts such as work, quality of work, work-related disorders and occupational disease into operational terms. Sources of information are often incomplete or biased because of the link to the specific purposes for which they were obtained (such as sickness absence and disability). At the same time, a closer exploration of the concept of disease is necessary, with more awareness of societal aspects.<sup>19</sup>

In the present study, the relationship between health and work was examined using data from general practice. An important feature of general practice concerns the psychological and social aspects of disease which influence both diagnosis and treatment.

The strength of the National Survey is that it is representative at national level and links socio-demographic data of the population with sickness data from general practice. Possible weaknesses of the study relate to the limited observation period (3 months in each practice) and to the well recognized limitations of diagnosis in general practice though diagnostic criteria were made available. Diagnostic coding was performed centrally and quality control carried out.<sup>20</sup> The

data from the practices are largely consistent with the statistics from the Social Insurance Council and several studies as far as sickness absence and incapacity for work are concerned.<sup>7,18,21-26</sup>

Even after correction for socio-demographic characteristics examined, persons receiving disability benefits presented a large number of physical, mental and social problems compared with those in work or unemployed. Their high score for 'side-effects of care' is a logical consequence. Their illnesses place them in a high-risk group for preventive care such as vaccination against influenza.

It is possible that the logistic regression has resulted in an overcorrection, because poorer working conditions may be one of the reasons why, for example, those compulsorily insured under the state system present more complaints to general practitioners than those who are privately insured. Further analyses will be required, preferably using longitudinal data, to unravel the part work plays.

There are occupation related variations in the extent to which health problems are presented and the data from this study largely conform to other studies.<sup>6,7</sup> Pressures from working conditions, environment, physical problems and stress all bear on health care utilization.<sup>27-28</sup>

The risk industries which Willems<sup>7</sup> listed also emerged in these analyses and we could add education and several other service industries.

To what extent the quality-of-work dimensions that have been distinguished are relevant or operate in a causal way is not always clear. Injuries in some occupational groups are largely related to working conditions, but problems presented by teachers more loosely associated. Results from this study are particularly valuable because the general practitioners who recorded the data were not concerned with research into the relationship between work or occupation and health. The study does not necessarily identify the most unhealthy occupations but it is important to realize that many everyday complaints may ultimately turn out to be the beginning of more lasting health problems.

It is the general practitioner's task, besides providing treatment, to take preventive action, for example by giving information to both patients and sometimes even to their employers. General practitioners can play an essential part in bringing problems to the attention of the stakeholders, both in terms of the information available in their practice and in tackling work-related health problems. Close cooperation with occupational medical services is a logical step. Only from the efforts of all involved can a proper balance be maintained between work and health and, ultimately, the social insurance system.

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## HOUSE CALLS FOR RESPIRATORY TRACT INFECTIONS: FAMILY MEDICINE PURE AND SIMPLE?

### Abstract

House calls still seem to be an important element in the work of general practitioners in the Netherlands. A secondary analysis of the data of the Netherlands Institute of Primary Health Care (NIVEL) Dutch National Survey of General Practice reveals that 15% of the contacts relating to cases of respiratory tract infections are house calls. General practitioners appear to consider carefully whether or not to make house calls. House call figures differ considerably with respect to diagnosis, reasons for encounter and age. Relatively high percentages of house calls occur in cases of lower respiratory tract infections, fever as reason for encounter, for old people and young children. The number of house calls is hardly associated with region, level of urbanization and distance from a hospital. Further research is necessary to establish guidelines for the decision whether or not to make a house call.

### Introduction

In most Western countries, the number of house calls general practitioners make, has fallen since the 1960s.<sup>1-6</sup> In the Netherlands, the number of house calls made per day in a typical practice dropped from about 15 in 1965 to four in 1987-1988.<sup>1,2</sup> In the North of England, the number of house calls made on patients aged < 65 years with respiratory tract infections fell particularly strongly.<sup>3-6</sup> Reasons for reducing the number of house calls include the marked increase in the number of automobiles, consultations by appointment, better diagnostic and treatment possibilities in general practice and avoiding unnecessary loss of time.<sup>4,7,8</sup> It seems that telephone consultation usually suffices for out-of-surgery calls.<sup>9</sup> In the USA and Canada, the numbers of house calls made, have fallen even more dramatically.<sup>10-13</sup>

Recently, increased attention has been paid to the importance of house calls, even in such countries as USA and Canada.<sup>14</sup> A house call can provide a general practitioner with an insight into life style, circumstances and the sickness behaviour of the patients and patient's family, important factors affecting the occurrence of illness and whether or not they are presented to the general practitioner.<sup>4,5,8,15,16</sup> Since the association between the environment and family

factors with respiratory tract infections and their presentation to the general practitioner is so close, it is precisely for these disorders that an understanding of life style and circumstances is so important.<sup>17,18</sup> The question that arises is the extent to which the importance of house calls justifies the time invested in them. They are certainly not worthwhile for common disorders of a generally harmless nature.

The objective of this study is to establish the characteristics of patients and practices associated with the making of house calls for respiratory tract infections. The research questions were:

- What is the relative frequency of house calls for respiratory tract infections associated with type of contact?
- Is there a relationship between the reasons for encounter for the first contact of a new episode and the percentage of house calls made for respiratory tract infections?
- Are the differences in the percentages of house calls made for respiratory tract infections related to characteristics associated with patient or practice characteristics?

## **Methods**

The data for this investigation were drawn from the Dutch National Survey of Morbidity and Interventions in General Practice.<sup>19</sup> A randomly selected stratified group of 161 general practitioners (and their practice assistants) who together cared for 335,000 patients participated in this study. In 1987–1988, general practitioners stratified into four groups of approximately 40 per group registered successively all patient contacts for a period of three months. From this episode oriented database, the contacts with the most important diagnostic categories listed below (excluding symptom diagnoses) were selected.

H71	acute otitis media
R74	acute upper respiratory tract infection
R75	sinusitis
R72/R76	acute tonsillitis and streptococcus infection
R77	acute laryngitis
R78	acute bronchi(ol)itis
R80	influenza
R84	pneumonia

Reasons for encounter were categorized as fever, cough, throat complaints, common cold, shortness of breath, headache, earache, general malaise and other

on the grounds of interpretation; frequency of occurrence then played a secondary role. The dependent variable was the house call classified as emergency, by appointment, or spontaneous. The independent variables were certain patient and practice characteristics. The patient characteristics were age, sex and comorbidity. Comorbidity was operationalized into contiguous (that is to say, another problem presented in the same contact) and subordinate (that is to say, an underlying problem presented in the same contact). Practice characteristics comprised the stratification variables of region, level of urbanization, and distance from practice address to the hospital.

Only contacts with a general practitioner were studied. These were divided into first contact, repeat contact, and contact on account of recidivism; analysis was confined to first contacts and the diagnoses made in them. The second and third research questions were addressed using data from the first contact only. First contacts occur most frequently, and it is with these that the decision of whether or not to make a house call is most crucial. Bivariate analysis was carried out by means of SPSS-X.

## Results

### *Frequency*

Fifteen per cent of all contacts associated with respiratory tract infections consisted of a house call (table 16.1); this was the case both for first contacts and for recurrences. House calls for repeat contacts were more frequent; more than 20% of these was a house call. The percentage of house calls was highest for pneumonia, followed by influenza, acute tonsillitis and acute bronchitis. For the repeat contacts, the percentage of house calls was highest for influenza and pneumonia; about half the contacts for these diagnoses were house calls. The percentage of house calls for acute upper respiratory tract infections, acute laryngitis, influenza and pneumonia was higher than for first contacts and – with the exception of pneumonia – also for recurrences.

Of the first contact house calls made, 6% of those for respiratory tract infections were emergency calls, while a quarter of those for acute laryngitis were emergency calls (not mentioned in table).

In total, half of all house calls for respiratory tract infections were made for the diagnoses acute respiratory tract infections and acute bronchitis. For a third of all house calls for respiratory tract infections the first contact was concerned with acute upper respiratory tract infections, while another third were concerned with influenza and acute bronchitis. Three-quarters of the repeat calls were made for acute bronchitis, pneumonia and acute respiratory tract infections (not mentioned in table).

Table 16.1 Percentage of house calls in episodes through respiratory tract infections, classified according to the nature of the contact. Percentages in round figures

	n	First contacts	Repeat contacts	Recurrences	Total
Acute otitis media	3387	13	11	9	12
Acute tonsillitis/streptococcus infection	2487	22	21	20	22
Acute upper respiratory tract infection	11874	11	20	10	13
Sinusitis	4444	7	7	3	7
Acute laryngitis	1418	8	16	9	12
Total upper respir. tract	23590	12	14	9	12
Influenza	1613	33	47	30	35
Acute bronchi(oli)tis	6883	20	25	23	22
Pneumonia	1600	44	51	53	49
Total	33686	15	22	14	15

#### *Reasons for encounter*

A house call was made for almost two-thirds of the contacts in which fever was registered as the reason for encounter (table 16.2). For shortness of breath, this was the case for one in three contacts, while for common cold and earache a house call was seldom made in more than 10% of cases. For all diagnoses, the percentage of house calls for fever was three to six times higher than the percentage for all reasons for encounter per diagnosis. For pneumonia with fever as reason for encounter, a house call was made in more than three quarters of the cases. For shortness of breath, the percentage of house calls was made in more than three quarters of the cases. For shortness of breath, the percentage of house calls was markedly higher than the average when occurring in acute laryngitis and acute respiratory tract infections, and to a lesser extent with acute bronchitis and pneumonia. For general malaise, the numbers of house calls made were only above average for upper respiratory tract infections, sinusitis and acute laryngitis.

#### *Patients and practice characteristics*

The percentage of house calls was associated with patients' age for all diagnoses (table 16.3). House calls were made mostly for young children and the elderly.

Table 16.2 Percentage of house calls for first consultations, classified according to reason for encounter. Percentages in round figures

	Acute otitis otitis media (n=2067)	Acute tonsillitis/ streptococcus infection (n=1893)	Acute upper respiratory tract infection (n=9207)	Sinusitis (n=2605)	Acute laryngitis (n=1096)	Influenza (n=1387)	Acute bronchi(o)litis (n=3118)	Pneumonia (n=578)	Total (n=21951)
Fever	59	61	60	46	48	65	61	78	61
Cough	22	18	9	7	9	25	16	35	13
Throat complaints	27	16	6	-	5	8	7	-	10
Common cold	20	9	8	5	18	12	9	7	8
Shortness of breath	-	25	27	14	45	-	29	60	34
Headache	47	-	10	6	-	31	55	-	11
Earache	8	20	8	11	-	50	-	-	8
General malaise	12	16	21	18	30	33	20	23	23
Other	8	13	10	3	11	25	22	44	13
Total	13	21	11	7	12	19	19	43	15

The percentages in this table are based on the total number of first contacts because of a certain diagnosis (for example AOM), which are initiated with a certain reason for encounter (for example fever). So, of all initial contacts with AOM as diagnosis, for which the reason for encounter was fever, 59% consisted of a house call.

Table 16.3 Percentage of house calls for first consultations, classified according to diagnosis per age group. Percentages in round figures

Diagnosis	n	Age of patient							Total
		0-4	5-14	15-24	25-44	45-64	65-74	75+	
Acute otitis media	2067	19	8	3	3	7	5	38	13
Acute tonsillitis/streptococcus infection	1893	32	26	11	18	18	36	42	21
Acute upper respiratory tract infection	9207	18	10	4	5	7	22	58	11
Sinusitis	2605	12	5	4	5	8	21	36	7
Acute laryngitis	1096	27	15	5	5	5	20	44	12
Acute bronchit(ol)itis	3118	23	12	7	9	14	34	67	19
Influenza	1387	41	38	23	22	27	70	82	33
Pneumonia	578	25	20	37	37	45	65	78	43
Total	21951	4516	3207	3212	6178	3018	1004	816	

The percentages in this table are based on the total number of first contacts in a certain age group (for example 0–4 years) with a certain diagnosis (for example AOM). So, of all initial contacts in the age group 0–4 year with AOM as diagnosis 19% consisted of a house call.

For the very old, two-thirds of first contacts were house calls; for influenza that was more than 80% and for acute bronchitis and pneumonia more than three-quarters. For young children, one-fifth of first contacts were house calls; at two-fifths, the number of house calls for influenza was the highest for this age group.

A more precise analysis using stratification revealed that, for small children (0–4 years), the relatively high percentage of house calls had little to do with the nature of the underlying disorders. For people aged 65 years and more the percentage of house calls increased with age, but for people with an underlying disorder the rise was even stronger. Two factors played a part in this. First, in all age groups, there was a higher percentage of house calls for respiratory tract infections where there was an underlying disorder. Second, the proportion of people aged 65 and over with an underlying disorder was higher than in the other age categories. COPD featured in about half the cases with an underlying disorder; for acute bronchitis and pneumonia the percentages were relatively high (73% and 45%, respectively) while for acute otitis media and influenza they were relatively low (26% and 19%, respectively). The percentage of house calls was hardly related to religion, level of urbanization, and the distance from the practice to the hospital, except for influenza and pneumonia; more house calls were made for these diagnoses in rural areas than in the towns: 36% and 47% compared with 24% and 37%. Further investigation using stratification revealed an association with age; the difference between town and rural areas operated for the younger age categories, but not for those aged 65 years or more.

## Discussion

The most important conclusion from this study is that the percentage of house calls for contacts associated with respiratory tract infections (15%) was practically the same as the average for all contacts (17%), but that there were considerable differences regarding diagnosis, reasons for encounter and age. Almost all patients with pneumonia and fever as reasons for encounter were seen at home. More frequent calls were made for repeat contacts and recurrences. The number of emergency calls was limited, except for acute laryngitis (25%). Considering the seriousness of this disorder this is understandable; for children with acute shortness of breath, laryngitis subglottica was the most frequent rea-



son for asking for emergency help. General practitioners appear to consider carefully whether or not to make house calls.

The number of house calls in the Netherlands is about the same as in Great Britain; in the Netherlands about four house calls per day are made in a typical practice, compared with about five in Great Britain.<sup>2-5,8</sup> Marsh found that it was in particular the house calls for respiratory tract infections which had fallen so dramatically.<sup>3</sup> In the North of England during the period 1969-1980, the number of house calls fell from 9.1 to 5.4 per day (41%). For respiratory tract infections the reduction was more than 50%.<sup>3-5,8</sup> Although in the USA and Canada fewer house calls are made than in the United Kingdom and The Netherlands, the interest in house calls has grown in North America.<sup>8,10-13</sup>

A striking result is that for all diagnoses with the reasons for encounter of fever, a house call was made in almost two-thirds of cases; on the other hand, for shortness of breath the number remained limited to about one-third of first contacts while there was a strong connection with the diagnosis (acute laryngitis and acute upper respiratory tract infections, and to a lesser extent with acute bronchitis and pneumonia). It must be borne in mind that the reasons for encounter are not really comparable with those for a house call; house calls are usually preceded by the general practitioner's, or practice assistant's selection. A patient has to justify a house call. A general practitioner will also tend to register fever as a first reason for encounter on which to base a selection.

The large number of house calls for the reason for encounter 'fever' raises a number of questions: are they medically indicated, are they justified, or is the general practitioner giving way to pressure from patients or their parents? The fact that, with fever, the diagnosis plays no role while for breathlessness it does, indicates that the general practitioner takes patients' unease into account and a clear medical indication may not always be present.

Research shows that parents tend to overestimate the significance and danger of fever, particularly in children.<sup>20-22</sup> There is the concept of a 'fever phobia'. Parents from a higher socio-economic background tend to be more concerned about brain damage caused by fever than are parents from lower socio-economic backgrounds.<sup>21</sup> The important fact is that the views of the general practitioner and the parents do not concur.<sup>22</sup> Patients, or the parents of a child with a high temperature, will tend to stress the seriousness of the symptoms. Recommendations for health education and paying attention to incorrect conceptions of fever have been reported.<sup>23</sup> Since a house call can confirm an incorrect conception of fever, the importance of careful consideration whether or not to make a house call is further emphasized.

For general malaise, more house calls than average were only made for acute

respiratory tract infections, sinusitis and acute laryngitis. General malaise expresses something about a patient's general condition in combination with the underlying disorder and possibly about the seriousness of a respiratory tract infection, particularly in the elderly.

The finding that house calls are made in particular for the elderly is in line with other research. In an English general practice the number of visits decreased for patients younger than 65 years from 147 per 1000 in 1977 to 43 in 1989, against 429 per 1000 to 308 in patients aged 65–74 years and 1188 to 919 per 1000 in patients aged 75 years and older in the same period.<sup>6</sup> Relatively serious disorders such as pneumonia occur much more frequently in the elderly, while they may also have more problems with transport. General practitioners appear to consider carefully whether or not to make house calls. The lack of association between the number of house calls concerning respiratory tract infections and region with level of urbanization is striking. In the towns, the general practitioner only visited patients suffering from influenza or pneumonia frequently when they were elderly.

From this study, it can be concluded that general practitioners balance the advantages and disadvantages carefully when deciding to make house calls since they are only made for certain patient categories. The fact that in the Netherlands general practitioners make house calls for patients with respiratory tract infections is a great good and exemplifies the Dutch expression for a general practitioner: 'home doctor'. Although their importance would hardly be denied, the advantages and disadvantages of house calls require further investigation. There are still no clear guidelines or criteria to help the general practitioner identify the patients for whom house calls would be prudent. More research into the significance and background of house calls is important for the maintenance of this aspect of family medicine. Only in this manner can house calls be sustained at a time when efficiency is of prime importance.

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## IDENTIFICATION OF UNDERPRIVILEGED AREAS: A METHOD FOR ALLOCATING RESOURCES TO GENERAL PRACTITIONERS

### **Abstract**

*Objective:* To develop a method for the identification of underprivileged areas in the Netherlands for extra resource allocation to general practitioners

*Design:* Literature review and analysis of national data

*Setting:* All postal codes in the Netherlands

*Methods:* Definition of requirements of the method, selection of required data and calculation of deprivation scores.

*Results:* The developed method includes an index, based on income and number of people receiving income of benefit schemes, calculated for very strong urbanized areas. Overall 87 four digit postal codes were identified as underprivileged area, in which 875.000 people live. About one in three inhabitants of the four biggest cities is living in such area.

*Conclusion:* For the first time in the history of Dutch health care a national method for the identification of underprivileged areas has been developed. This method has been adopted as a basis for making enhanced payments to general practitioners for patients living in these areas. The developed method is, taking the availability of relevant data into account, the most feasible at this stage, but the method is not yet perfect. This is especially true for medium sized cities. Therefore, further validation and refinement of the method is needed.

### **Introduction**

Social changes and developments have a direct effect on the work of individual general practitioners,<sup>1</sup> and this is especially true for general practitioners working in so-called 'underprivileged areas'.<sup>2-4</sup> Although there is not yet consensus on the definition of underprivileged areas,<sup>5</sup> these areas have a high concentration of socio-economically underprivileged inhabitants who show limited self-reliance, little social cohesion and a great need for care. There is a greater demand for general practitioner care in these areas, the problems presented are more complex and more often have a social component, and language or cultural differences complicate the provision of health care.<sup>1,4,6,7</sup> In addition to the complexity of care, many problems in combination are also difficult to manage. As a consequence, it is difficult to

reach agreement on the care to be provided by the professionals, which has repercussions chiefly on primary care.<sup>1</sup> In this article we use the term 'underprivileged areas' for those areas in which the care structure is complex and in which there is a high demand for care as a result of socio-economic deprivation. The combination of a high demand for care, a high percentage of patients who are insured by the compulsory national health insurance scheme, and the sharp bend in the curve for reimbursement of payments for such patients under former regulations (the lower contribution per patient for practices with 1600 or more patients covered by national health insurance) has led to a higher than average workload and a lower than average income for general practitioners in underprivileged areas.<sup>3</sup> Moreover, general practitioners do not find the prospect of working in underprivileged areas attractive,<sup>2,8</sup> and in some instances the availability and quality of primary health care is endangered.<sup>2,3</sup>

The government has recently made 20 million guilders a year available to maintain the quality of primary health care in underprivileged areas. However, the fair allocation of these funds requires the identification of underprivileged areas, and to date no such method is available in the Netherlands.<sup>9</sup> In the United Kingdom, which has a system of 'deprivation payments' by which general practitioners in underprivileged areas receive extra resources, the Jarman index is used to identify underprivileged areas. This index is based on data from the national census and incorporates information about the unemployment among the workforce and the number of single-parent families.<sup>10,11</sup> All general practitioners in England and Wales receive extra funding for the patients in their practices who live in areas with a high score on the Jarman index.

In this article we describe how we developed a method to identify underprivileged areas in the Netherlands. This method has been accepted by the government as a basis for allocating extra funds to general practitioners who have patients on their lists who live in underprivileged areas.

## **Data and methods**

### *Methodological aspects*

We formulated the following requirements on the basis of information from the literature.<sup>10-20</sup> First, the method should be suitable for the entire country. This implies the national availability of good-quality data for small, homogeneous areas. Second, the method should be simple, it should incorporate as few variables as possible and should not make use of complex weighting. Third, it should have high face validity with respect to the working conditions and the workload of general practitioners in underprivileged areas. Fourth, it should give an accurate representation of the socio-economic deprivation and the complexity of care in these areas.

Fifth, it should be based on factors that are known to influence health and the utilization of health care resources. We estimated that there would be about 700,000 people covered by national health insurance living in underprivileged areas. This is slightly less than 5% of the total population and is equivalent to the number of households below the poverty line.<sup>21</sup> The method had to be available within a half year.

#### *Data*

Neighbourhood data from Statistics Netherlands (CBS) or postcode data meet the first criterion.<sup>5</sup> For these areas, there are numerous data available from different sources on the structure of families and households, incomes, social benefits received, expenditure pattern, ethnic origins, density of public amenities, degree of urbanization, number of people who have moved house, ownership of a car or home, available health facilities and schools.<sup>22</sup> We chose the following variables as good indicators of the socio-economic status of the population and of the complexity of care.<sup>5,23</sup>

- density of addresses. This is the mean number of addresses per square kilometre in a radius of 1 km from a given address in an area.<sup>23</sup> This indicator provides information about the concentration of problems and about the complexity of local care.
- mean disposable income per wage-earner. This represents the mean disposable income of individuals who received an income for 52 weeks in 1989, in units of 1000 guilders.
- percentage of people between 15 and 64 years of age who were receiving benefits. This is the 'non-active' part of the population with a 52-week income. These people were receiving income support, unemployment benefit or disability benefit.

Information about all three aspects is available, per neighbourhood or postcode, from Statistics Netherlands (CBS).<sup>26</sup> For administrative reasons, it is only possible to allocate extra funds for patients with national health insurance on a postcode basis.

#### *Calculation of deprivation index scores*

These scores were calculated making use of the standard (Z) scores for income and percentage of people who were entitled for benefits for the very urbanized areas (address density > 2500 addresses/km<sup>2</sup>). Both socio-economic variables had an about normal distribution and had the same weighting in the deprivation index calculation. The score was weighted for the number of inhabitants living in a given postcode area so that the score reflected the number of underprivileged people and

not the number of postcode areas. Because the address density had a skewed distribution, it could not be used as continuous variable in the analysis.

## Results

### *Address density and deprivation*

The CBS has five categories of address density. The mean income was the lowest and the number of people aged 15 to 64 years who were receiving benefits was the highest in the areas with the highest address density (table 17.1). We restricted further calculations to this category because we expected this category to have the highest concentration of problems and the most complex care.

Table 17.1 Mean disposable income per wage-earner and percentage of people aged 15 to 64 years receiving benefits in each of five categories of address density

	Address density (no. addresses/km <sup>2</sup> )				
	≥2500	1500-2499	1000-1499	500-999	<500
No. inhabitants (× 10 <sup>6</sup> )	2.7	3.2	3.1	3.1	2.9
Mean income (× 1000 guilders/year)	22.4	23.8	24.5	24.6	23.9
People receiving benefits (in %)	30.7	24.4	20.7	18.4	18.2

### *Deprivation scores in the areas with the highest address density*

Assuming that about 80% of the population in underprivileged areas is covered by national health insurance, we expected to identify about 875,000 people in socio-economically underprivileged areas. This represents 32% of the inhabitants living in postcode areas with the worst scores for the deprivation index (this was the 68th percentile of the inhabitant-weighted distribution of postcode areas over the underprivileged areas). To complete the picture, we also made calculations for the 63rd and 73rd percentiles (table 17.2). Comparison of the results showed the effect the method of calculation had on the number of inhabitants identified as living in underprivileged areas and on the possible additional payment per person covered by national health insurance. Comparison of the underprivileged and non-underprivileged areas showed that the mean disposable income in underprivileged areas was about f4000 lower than that in non-underprivileged areas and that the



Table 17.2 Use of different percentiles of the deprivation index for identifying postcode areas in which general practitioners are eligible to receive a supplement per patient covered by national health insurance and comparison of the percentiles and certain characteristics of underprivileged areas

	No. inhabitants (Per 1/1/94) ( $\times 1000$ )	Percentile $P_{0.680}$ ( $>0.680$ )		$P_{0.789}$ ( $>0.789$ )		$P_{0.845}$ ( $>0.845$ )		$P_{0.953}$ ( $>0.953$ )		$P_{1.116}$ ( $>1.116$ )	
		pc	inh ( $\times 1000$ )	pc	inh ( $\times 1000$ )	pc	inh ( $\times 1000$ )	pc	inh ( $\times 1000$ )	pc	inh ( $\times 1000$ )
Large cities*	1994.8	75	805.8	68	741.8	65	701.8	59	638.8	57	611.4
Amsterdam	719.7	24	317.3	23	308.4	22	294.5	20	268.0	18	240.6
Rotterdam	596.5	25	247.1	23	231.8	22	217.1	21	204.9	21	204.9
Den Haag	444.7	17	157.3	14	138.2	14	138.2	14	138.2	14	138.2
Utrecht	233.9	9	68.8	8	63.4	7	52.0	4	27.7	4	27.7
Middle-sized cities*†	1135.5	24	207.8	21	177.2	19	154.5	18	141.2	14	110.5
Small cities*†	325.2	4	20.9	4	20.9	3	17.1	3	17.1	3	17.1
Total	3455.5	103	1019.2	93	939.9	87	873.4	80	797.1	74	739.0
Supplement‡			12.30		13.30		14.30		15.70		16.90
Deprivation indicators		$P_{0.680}$		$P_{0.789}$		$P_{0.845}$		$P_{0.953}$		$P_{1.116}$	
		d	nd	d	nd	d	nd	d	nd	d	nd
Mean disposable income ( $\times 1000$ guilders/year)		20.3	24.1	20.3	24.1	20.2	24.1	20.2	24.1	20.1	24.1
% entitled to benefits		39.7	21.1	40.3	21.2	40.8	21.2	41.5	21.3	42.0	21.4
Mean score§		+1.767	-1.689	+1.857	-1.674	+1.937	-1.662	+2.037	-1.648	+2.115	-1.636

PC= postcode area, inh = number of inhabitants; d = underprivileged area; nd = non-underprivileged area

\* Large cities had more than 200,000 inhabitants; middle-sized cities between 100,000 and 200,000 inhabitants; and small cities fewer than 100,000 inhabitants.

† Only cities or towns in which at least one underprivileged area was identified on the basis of postcode areas.

‡ Supplement (in guilders) per patient with national health insurance coverage. This was calculated on the basis of the fact that 80% of the inhabitants in underprivileged areas were covered by national health insurance. For  $P_{0.680}$  this is  $1,019,200 \times 0.8$ . The calculation is also based on the allocation of two times ten million guilders, a part of which was intended for the general practitioner's income and a part for structural changes.

§ Mean score on the deprivation index.

percentage of people receiving benefits was almost twice as high. About one in three inhabitants in the four largest cities in the Netherlands lived in an underprivileged area. A substantial number of people lived in underprivileged areas in the middle-sized cities such as Groningen, Arnhem, Nijmegen and Tilburg. Fewer people lived in underprivileged areas in cities such as Deventer, Enschede, Leiden, Schiedam and Zwolle.

#### *Comparison of neighbourhoods and postcodes*

Almost the same underprivileged areas were identified when postcode areas or neighbourhood areas were used in the calculation, and this is also true for the four major cities. In only one city, Den Bosch, did the use of neighbourhood areas rather than postcode areas lead to the identification of markedly different underprivileged areas. The procedure was adjusted for this city, so that postcode areas encompassing the underprivileged neighbourhoods were used in the calculations.

### **Discussion**

In this article we describe a method for identifying underprivileged areas for the allocation of extra funds to general practitioners. Eighty-seven postcode areas were identified as underprivileged areas. Some 875,000 inhabitants lived in these areas, most of which were concentrated in the four major cities (Amsterdam Den Haag, Rotterdam, Utrecht), and a smaller proportion in the middle-sized cities. Although our method largely met the criteria we set, the following points should be made. Was the choice of variables used correct? We tried to find indicators that reflected the term 'underprivileged area'. The mean disposable income and the number of inhabitants receiving benefits are indicators of socio-economic status and are associated with health status and the use of general practitioner services.<sup>19,27,28</sup> The mean disposable income does not indicate whether this income is derived from full-time or part-time employment.<sup>25</sup> We assumed that the number of people in part-time employment would be evenly distributed over all the postcode areas. A high address density is indicative of a concentration of socio-economic deprivation and associated problems as well as a complex care structure in that area.<sup>1-6,29</sup> It is this combination of factors that increases the workload of general practitioners in these areas. However, because the address density is lower if there is an industrial estate or a park in the postcode area, some of these areas were erroneously not considered as underprivileged areas. This plays a role especially in middle-sized cities. Much of the data that we did not use was available for certain town councils only, or was not of adequate quality, or did not primarily concern socio-economic deprivation. A second question concerns the choice of using postcode areas or neighbourhood areas. It is often assumed that neighbourhood areas show greater socio-economic

homogeneity than do postcode areas. However, the results were similar irrespective of whether we used neighbourhood areas or postcode areas as selection criteria. A third question concerns the extent to which data from 1989 can be extrapolated to 1996 and the effect of chance variation during this period. The financial data were based on fiscal data for 1989. Although the data may well be out-dated with regard to the dynamics of an area, new data, those of 1994, are not expected to become available before 1998. However, research into underprivileged areas in the United Kingdom and the Netherlands has shown the ranking of underprivileged areas to be stable over a 10-year period.<sup>30-33</sup>

Our results are in agreement with those of regional research.<sup>31-35</sup> We could identify nearly all the under-privileged areas in the four major cities, but were less successful with the middle-sized cities. Besides the above-mentioned factors, this could also be caused by a scale effect — it is more likely that large groups of people live in underprivileged areas in large cities.

This is the first time that general practitioners in underprivileged areas will receive extra financial resources and that the term 'underprivileged' has been operationalized for this purpose. The problems mentioned earlier indicate that it is important to re-evaluate our method after a certain time. The method should be validated further with indicators of health and utilization of health resources, and we need to determine whether the workload of general practitioners in these areas is eased by the additional financial support. Even in the United Kingdom there is debate about the validity of the method, although it is recognised that a method is needed.<sup>18</sup> One of the criticisms of the Jarman Index is that it is too focused on urban areas, and especially inner London.<sup>11-14</sup>

The budget is currently allocated on the basis of the number of patients from underprivileged areas that a general practitioner has on his/her list: one half is given as supplement to the national health insurance contribution and the other half is put into local funds to finance new initiatives in or changes to the provision of care. For example, general practitioners and other interested parties can develop plans to improve health care in a certain area. These plans then have to be submitted for approval to the local General Practitioners' Association and the regional insurance fund, who manage the funds. If these plans are also implemented successfully, then general practitioners and primary care in underprivileged areas will very soon receive direct financial and other support.

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**PART FOUR**  
**GENERAL DISCUSSION**





## IS GENERAL PRACTICE BASED HEALTH INFORMATION HELPFUL FOR SOLVING EPIDEMIOLOGICAL AND HEALTH POLICY QUESTIONS?

### 18.1 Summary of the main findings

While mortality statistics in the recent past were the most important source of information on population health, the increasing life expectancy of the population requires information that better reflects the health status as such. This implies that besides mortality statistics, information on morbidity, disability and perceived health has to be collected.

In more and more health care systems a pivotal role for general practice is recognized with regard to health information (De Maeseneer et al., 1995; Ruwaard et al., 1997). The advantage of information from general practice over other sources of information is that a good overview of the epidemiology of diseases can be provided, including insight into the complexity of relationships between diseases.

Routinely collected health information from general practice, based on a first professional assessment of a health problem of an individual patient, is, however, not directly useful for addressing epidemiological and health policy questions, in particular on socio-economic health differences. For two reasons. First, the available demographic information from Dutch general practice, the age-sex register and the type of insurance of the practice population, are not sufficient for the purpose. The inclusion of information on level of education and occupational status would open up huge potential for research and policy making. Second-ly, a systematic data collection is required, but not available.

If good information was available and linked to population-based data such as from health examination surveys, health interview surveys or health diaries, better insight could be gained into other aspects such as help-seeking behaviour or accessibility of and satisfaction with the care provided. Linkage of information from general practice to information from hospital and nursing home care, or pharmaceutical and rehabilitative care could provide further insight into illness-related quality and cost of care.

This assortment of ideas was incorporated into the survey design of the Dutch National Survey of General Practice. For the first time in such a survey a

random sample of general practitioners was selected, as re-presentativeness was considered essential. For practical reasons, colleagues of the general practitioners in the sample, who worked in the same practice, were requested to participate. An interesting side effect of this procedure was that now for the first time it became possible to compare male and female doctors in the same practice. What results were obtained in terms of the four themes described in chapter I?

### **Theme I    The validity of general practice based information**

Collecting standardized health information in general practice requires good measuring instruments, good instruction and good quality control of data. A major problem is the difficulty that many presented health problems cannot be put in clear cut diagnoses fitting a nosological system. Diagnoses made during a first contact will be kept rather tentative and later may or quite frequently may not crystallize out in recognizable diseases.

For the measurement of the validity of morbidity information from general practice several approaches can be distinguished. First of all the correctness of a clinical diagnosis made by the general practitioner during consultation can be tested. The clinical judgement can be validated against more laboratory investigations, X-rays or functional tests. Another approach, whereby the morbidity information from general practice is based on controlled diagnostic criteria and checked by means of population based studies such as health examination surveys or health interview surveys. Whatever approach for measurement is taken the purpose of study largely determines the validity of morbidity information from general practice .

Possible causes of bias in national comparisons about differences in morbidity rates were investigated in two ways. Chapter 8 reports a study into concurrent validity on the prevalence of chronic diseases as measured in health interview surveys. The wording used in almost identical checklists of chronic conditions was the most important explanatory factor for the differences. Further comparison with medical records in general practice revealed that serious chronic conditions, such as asthma/COPD, provide higher levels of agreement than chronic diseases based on patients' reports rather than diagnostic test, such as migraine. The remarkable discrepancy between general practitioner and patient judgements on cardiovascular diseases is caused by the fact that arrhythmias were not reported by patients but were considered by doctors to be heart problems. Chapter 9 compares three Dutch morbidity registration systems, specifically paying attention to differences in registration and classification.

Major explanatory factors for differences in reported incidences and prevalences are the location of the recording practices, participation of the practice assistant, training in the use of diagnostic criteria combined with recording over a longer period.

## **Theme II A National Survey of General Practice and its support to the policy of strengthening primary care**

Chapter 5 explains the reasons leading up to the development of a National Survey of General Practice in the Netherlands. A variety of unrelated registration systems provided good but not comprehensive insight into population health, into the presentation of health problems in and into the quality of the actions by the health services. Within the health care system general practice holds a key position. However, good and relevant information on general practice was almost wholly lacking at national level.

The Survey was a three-months enterprise, designed primarily as a health services research, in which demand and supply in general practice were to be investigated. As the general practitioner functions as a gatekeeper to other health care provisions, this type of information is especially useful to policy-makers. With health policy in the Netherlands in the 1980s shifting towards needs, social epidemiological research questions were incorporated.

Chapter 6 describes the study design and approaches to data collection. To address the research questions appropriately, 12 subprojects were designed. Episode-oriented recording of information on content and nature of consultations in general practice, and linkage with socio-demographic information from patients were key in collecting and processing the data. Besides, data were collected via a health interview survey and health diary, several questionnaires and prolonged recording of consultations in two subprojects. On the whole, the cooperation of patients and doctors was excellent and the response satisfactory.

The main findings of the Survey are presented in chapter 10. It starts with a complete overview of all publications and dissemination of the results. Chapter 10.1 presents an overview of all publications related to the management of almost 300 common diseases in general practice. Specific attention has been paid to the management of childhood diseases, diseases of the digestive and musculoskeletal systems, neurological disorders, respiratory tract infections, skin diseases and psychosocial problems. Comorbidity, the presence of more than one clinical entity in a single patient, was another important theme.

Chapter 10.2 addresses general practice care provided to target groups such as children, women, occupational groups, migrants and the elderly. Chapter 10.3

deals with the relationships between help-seeking behaviour, the quality of care provided, and organisational aspects of general practice. Chapter 10.4 provides information on policy related questions such as illness in everyday life and the related topic of healthy life expectancy, on prevention and obstetrics and on morbidity in general practice; further attention was paid to production figures on diagnostic and therapeutic procedures, the primary-secondary care interface and workload in general practice. Chapter 11 is an attempt to assess the impact of the Survey.

The Survey provided support for a policy of strengthening primary care by offering:

- more insight into the complexity of health problems, especially as an increasing number of patients suffer from more than one problem, and in particular how these are presented by patients and judged by doctors in terms of comorbidity;
- a description of the role and position of general practice in different settings in the Netherlands, including the urban versus rural setting, the health centres/group practices versus other practice types, the practices providing women's health care versus practices providing regular health care and the differing role and pivotal position of the practice assistant in the various practices;
- extensive information used in the development by the Dutch College of General Practitioners of many standards of care; the Standards of Care Programme is the backbone of quality assurance in general practice in the Netherlands;
- extensive information to fuel the discussion on workload in relation to quality of care and payment system;
- contributions to national information and policy reports such as the Scenario Reports on Primary and Home Care and on Chronic Diseases, the Committee of Modernizing Curative Care (Biesheuvel Committee), the Public Health Status Forecasts, the Health Budget Report (Jaar Overzicht Zorg), the Evaluation of Cost Sharing Initiatives and the Bijlmer Airplane Crash Inquiry;
- a contribution to the development of a new, national, computerized general practice based information system;
- encouragement to the development of programmatic prevention in general practice;
- a further understanding of modern health problems, such as like chronic fatigue syndrome and chronic pain syndrome;
- a more complete picture of diagnosis-related prescription patterns on a

- national scale, confirming the cautious attitude of Dutch general practitioners;
- support for the development of general practice-based information systems in the European Union (e.g. the Basq province, Catalonia, Denmark, Flanders) and in countries of Central & Eastern Europe (e.g. Hungary, Romania, Slovak Republic, Armenia, Belorussia, Russian Federation, Ukraine);
- specific contributions to European Union (AIM/Biomed) and World Health Organization (CINDI) programmes.

### **Theme III Socio-economic health differences and general practice**

The use of general practice based information for questions related to socio-economic health difference is of recent origin. As it is still unclear which role general practice can play in this field, the studies reported in chapters 12 – 15 have a descriptive character.

The study in chapter 12 confirms the pattern that consultation rates rise the lower the social class. Further analysis revealed that, although people in lower social class consult the general practitioner more frequently and present more health problems per consultation, the average duration of the consultation is shorter than those for people in higher social class. Those consultations are moreover handled relatively more frequently by the practice assistant.

The uptake of screening programmes through general practice by social class, described in chapter 13, revealed an interesting picture. In general, the uptake does not reflect social class differences. Screening for hypertension by case finding and screening for breast cancer by breast examination both occur for an equal extent in all social classes, but screening for cervix cancer – at the time the only established mass screening programme in general practice – was found to be performed more frequently among women from a higher social class.

There is a clear pattern, as described in chapter 14, in social differences in general practice registered morbidity. General practitioners recorded significantly more disease episodes in patients aged 25–64 with a low level of education, whereas the situation is less straightforward in patients aged 65 and over. Assessment of the management of the four most common reasons for encounter revealed the following pattern. Physical examinations were performed equally frequent in all educational categories, diagnostic tests more frequently among the highly educated, prescriptions were provided more frequently to the poorly educated, while the chance of counselling and/or patient education or referral varied per diagnosis among the socio-economic groups.

In another study, presented in chapter 15, the registered morbidity of people in

paid employment, unemployed people and people receiving disability benefit was compared. People in paid employment suffer slightly more from injuries, the unemployed from fear of disease, while people receiving disability benefit have –understandably– more chronic diseases. Manual and industrial workers run the highest risk of work–related diseases in the form of acute somatic complaints, injuries and infections.

#### **Theme IV The interaction between the general practitioner and the local community**

The interaction between the general practitioner and the local community is often considered a great advantage with respect to the role and position of a general practitioner in signalling and anticipating on socio–economic health differences. House calls are an extremely useful instrument in the social monitoring of the local community, especially for young children and elderly people. While the extra investment in terms of time and energy does not yield immediate benefits, it will pay off in the long term. With house calls constituting over 15% of all physician contacts, they were an important element in the work of general practitioners in the Netherlands. When examined in connection with respiratory tract infections – as carried out in chapter 16– the number of house calls, however, demonstrated hardly any relation to region, level of urbanization or distance from the practice to a hospital. This is in contrast with findings which suggest a strong relationship between house calls and region, level of urbanization or distance of the practice to a hospital.

Another feature of the interaction between general practice and the local community is discussed in chapter 17. The location of the practice does not only determine the composition of the practice population which is served, but also workload and income. General practitioners in deprived urban areas were believed to have a heavier workload and lower income than general practitioners elsewhere. Compensation by means of supplement payments had been proposed. A method to identify deprived areas in the Netherlands for the allocation of extra resources to general practitioners was requested. A method based on address density, income, and percentage recipients of any benefit scheme answered these requirements and was later adopted as a basis for making additional payments to general practitioners with practices in these areas.

## **18.2 Conclusions and recommendations**

### **Theme I The validity of general practice based information**

The validity of general practice based information should be considered in a special perspective. Time plays an important role in diagnosing a disease in general practice. Diagnoses crystallize out and may change over time, but are usually seen in the same context. The opportunity afforded in general practice for judging a patient's health problems is therefore unique.

The validity of general practice diagnoses varies considerably. Well-circumscribed, well-detectable clinical entities, made by the general practitioner, such as acute and most serious chronic diseases, have an satisfactory level of validity. Diseases with a highly subjective 'illness nature', with a wide range of complaints with complex histories, imprecise diagnostic criteria and unpredictable need for diagnosis and care are more problematic in terms of validity.

The validity of routine morbidity data from general practice can be increased by uniform definitions, by stricter control on the application of clear-cut practical diagnostic criteria and frequent checks.

### **Theme II The Dutch National Survey of General Practice and its support to the policy of strengthening primary care**

The Dutch National Survey of General Practice in the Netherlands more than lived up to expectation. The aim to address both epidemiological and health policy questions has been achieved. The participating general practitioners were provided with a clear picture of their work as was the intention. The linking of the different subsets, such as the morbidity recording, the prescription database, the census and the health interview survey in combination with a health diary, provided an unique research potential.

Comprehensive data collection in general practice, as occurred during the National Survey, was time consuming, labour intensive and sometimes controversial. Although much time was spent on the earliest design phase and logistic planning issues, major problems were also encountered because the software needed for processing the data on the prescribed medicines was faulty. Another problem was that socio-demographic data were less easy to collect than anticipated. On the other hand, patients of general practitioners, in particular groups like the elderly and chronically ill, proved substantially more inclined to respond to a health interview survey than respondents recruited in open population.

An better overall picture of the actual performance of general practice has been

obtained. The paradigms of personal, integral, continuous care were shown to be well implemented in most participating practices. The choices of most patients in seeking care (e.g. self/mutual care versus professional care; home or hospital confinement) are in most instances rational. Access to curative services and referral patterns to other providers were assessed as satisfactory, but access to preventive services was still problematic.

The quality of care, as measured through patient satisfaction, level of medical technical skills when compared with later published NHG-standards of care, and doctor task conception looks fine for the whole group of participating doctors. Infrastructure and management of the practice, including the role and position of the practice assistant and the practice computer requires the permanent attention of the profession. The survey provided for the first time information about the real medical consumption in general practice of privately insured patients, which influenced the macro-budget for this group, after results on this topic were published. The interfaces between primary and secondary care and between public health and primary care have not yet been fully exploited by the general practitioners and their professional organizations.

In epidemiological terms, general practice offers an useful overview of diseases with the opportunity to study the natural history and/or aetiology of symptoms or disease. New insights in the complexity of health problems, on comorbidity and on how general practitioners unravel underlying psychological and social causes have shown the added value of general practice for the Dutch health care system. Specific target groups have been addressed well. Differences in general practice care for women and men, residents and migrants and other social groups were present but not striking. There is no major general practitioner care deficit for any of the groups.

The best way to organize an enterprise as challenging as a National Survey is to develop a central plan based on subprojects. While general practice-based information has proven to be useful for epidemiological and health policy documents, a higher quality of information is requested, especially as for some diagnoses large variations among the general practice morbidity registration systems could not be explained. This higher quality can be achieved by using computerized national permanent practice based registries, including well-defined datasets. Coding and episode construction should be done at the practice but requires strict supervision and checks on the registering general practitioner. Permanent feedback with participants is a prerequisite for success. The creation of computerized age-sex registers in all practices is obligatory. Practice assistants should be given time to keep these registers up to date and of high quality.



A Second National Survey could thus be less of an inventory and more of an in-depth investigation of a number of topics. Data processing requires powerful mainframes/PC networks and sophisticated database management systems. The revision and clearing of data files should be a permanent activity.

In terms of national health policy the gatekeeper function of the general practitioner could be further strengthened, especially in the field of ambulant mental health care. Our study on inner city practices clearly demonstrated the consequences of an undermined gatekeeper function: patients shopping around in a totally fragmented and highly complex health care system. In these circumstances there is little overview of the course of life and continuity of care in order to perform appropriate disease management.

The Standard of Care Programme of the Dutch College of General Practitioners should tackle comorbidity, as it is an important problem in daily practice. In addition, more research effort should be put into evaluation of the routine actions by the practice assistants, as too much the focus has been pinned on the face to face consultation between the doctor and the patient.

### **Theme III Socio-economic health differences and general practice**

Different social classes not only make quantitatively but also qualitatively different use of general practice care. In analyses based on simple rates of consultation overall access appears to be good. In-depth analysis, however, revealed an intriguing pattern. Patients from the lower social classes tended to have relatively fewer and shorter consultations with the general practitioner, and to have more contact with the practice assistants than did patients belonging to a higher social class. The morbidity pattern indicates a cumulation of health problems in patient groups with low level of education, who are exposed to high occupational risks and who have a greater chance of receiving a disability benefit. The management of diseases in general practice is handled by a higher prescription rate for lower social class patients and more diagnostic tests, patient education/counselling and other preventive services for the higher social classes.

It is important that general practitioners should inform themselves of the existence of social problems in the practice population and in particular be able to identify risk groups. A general practitioner is one of the few persons who can monitor the health status of individuals over time. For instance, the development of a paver's simple low back pain into disabling spondylarthrosis, ending in a disability benefit scheme can be monitored in general practice. A pro-active role

of the family doctor in such circumstances can prevent a lot of misery.

Although general practitioners are well-trained, more time and effort should be spent on the social dimension of their work. First, and most important, is their essential signalling function ('social sentinel'), which implies that general practitioners should routinely collect and analyse information about the level of education and occupational status of the patient. Secondly, general practitioners should develop and be trained in specific skills and approaches to tackle social problems from the practice population and to address issues related to unequal care in the practice.

#### **Theme IV General practice and the local community**

House calls are an important tool for getting to know the patient's home environment and the community. During house calls, information on traffic infrastructure, housing, other living conditions and family and community life become available. This knowledge can be applied to ameliorate the compliance of interventions. Further research in this area should elaborate on the added value of a house call. At no cost should economics prevail over the benefit of house calls.

After much debate in the profession, it was decided that financial compensation for practices with many patients from deprived areas should receive top priority. Developing an appropriate resource allocation method was not easy, because of both limitations in available data and of time constraints, but the first attempt worked out quite well. A recent study indicates that the former unfair situation had been largely resolved. A new spirit is visible among general practitioners in the local communities concerned. The validity of the method has been tested, and minor changes have been proposed which favour the general practitioners in middle sized cities (Verheij, 1999).

The availability of enough family doctors in deprived areas is another new hot item, which is in part currently solved by doctors from other countries. These ad hoc solutions illustrate the need for a local health plan in each municipality and better collaboration between the different tiers of health care (Tarimo, 1991).

Altogether, plenty of work remains to be done in this field (Haq et al., 1995) First, a health policy directed at the position of general practitioners in deprived areas should be further developed. In the overall framework, collaboration between local public health and primary care authorities at area level must be strongly advocated. (Nutting, 1987; Abramson, 1988; Ashton, 1990; White, 1992; Hannay, 1993; Bhopal, 1995; Graffy et al., 1995; Starfield, 1996; De

Maeseneer et al., 1998). Secondly, house calls should be stimulated, especially in deprived communities. Thirdly, research, in particular a Second Dutch National Survey, should be undertaken to analyse the situation of and provide support to the practices with many deprived patients and to policymakers (Reijneveld et al., 1997).

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## SUMMARY

### Introduction

This thesis deals with the value of information from general practice, and in particular the role this can play in reducing socio-economic health differences. This study is the final piece of a large-scale research project called the Dutch National Survey on Morbidity and Interventions in General Practice, for which data collection was carried out by the Netherlands Institute of Primary Health Care between 1 April 1987 and 31 March 1988. The aim of the project was:

'to gain at national scale insight into the presentation of complaints and health problems in general practice, in the actions of the general practitioners, related to these problems and in factors that influence the presentation of health problems, as well as the diverse reaction of general practitioners to presented health problems'.

To be able to assess the value of information from general practice two topics will first be addressed, namely 'information from general practice as research theme' and 'the importance of information from general practice'. Chapters 1-4 discuss the objective of our research, the state of the art on socio-economic health differences in the Netherlands, the development of general practice over time and the possible role of general practice as provider of health information.

#### *Information from general practice as research theme*

In some countries, among which the Netherlands, general practice has a pivotal role in the health care system and related health information system. The majority of health problems of patients seeking professional aid, are exclusively dealt with by the general practitioner. In addition, the general practitioner acts as a 'gatekeeper' for patients who are referred to other health facilities in primary and secondary care.

General practice in the Netherlands is well-organized and well-equipped to provide policy relevant health information. There are fixed lists of patients, and almost all practices now have a computer. An age-sex register may be created, including information on the type of health insurance of a patient. Most general practitioners keep a medical record, in line with the NHG standard medical record. However, the available information is not directly suitable for research. In particular, attention should be paid to the operationalization of specific concepts and to standardization of data collection. The possibility of linking medical

information to socio-demographic information obtained on the practice population opens the way for epidemiological research. By linking data on diagnostic procedures and treatment inside general practice to that of institutions such as hospitals, nursing homes means that a better understanding of the entire health care chain can be obtained.

#### *The importance of information from general practice*

For a long time, general practitioners feared to have their work studied. There was a general distrust towards policymakers and financing bodies during the 1980s, which was not wholly without foundation. There was pressure on general practice to prove its value. The limited knowledge available about general practice was fragmented. Information on morbidity and interventions from general practice was collected in a regional setting and detached and was extremely difficult to compare. Policymakers and financing bodies were especially keen on information from general practice on a national scale in view of their health policy which was aimed at strengthening primary care.

#### *Research question*

The purpose of this thesis is to show how general practice can be a source of information for epidemiological and health policy questions, especially those relating to socio-economic health differences.

Four specific themes have been explored. First, the validity of information from general practice, second the benefit of a large-scale data collection for a health policy aimed at strengthening primary care, third a study into the possibilities of research in the field of socio-economic health differences and general practice, and finally, the importance of information on the local community served by the practice. The contribution which general practice-based information can make, is discussed for each theme.

### **The validity of information**

Morbidity and other data from general practice can be used to assess health care needs of the population. Two problems with regard to the validity of information appear. Does general practice-based information reflect information obtained from the population and how good is the information? The validity of general practice-based information should be considered in a special perspective. Many diagnoses, made by the general practitioner, are in the first instance just a working hypothesis. Diagnoses crystallize out and may change over time, but are usually seen in the same context. Time plays an important role. This characteris-

tic of general practice must always be taken to account. In Part II of this thesis the importance of research into the validity of information is illustrated by several examples. In chapter 7, the system of quality control of data in the Dutch National Survey has been explained. Quality control on the recording of data in the practice occurred by coding clerks, whereas each month 10 paper vignettes were submitted to all participating general practitioners, who were then asked to make a diagnosis in each case and classify each according to an ICPC code. Quality control of data-processing included uniformity tests on a weekly basis for coding clerks. Wherever uniformity left something to be desired, further instruction was given. The data set was checked for incompatible combinations of diagnosis-age and diagnosis-sex by a computer program. Finally, all episodes were checked for consistency and correctness.

In chapters 8 and 9 attention is paid to the validity of information on subjective health and on morbidity as recorded in general practice. In chapter 8 the prevalences of somatic chronic diseases, as measured in three health interview surveys, are compared. This comparison indicates that especially the wording of the question i.e. the precise description of a diagnosis on a checklist, leads to differences in prevalence figures. Further comparison with medical records in general practice revealed that serious chronic conditions, such as asthma/COPD, provide higher levels of agreement than chronic diseases such as migraine based on patient's reports rather than diagnostic tests.

In chapter 9, three Dutch morbidity registration systems are compared, among which the Dutch National Survey. Incidence figures for infectious diseases and prevalence figures for cardiovascular diseases, diseases of the musculoskeletal system and metabolic disorders do not show large differences. Remarkable and explicable differences were found for diseases leading to repeat prescriptions such as glaucoma, peptic ulcer and asthma/COPD, for diseases leading to a visit at the first aid in a hospital such as foreign body eye, cut/laceration and for diseases where the registration system had a direct impact such as breast cancer, gastro-intestinal cancer, epilepsy and psoriasis. Remarkable and not directly explicable differences were found for irritable bowel syndrome, rheumatoid arthritis, migraine and depression. The validity varies strongly per diagnosis and, is generally speaking, fine for well-circumscribed diagnoses. The validity can be increased by uniform definitions, by stricter control on the application of clear-cut practical diagnostic criteria and checks.

## **The Dutch National Survey of General Practice and its support to the policy of strengthening primary care**

### *Background, study design and data collection*

In theory there was agreement about the benefit of a large-scale data collection for research and health policy. The question was: does it work in practice? In chapters 5 and 6 background, study design, organization and execution of data collection of the Dutch National Survey has been described. To answer the research and health policy questions, 12 subprojects were designed, which were later followed by another 40 subprojects.

The big dilemma, and, at the same time, challenge, for a researcher who would like to evaluate general practice, is that no strict segregation between biomedical and behavioural models can be made. Many health problems, which are presented to a general practitioner, not only have a physical basis but also a psychological or social component. This implies that general practice research must use concepts from various disciplines. In the National Survey, it required the development of concepts such as reason for encounter, disease episode, comorbidity and psychosocial character of the disease. In addition, the ICPC was selected for classification of morbidity and the ATC for classification of medicines, despite the fact that both were still in a (final) stage of development. About the duration of the registration period, a compromise was made. A three-month registration period of all health problems was combined with longitudinal, connected recording for studies on chronic diseases and psychosocial problems.

Information from the practice population was obtained by a registration of socio-demographic data of all patients and by a health interview survey and connected health diary among a random sample of patients. Information of results from laboratory investigations, X rays/ultrasound and functional tests were collected separately. Information from the general practitioner, the practice assistant and the practice were obtained through questionnaires.

For collecting the data a logistic machinery was set up, in which some hundred persons participated. All participating general practitioners were provided with a complete profile of their own practice, including a comparison with national averages.

### *The findings*

Since the mid eighties the quality of general practice care has received much attention from policymakers, researchers and general practitioners. In this thesis, the question of the access to and quality of care in daily practice has been dealt



with in chapter 10, where the results of the National Survey are described. Analyses with regard to access to general practice care do not indicate major differences among differing patient groups. The organization and execution of out-of-hours services varies strongly, but the assistance is adequate. The role and position of the practice assistance improved remarkably. The level of patient satisfaction with the care provided is generally speaking high. The older the patient the more satisfied, with the chronically ill making the most comments. Quality of general practice care covers not only medico-technical skills, but also communication skills and aspects of practice management. This was the reference framework within which the management of a large number of diseases has been described. General practice care for target groups revealed no major differences in the care provided to children, migrants and elderly, and demonstrated that care for men and women differs, that social networks have a large impact on health care utilization and that work-related disease required more attention. The National Survey was an important source of information during the past decade for the government policy on general practice. This was especially true for health status (including health differences), quality of care, prevention, prescribing of medicines, practice management and workload, women health care and general practice in underprivileged areas. The information is intensely used in essential policy documents such as the Public Health Forecasts, The State of Health Care and Health Budget Report

### **Socio-economic health differences and general practice**

General practice has been credited with an important role as provider of health information about socio-economic health differences. This has made it necessary for general practice to collect extra socio-demographic data, although the question is at what price and what insights become available. Four explorative studies have been carried out, which are described in part III in chapters 12-15. Differing social groups utilize general practice in quantitative and qualitative different ways. On the basis of crude indicators, access to curative care does not show major differences, but this is not guaranteed for preventive care. More specific analyses in chapter 12 indicate that relatively healthy people from higher social classes claim more time from their doctor for both curative and preventive care than unhealthy people from the lower social classes. This difference in the demand made on a physician's time can be partly explained by the higher chance of physical examination, therapeutic counselling and systematic screening for certain conditions in people from higher social classes, whereas the less time-consuming activities such as writing prescriptions occur more frequently in people from lower social classes. Moreover, most prescriptions are provided by

the practice assistant, as is demonstrated in chapter 14.

Another topic concerns occupation and health in general practice. Until recently due to the strict separation of curative and control services the general practitioner had almost no involvement in this area, although it was one in which general practitioners had shown a keen interest. The analyses in chapter 15 indicate that general practitioners are confronted with professional risks, consequences of unemployment and inability to work. In the management of these problems, general practitioners collaborate with occupational health doctors on a very limited scale.

### **The interaction between general practice and neighbourhood, area or village**

On a national scale, only limited information about the interaction between general practice and the direct environment was available. In this interaction, house calls and the special position of general practitioners in underprivileged areas play an important role.

House calls are an excellent tool for the general practitioner to familiarize him/herself with home and family situation of the patient and the life in the neighbourhood, area or village. Ten years ago, at the time of data collection for the National Survey, one out of seven consultations was a house call. As far as respiratory tract infections was concerned, chapter 16 shows that general practitioners appear to be rational in the decision of whether or not to make a house call. Fever and dyspnoea were the most important reasons for a visit. There was no relation with region, level of urbanization and distance from a practice to a hospital. As regards house calls for a chronic disease or a social visit to elderly people age is the most important determinant (the older the patient, the quicker a visit) with a greater likelihood in such cases of a house call in rural areas. House calls are, however, no longer a significant part of the job in many practices.

After years of research and debate, the difficult financial and organizational position of general practitioners in underprivileged areas has been recognized. These general practitioners were offered the prospect of a financial compensation. For the allocation of resources, identification of underprivileged areas was requested. On the basis of postal codes in combination with address density, income and percentage of persons receiving benefits, a method was developed. In total 87 postal codes have been identified, in which 875.000 persons live. One out of three inhabitants of the four large cities lives in such area. The method is accepted by the Minister for the allocation of the financial resources to the general practitioners concerned. The money has been used to supplement the income of these general practitioners and for investments in infrastructure.

## Conclusion

The question posed was whether general practice can be an important source of information for solving epidemiological and health policy questions. Four themes have been explored. The topics cover the validity of information, the value of a large-scale data collection and in two cases policy relevant epidemiological questions. To guarantee the validity of information theoretical knowledge and information about daily practice is required. The National Survey provided the knowledge about daily practice. The access and quality of curative general practice care seemed to be guaranteed, although there may be problems as regards preventive care. At various places social differences in care appear, especially in relation to underprivileged areas. What does this mean for policy and research?

### *Implications for Policy*

Although the data for the present study was collected 10 years ago, the results allow for a debate with regard to the future position of general practitioners in Dutch health care. The important developments are the extension of the NHG standard of care programme and programmatic prevention. Government policy aimed at strengthening the gatekeeper function in particular for mental health care, cost containment for medicines inter alia by prescribing generic products and extension of the practice support through appointment of practice nurses. General practice appears to be an important tool to enhance efficiency and quality in Dutch health care. Maintaining this situation in the future will require: enough well educated doctors, further development of a quality system, mutual collaboration among general practitioners and with other care providers being enforced and the pursuit of income solidarity. Practice management requires permanent attention of the profession.

On the basis of the present study, a number of policy measures can be discussed critically. The quality system with the NHG standard of care programme as a figure-head, has given an undeniable impulse to general practice and linked research, but what has been achieved so far?

The experiences with analyses on data of the National Survey have taught us that it is not easy to give a general judgement about the quality of care. In many cases, there was not enough information, especially with regard to the medical history, the context in which way and in which physical examinations were performed or patient education provided. At the same time the high expectations of policymakers for a better outcome of care were not fully realized. This holds to an even greater extent for programmatic prevention. The success of the influenza vaccination programme notwithstanding this study shows that the only

population-based programme that is run by general practice, leads to socio-economic health differences. The question is whether too much is expected. What about policies towards prescribing generic products or with the gatekeeper function for mental health care? Prudence is mandatory.

The still high number of recipients of disability benefits, the increasing number of singles and immigrants, mean that the general practitioner should pay more attention to the social dimension of health problems and matching care. The general practitioner is well-placed at least to signal the social problems of the population, and where possible to anticipate these. A pro-active role is not too much to expect from the general practitioner. To be able to play such a role the general practitioner should be aware of the educational background and profession of a patient next to only knowing age and sex. For the integration of sick employees the virtually non-existing collaboration between the general practitioner and the occupational health doctor needs to be worked out. General practitioners in underprivileged areas are confronted most frequently with social problems in their practice population, but often can do little. The shortage of practice assistance and other supportive facilities has been at the expense of the house calls. An individual doctor may initiate action at neighbourhood level to tackle social misery, but a good collaboration between municipal health services and general practice is indispensable. National and local governments should stimulate this collaboration.

#### *Implications for Research*

With computers around, the temptation to collect more data is paramount. This may undermine the quality of information. It has been the very reason to formulate subprojects in the National Survey. For the first time, too a random sample of general practitioners participated with success in such a registration. Large-scale, complete and qualitatively good data collection goes hand in hand, but costs much time and energy, and may produce problems.

In the National Survey, the main problems related to the processing of prescription data, in particular the availability of appropriate software. The strictly organized quality control of data and timely feedback to the general practitioners had a good effect on their quality of recording. If general practice is to maintain its position as important provider of health information, investments should be made in disciplined registration and classification, increased efficiency in data processing and deepening the research.

While the trend in research is further specialization, this study illustrates the importance of linking epidemiology, social sciences and general practice, and on some occasions economics. The interweaving of epidemiology and general prac-

tice has provided new insights in the field of socio-economic health differences, which may be beneficial to solving public health issues. The linkage of population-based information, usually the domain of social sciences, and practice-based information provided relations between health and care and making it possible to indicate where and how gains in a population's health could be achieved. The strength of general practice is that physicians are trained to take the patient's subjective story, with all its uncertainties and contradictions, as the basis for actions. The challenge for general practice research is the further integration of the various disciplines involved.

## SAMENVATTING

### **Inleiding**

Dit proefschrift gaat over de waarde van informatie uit de huisartspraktijk, in het bijzonder ten behoeve van de verkleining van sociaal economische gezondheidsverschillen. Deze studie is het sluitstuk van een grootschalig onderzoeksproject 'de Nationale Studie naar Ziekten en Verrichtingen in de Huisartspraktijk'. De gegevensverzameling voor deze studie is uitgevoerd door het NIVEL, het Nederlands Instituut voor onderzoek van de gezondheidszorg tussen 1 april 1987 en 31 maart 1988. Het doel van dit project was:

" het verkrijgen van inzicht op nationale schaal in de presentatie van ziekten, klachten en problemen in de huisartspraktijk, in de door huisartsen naar aanleiding van deze gepresenteerde problematiek ondernomen acties en tevens in de factoren, die de presentatie van gezondheidsproblemen in de huisartspraktijk beïnvloeden alsook de sterk variërende reacties van huisartsen op de hun aangeboden problematiek. De verkregen informatie moet dienen ter ondersteuning, evaluatie en bijstelling van het beleid in de gezondheidszorg in ruime zin."

Om de waarde van informatie uit de huisartspraktijk te kunnen vaststellen worden in deel I van dit proefschrift twee onderwerpen aan de orde gesteld, te weten 'informatie uit de huisartspraktijk als onderzoeksthema' en 'het belang van informatie uit de huisartspraktijk'. In de hoofdstukken 1-4 worden daartoe achtereenvolgens de doelstelling van het onderzoek, de stand van zaken met betrekking tot sociaal economische gezondheidsverschillen in Nederland, de ontwikkeling van de huisartsgeneeskunde en de mogelijke rol van de huisartspraktijk als leverancier van gezondheidsinformatie besproken.

#### *Informatie uit de huisartspraktijk als onderzoeksthema*

In sommige landen waaronder Nederland wordt de huisartspraktijk gezien als de spil van het gezondheidszorgsysteem en daaraan gekoppeld het gezondheidsinformatiesysteem. Immers het overgrote deel van de gezondheidsproblemen van mensen, zo ze al onder de professionele aandacht komen, wordt uitsluitend behandeld door de huisarts. Aansluitend fungeert de huisarts als 'poortwachter' voor patiënten die worden verwezen naar andere voorzieningen in eerste en tweede lijn.

Op zich is de huisartspraktijk in Nederland goed georganiseerd en geëquipeerd voor het leveren van beleidsrelevante gezondheidsinformatie, vanwege het feit

dat patiënten op naam staan ingeschreven en er tegenwoordig in vrijwel alle praktijken een computer aanwezig is. Er kan aldus een leeftijds-geslacht register worden gecreëerd, waarin ook informatie over de verzekeringsvorm van de patiënt is opgenomen. De meeste huisartsen doen aan medische verslaglegging, conform de standaard van het Nederlands Huisartsen Genootschap. De beschikbare informatie is echter niet direct geschikt voor relevant huisartsgeneeskundig onderzoek. Bijzondere aandacht moet worden geschonken aan de operationalisatie van specifieke concepten en aan de standaardisatie van gegevensverzameling. De mogelijkheid tot koppeling van medische gegevens aan gegevens van de praktijkbevolking in eenzelfde huisartspraktijk opent de weg naar epidemiologisch onderzoek. Met de mogelijkheid tot koppeling van gegevens over diagnostiek en behandeling binnen de huisartspraktijk en uit instellingen zoals ziekenhuizen, verpleeghuizen kan inzicht worden verkregen in de totale zorgketen.

*Het belang van informatie uit de huisartspraktijk voor een nationaal gezondheidsbeleid*

Lange tijd bestond er enige schroom bij huisartsen zelf om op nationale schaal onderzoek te (laten) doen naar het functioneren van de huisartspraktijk. Het idee dat men door de beleidsmakers en financiers van de zorg kon worden 'afgerend' was midden jaren tachtig niet ten onrechte aanwezig. De huisartsgeneeskunde stond onder druk om haar waarde nu eens aan te tonen. De weinig beschikbare kennis over de huisartspraktijk was sterk gefragmenteerd. Gegevens over ziekten en verrichtingen in de huisartspraktijk werden veelal in regionale setting en los van elkaar verzameld en waren uitermate moeilijk vergelijkbaar. Vooral beleidsmakers en financiers van de zorg zaten dus verlegen om informatie over het functioneren van de huisartspraktijk op landelijk niveau voor een gezondheidsbeleid dat versterking van de eerste lijn nastreeft.

*Onderzoeksdoelstelling*

Kan de huisartspraktijk een belangrijke bron van informatie zijn voor de beantwoording van epidemiologische en beleidsvraagstukken, in het bijzonder met betrekking tot sociaal-economische gezondheidsverschillen?

Een viertal thema's wordt aan de orde gesteld. Ten eerste de validiteit van de informatie, ten tweede het nut van een grootschalige gegevensverzameling voor een beleid gericht op versterking van de eerste lijn, ten derde een verkenning van de mogelijkheden van onderzoek op het terrein van sociaal-economische gezondheidsverschillen en de huisartspraktijk en ten slotte het belang van informatie over de plek (buurt, wijk, dorp), waar de huisarts werkt. Binnen elk

thema wordt ingegaan op de vraag welke bijdrage de informatie uit de huisartspraktijk nu werkelijk levert.

### **De validiteit van de informatie**

Morbiditeit en andere gegevens uit de huisartspraktijk kunnen worden gehanteerd voor het vaststellen van de behoefte aan zorg van de bevolking. Daarbij doen zich twee vraagstukken met betrekking tot de validiteit van informatie voor. Is informatie uit de huisartspraktijk een afspiegeling van informatie verkregen uit de bevolking en hoe goed is deze informatie?

De validiteit van informatie uit de huisartspraktijk moet in een speciaal licht worden gezien. Veel diagnoses, die worden gesteld, zijn in eerste instantie slechts een werkhypothese. Diagnosen kristalliseren zich uit over tijd, waarbij de patiënt wel in een zelfde context kan worden gezien. Tijd speelt dus een grote rol. Met deze karakteristieke eigenschap van de huisartsgeneeskunde moet in elk onderzoek rekening worden gehouden. In deel II van dit proefschrift staan een aantal voorbeelden die het belang van onderzoek naar validiteit van informatie onderstrepen. In hoofdstuk 7 is het systeem van controle op de kwaliteit van gegevens in de Nationale Studie beschreven. Controle in de huisartspraktijk vond plaats door de veldwerkers, terwijl elke maand aan de deelnemende huisartsen 10 papieren patiënten werden voorgelegd, waarbij men een diagnose moest stellen. Controle op de kwaliteit van de verwerking van gegevens vond plaats aan de hand van wekelijkse invuloefeningen voor veldwerkers, welke uitvoerig werden besproken. De database werd gecheckt met behulp van computerprogramma's, waarbij de diagnose werd gematched op leeftijd en geslacht. Tot slot werden alle episodes handmatig gecontroleerd op consistentie en juistheid.

Vervolgens is in de hoofdstukken 8 en 9 aandacht besteed aan de validiteit van informatie rond subjectieve gezondheid en over morbiditeit, geregistreerd in de huisartspraktijk. In hoofdstuk 8 zijn de prevalentiecijfers van somatische chronische ziekten uit drie verschillende gezondheidsenquetes vergeleken. Deze vergelijking toont aan dat vooral verschillen in de omschrijving van een ziekte aanleiding geven tot verschillen in prevalentiecijfers. Een vergelijking tussen ziekte zoals gerapporteerd door de patiënt in een enquête en de aanwezigheid van dezelfde diagnose in het medisch dossier bij de huisarts laat kleine discrepanties zien voor diagnosen zoals astma bronchiale en grote discrepanties voor diagnosen zoals chronische hoofdpijn.

In hoofdstuk 9 is een vergelijking gemaakt tussen de epidemiologische kengetallen van drie morbiditeitsregistraties in Nederland, waaronder de Nationale Studie. Incidentiecijfers voor infectieziekten en prevalentiecijfers voor hartvaatziekten,



aandoeningen van het bewegingsapparaat en metabole stoornissen leveren geen grote verschillen op. Opvallende en verklaarbare verschillen werden gevonden voor aandoeningen waarbij herhaalvoorschriften voor geneesmiddelen aan de orde zijn (glaucoma, maagzweer, astma/COPD), voor aandoeningen die aanleiding geven tot een bezoek aan de EHBO van het ziekenhuis (vuiltje in oog, snij/schaafwond) en bij aandoeningen waar het registratiesysteem ook zonder doktersbezoek doorregistreert (borstkanker, maagdarmkanker, cataract, epilepsie, psoriasis). Opvallende en niet direct verklaarbare verschillen zijn er voor irritable bowel syndrome, reumatoïde artritis, migraine en depressie. De validiteit varieert sterk per diagnose en is goed voor wel omschreven diagnoses. De validiteit kan worden verbeterd door meer uniforme definities, een stricte controle op het gebruik van heldere diagnostische criteria en checks.

## **De Nationale Studie naar Ziekten en Verrichtingen in de huisartspraktijk en ondersteuning van gezondheidsbeleid gericht op een sterke eerste lijn**

### *Achtergrond, opzet en gegevensverzameling van de Nationale Studie*

Over het nut van een grootschalige gegevensverzameling ten behoeve van onderzoek en beleid bestond in theorie overeenstemming. In de hoofdstukken 5 en 6 staan achtergrond, opzet, organisatie en uitvoering van de gegevensverzameling van de Nationale Studie beschreven. Voor de beantwoording van de onderzoeksvragen is een twaalftal deelprojecten ontworpen. Later zijn daar nog meer dan veertig deelprojecten aan toegevoegd.

Het grote dilemma, en tegelijkertijd de uitdaging, voor een onderzoeker die het functioneren van de huisartspraktijk wil nagaan, is dat biomedische en gedragswetenschappelijke modellen hier samenvloeien. Veel gezondheidsproblemen, die aan de huisarts worden gepresenteerd, zijn immers niet louter van biologische aard, maar kennen ook een psychische of sociale component. Dit betekent dat huisartsgeneeskundig onderzoek gebruik moet maken van begrippen uit verschillende disciplines. Ook in de Nationale Studie is begripsontwikkeling noodzakelijk geweest. Voorbeelden zijn reden voor contact, ziekte-episode, comorbiditeit en 'psychosocialiteit' van het probleem. Deze begrippen zijn verwerkt in het zogenoemde contactregistratieformulier. Aansluitend werd gekozen voor de ICPC als classificatiesysteem voor morbiditeit en de ATC als classificatiesysteem voor geneesmiddelen, ondanks het feit dat beide systemen nog in ontwikkeling waren. Over de duur van de periode van registreren werd een compromis gesloten. Naast een drie maanden durende registratie voor alle gezondheidsproblemen zijn voor studies naar chronische ziekten en langerdurende psychische problemen

een aansluitende registratieperiode gehanteerd.

Gegevens van de praktijkpopulatie werden verkregen door middel van een registratie van sociaal-demografische gegevens van alle patiënten en door middel van een gezondheidsenquête met aansluitend een dagboek onder een steekproef van patiënten. Gegevens van uitslagen van elders uitgevoerd laboratoriumonderzoek, röntgenonderzoek/echografie en functietesten en rond ziekenhuisopnamen werden separaat verzameld. Gegevens over de huisarts, de praktijkassistente en de praktijk werden met behulp van diverse vragenlijsten verkregen.

Voor de gegevensverzameling werd een logistiek apparaat ingericht, waaraan uiteindelijk enige honderden mensen hebben meegewerkt. Aan de deelnemende huisartsen werd een volledig overzicht van de eigen praktijk ten opzichte van het landelijk gemiddelde verstrekt.

#### *De bevindingen van de Nationale Studie*

Vanaf het midden van de jaren tachtig staat de kwaliteit van het huisartsgeneeskundig handelen volop in de belangstelling van zowel beleidsmakers, onderzoekers als huisartsen. In dit proefschrift is de vraag aan de orde, hoe het nu werkelijk met de toegang tot en de kwaliteit van de zorg is gesteld, bij de beschrijving van resultaten van de Nationale Studie in hoofdstuk 10. De gegevens uit de Nationale Studie laten zien dat de toegang tot de huisartsgeneeskundige zorg geen grote verschillen oplevert tussen de diverse groepen. De organisatie en uitvoering van hulp buiten kantooruren wisselt sterk, maar de hulp lijkt adequaat. De rol en positie van de praktijkassistente bleek aanmerkelijk verbeterd. De tevredenheid van patiënten met de verleende zorg is in het algemeen hoog. Hoe ouder de patiënt, hoe meer tevreden, terwijl chronisch zieken het meest commentaar leveren. Bij kwaliteit van huisartsgeneeskundige zorg denken men niet alleen aan medisch-technische vaardigheden, maar ook aan vaardigheden op het terrein van arts-patiënt communicatie en aspecten van praktijkmanagement. In deze context is de aanpak van een groot aantal ziekten beschreven. De beoordeling van huisartsgeneeskundige zorg voor doelgroepen laat zien, dat de hulp aan kinderen, migranten en ouderen geen grote onderlinge verschillen oplevert, dat de hulp aan mannen respectievelijk vrouwen verschillend is, dat sociale netwerken grote invloed hebben op gezondheid en zorggebruik en dat er meer aandacht moet worden geschonken aan werk-gerelateerde aandoeningen. De Nationale Studie was een belangrijke bron van informatie voor het overheidsbeleid ten aanzien van de huisartsgeneeskunde gedurende de afgelopen tien jaren. Dit geldt in het bijzonder de gezondheidstoestand (inclusief gezondheidsverschillen), kwaliteit van zorg, preventie, voorschrijven van geneesmiddelen, praktijkmanagement en werkbelasting van de huisarts, vrouwengezondheidszorg

en zorg in achterstandsgebieden. Deze informatie is intensief gebruikt in belangrijke beleidsdocumenten o.a. de Volksgezondheid Toekomst Verkenningen, Staat van de Zorg en Jaaroverzicht Zorg.

### **De huisartspraktijk en sociale ongelijkheid**

De huisartspraktijk wordt een belangrijke rol toebedacht als leverancier van gezondheidsinformatie wat betreft sociaal-economische gezondheidsverschillen. In die situatie moet de huisartspraktijk wel systematisch extra sociaal-demografische gegevens verzamelen, maar tot welke prijs en welke inzichten komen daardoor beschikbaar? Daartoe is een viertal verkennende studies uitgevoerd, die zijn beschreven in de hoofdstukken 12–15.

Verschillende sociale groepen maken zowel kwantitatief als kwalitatief verschillend gebruik van de huisartspraktijk. Op basis van ruwe indicatoren lijkt de toegang op de curatieve zorg voor de verschillende groepen geen grote verschillen op te leveren, terwijl dat voor preventieve zorg niet altijd gegarandeerd lijkt. Nadere analyses in hoofdstuk 12 laten zien dat relatief gezondere mensen uit hogere sociale klassen meer beslag leggen op de tijd van de huisarts voor zowel curatieve als preventieve zaken dan de ongezonere mensen uit de lagere sociale klassen. Dit verschil in tijdsbeslag laat zich voor een deel verklaren door de hogere kans op lichamelijk onderzoek, gespreksvoering en systematische screening voor bepaalde aandoeningen bij mensen uit de hogere klassen, terwijl het minder tijdrovende uitschrijven van een recept vaker voorkomt bij mensen uit een lagere sociale klasse. Dit recept wordt bovendien veelal via de praktijkassistente verstrekt, zo blijkt uit hoofdstuk 14.

Een ander onderwerp betreft arbeid en gezondheid in de huisartspraktijk. Tot voor kort was er vanwege de strikte scheiding tussen curatieve sector en arbozorg nauwelijks enige bemoeienis van de huisarts met dit terrein. En dat terwijl huisartsen juist bijzonder geïnteresseerd blijken te zijn in de problematiek. De analyses in hoofdstuk 15 laten zien dat huisartsen wel degelijk worden geconfronteerd met beroepsrisico's, gevolgen van werkloosheid en arbeidsongeschiktheid. In de aanpak van deze problemen schakelt de huisarts de bedrijfs- of verzekeringsarts maar op zeer beperkte schaal in.

### **De interactie tussen huisartspraktijk en buurt, wijk, dorp**

Over de interactie tussen de huisartspraktijk en de directe omgeving was op landelijke niveau nauwelijks enige informatie voor handen. In deze interactie spelen het huisbezoek en de bijzondere positie van huisartsen in achterstandsgebieden een belangrijke rol.

Huisbezoek is een goed instrument voor de huisarts om de thuis- en familiesitu-

atie van de patiënt en het leven in de buurt of het dorp te leren kennen. Tien jaren geleden, ten tijde van de materiaalverzameling van de Nationale Studie, gold het huisbezoek nog één op de zeven consulten. Wat betreft luchtweginfecties, zoals beschreven in hoofdstuk 16, opereerde de huisarts rationeel in de afweging wel of geen huisbezoek. Koorts en benauwdheid vormden de belangrijkste redenen om op huisbezoek te gaan. Er is geen verband met regio, urbanisatiegraad en afstand tot het ziekenhuis gevonden. Wat betreft het huisbezoek wegens een chronische aandoening of een sociaal bezoek aan bejaarden is leeftijd de belangrijkste reden voor bezoek (hoe ouder de patiënt, hoe eerder een bezoek) en wordt op het platteland vaker een bezoek afgelegd. Het huisbezoek is echter niet meer een vanzelfsprekend onderdeel van het werk in menig praktijk. Na vele jaren onderzoek en debat werd de moeilijke financiële en organisatorische positie van huisartsen in achterstandsgebieden erkend. Deze huisartsen werd een financiële compensatie in het vooruitzicht gesteld. Voor de verdeling van de middelen diende achterstandsgebieden te worden geïdentificeerd. Aan de hand van postcodes en op basis van adressendichtheid, inkomen en percentage mensen met een uitkering is een systematiek ontwikkeld. In totaal zijn 87 vier-cijferige postcodes geïdentificeerd, waarin 875.000 mensen wonen. Eén op de drie inwoners van de vier grote steden woont in een dergelijk gebied. De systematiek is door de Minister overgenomen voor de verdeling van het geld aan de betrokken huisartsen. Het geld is aangewend voor aanvulling op het inkomen en investeringen in infrastructuur.

## **Besluit**

In het begin van dit proefschrift is de vraag gesteld of de huisartspraktijk een belangrijke bron van informatie kan zijn voor de beantwoording van epidemiologische en beleidsvraagstukken. Voor de aanpak van deze vraag is een viertal thema's gekozen. Er is gekeken naar de validiteit van informatie, het nut van een grootschalige gegevensverzameling en op twee terreinen zijn beleidsepidemiologische vraagstukken bestudeerd. Om in onderzoek een goede validiteit van informatie te garanderen is naast theoretische kennis, kennis over het functioneren van de huisartspraktijk onontbeerlijk. Mede door de Nationale Studie is er momenteel beter inzicht in het functioneren van de huisartspraktijk. De toegang tot en de kwaliteit van het curatieve deel van de zorg is vrijwel gelijk voor iedereen, op preventief terrein zijn er nog zorgen. Er zijn op diverse fronten sociale verschillen in de zorg en vooral in relatie tot achterstandsgebieden geconstateerd. Wat betekent dit nu voor beleid en onderzoek?

*Implicaties voor het beleid*

Hoewel de gegevens die in dit onderzoek zijn gebruikt 10 jaar geleden zijn verzameld kunnen uit de resultaten enkele implicaties voor het beleid ten aanzien van de positie van de huisarts in de Nederlandse gezondheidszorg worden afgeleid. Daarbij moet rekening worden gehouden met belangrijke ontwikkelingen in de huisartsenzorg zoals de verdere uitbouw van het NHG standaarden programma en programmatische preventie. Dit geldt eveneens het overheidsbeleid dat is gericht op de versterking van de poortwachtersfunctie in het bijzonder voor de geestelijke gezondheidszorg, de beheersing van kosten van geneesmiddelen o.a. door het voorschrijven op stofnaam en uitbreiding van praktijkondersteuning door de aanstelling van praktijkverpleegkundigen. De huisartspraktijk blijkt een belangrijk instrument om doelmatigheid en kwaliteit van de Nederlandse gezondheidszorg te garanderen. Om deze situatie voor de toekomst te behouden zijn voldoende artsen met een hoogwaardige opleiding nodig, moet het kwaliteitsbeleid nader worden ingevuld, moet samenwerking van huisartsen onderling en met andere hulpverleners worden afgedwongen en inkomenssolidariteit worden nagestreefd. Praktijkmanagement vereist permanente aandacht van de beroepsgroep.

Op basis van de resultaten uit de onderhavige studie kan een aantal van de maatregelen kritisch worden besproken. Het kwaliteitsbeleid, met als boegbeeld het NHG standaarden programma, heeft ontegenzeggelijk een impuls gegeven aan de huisartsgeneeskunde en gelieerd onderzoek, maar het is niet eenvoudig aan te geven waar de huisartsgeneeskunde op dit punt nu staat. De ervaringen met analyses op de gegevens uit de Nationale Studie hebben geleerd dat het niet zo eenvoudig is algemene uitspraken over de kwaliteit van de hulpverlening te doen. Vaak was onvoldoende informatie voor handen, met name rond de afname van een anamnese, in welke context en op welke wijze lichamelijk onderzoek werd verricht of voorlichting werd gegeven. Tegelijkertijd kunnen de soms hooggespannen verwachtingen vanuit het beleid voor betere uitkomsten van de zorg niet altijd worden waargemaakt. Dit geldt nog sterker voor programmatische preventie. Alhoewel er succes is met betrekking tot griepvaccinatie laat deze studie zien dat het enige bevolkingsonderzoek dat via de huisartspraktijk loopt sociale gezondheidsverschillen versterkt. De vraag is of men eigenlijk niet te veel wil? Hoe moet het met voorschrijven op stofnaam of met de poortwachter van de geestelijke gezondheidszorg? Voorzichtigheid is dus geboden.

Gezien het nog steeds grote aantal personen, dat afhankelijk is van de WAO, het toenemend aantal alleenstaanden en patiënten van niet-Nederlandse afkomst zal de huisarts meer aandacht moeten besteden aan de sociale dimensie van gezond-

heidsproblemen en daarbij passende zorg. De huisarts verkeert in een goede positie om de sociale problemen in de praktijkbevolking op zijn minst te signaleren en waar mogelijk op te anticiperen. Hierbij mag een pro-actieve houding van de huisarts worden verwacht. Om deze actieve rol te kunnen spelen dienen naast leeftijd en geslacht opleiding en beroep van de patiënt bij de huisarts bekend te zijn. Voor de reïntegratie van zieke werknemers dient de nu nog nauwelijks bestaande samenwerking tussen huisarts en bedrijfsarts verder te worden uitgebouwd.

Huisartsen in achterstandgebieden worden het meest geconfronteerd met sociale problemen in hun praktijkbevolking, maar kunnen vaak weinig uitrichten. Tekort aan praktijkassistentie en overige ondersteunende faciliteiten zorgen er bijvoorbeeld voor dat het noodzakelijke huisbezoek er nogal eens bij inschiet. Een individuele huisarts kan op buurt- of wijkniveau mogelijk nog wel de nodige actie ondernemen om sociale misstanden aan te pakken, maar een goede samenwerking tussen GGD en huisartspraktijk is hierbij onmisbaar. De nationale en lokale overheden zou deze samenwerking sterker moeten stimuleren.

#### *Implicaties voor onderzoek*

Met de aanwezigheid van computers is de verleiding groot om steeds meer gegevens te verzamelen. Dit kan op den duur de kwaliteit van informatie aantasten. Ten tijde van de Nationale Studie vormde dit een reden om deelprojecten te formuleren. Voor het eerst nam ook een aselechte steekproef van huisartsen aan een dergelijke registratie deel. En met succes. Grootschalige, complete en kwalitatief goede gegevensverzameling gaat heel wel samen, maar kost veel tijd en energie en geeft de nodige problemen. Voor de Nationale Studie lagen deze vooral op het terrein van de verwerking van voorschrijfgegevens, in het bijzonder de beschikbaarheid van goede software. Strak georganiseerde kwaliteitscontrole van de gegevens en tijdige feedback aan de huisarts werken goed uit op de kwaliteit van registratie. Wil de huisartspraktijk een blijvend belangrijke leverancier van informatie zijn dan moeten wel investeringen worden gepleegd rond gedisciplineerde registratie en classificatie in de huisartspraktijk, verhoging van de doelmatigheid bij de verwerking van gegevens en verdieping van het onderzoek.

Terwijl er in onderzoek de trend bestaat om steeds verder te specialiseren toont dit onderzoek het belang van het leggen van verbanden tussen epidemiologie, sociale wetenschappen en huisartsgeneeskunde en voor sommige onderdelen economie. De vervlechting van epidemiologie en huisartsgeneeskunde leverde met name op het terrein van sociale gezondheidsverschillen nieuwe inzichten op welke van nut kunnen zijn om vraagstukken over de volksgezondheid te beant-

woorden. Het combineren van gegevens uit de bevolking, vaak het domein van de sociale wetenschappen, en uit de huisartspraktijk legde verbanden tussen gezondheid en zorg en zou richting kunnen geven waar en op welke wijze de meeste gezondheidswinst kan worden bereikt. De kracht van de huisartsgeneeskunde ligt in het feit dat de huisarts is getraind het subjectieve verhaal van de patiënt met alle daarbijbehorende onzekerheden en tegenstellingen als uitgangspunt voor het handelen te nemen. In het verlengde hiervan ligt de grootste uitdaging voor huisartsgeneeskundig onderzoek in de verdere integratie van betrokken disciplines.

## DANKWOORD

Als je je omgeving zo lang in spanning houdt of er ooit wel een proefschrift komt, mag er wel een bedankje af voor alle steun.

Toen ik in 1985 via het huisartsregistratiesysteem het NIVEL binnenkwam om projectleider van de Nationale Studie te worden, had ik naast de nodige ervaring in de klinische praktijk, op onderzoeksterrein wel verstand van 'study design' en data-verzameling, maar eigenlijk beperkt ervaring met data-analyse en nog minder met logistiek management. Deze laatste terreinen zijn nu juist mijn favoriete werkterreinen geworden. De grootste winst voor mijzelf, maar ook voor andere onderzoekers betrokken bij de Nationale Studie, is dat we over de uiteindelijke resultaten helder hebben kunnen communiceren. En vaak met effect.

In dit opzicht is mijn eerste promotor, professor Paul van der Maas, van bijzonder grote waarde geweest. Je was helder in wat je mij aan begeleiding kon bieden. Ik moest vooral zelf de trekker van het promotie traject zijn en je had er kennelijk vertrouwen in dat dat zou lukken. Het is wel heel anders gelopen en het heeft vooral even geduurd. Terwijl jij je mogelijk vaak hebt afgevraagd waar ik mee bezig was, heb ik je lessen hoe je een wetenschappelijk artikel in elkaar zet en hoe je op sobere wijze resultaten kunt presenteren zeer ter harte genomen en verwerkt in menige publicatie uit de Nationale Studie. Daarnaast heb ik veel opgestoken van je brede visie op vele terreinen. Paul, ik heb het een voorrecht gevonden dat je me hebt willen begeleiden. Bij de NSPH is dit overigens niet anders!

Toen op een later tijdstip mijn 'baas' professor Jouke van der Zee zich bij ons voegde, werd een onhebbelijkheid mijnerzijds aan de kaak gesteld. Jouke, je bent wars van ideologie in wetenschappelijke werkstukken, zeker als die ideologie van de World Health Organization afkomt; je bent erin geslaagd zowat alle slogans, die ik in mijn teksten had aangebracht, eruit te werken, want die leiden immers te veel af. Je was altijd zeer begaan met de Nationale Studie, die ons allen veel bloed, zweet en tranen heeft gekost. Daarin was geen plaats voor 'flauwekul'. Nu dit proefschrift een overzicht van de belangrijkste resultaten van de Eerste Nationale Studie bevat, zou je een tevreden mens kunnen zijn en een Tweede Nationale Studie met vertrouwen tegemoet mogen zien.

Van zo'n Tweede Nationale Studie moeten de registrerende huisartsen wel opnieuw de motor zijn. Alleen dankzij hun enorme inzet kon de Eerste Nationale Studie uiteindelijk succesvol zijn, zij het mede door de sturing van NIVEL zijde. Daarbij ben ik veel dank verschuldigd aan alle leden van het projectteam



Nationale Studie. Dat waren in eerste instantie vooral 'veldwerkers', 'datatypisten' en 'jobbers', vervolgens de onderzoekers en last but not least het management van het NIVEL. Een paar mensen moeten apart worden vermeld. Dit geldt in het bijzonder Marleen Foets, met wie ik een hecht, multidisciplinair team vormde. Jij medisch socioloog uit de School Nuyens te Leuven en apothekersdochter, ik huisarts en epidemioloog uit de London School. We hebben wat discussies gehad over 'population-based survey designs' of het gebruik van diagnostische criteria ja dan nee en hoe medicijnen te coderen, maar we waren vooral ook praktisch, mede onder dwang van onze veldwerkorganisatoren Janet Stapelbroek en Gerard Popkema. Loek Stokx en Jan van der Steen waren tegelijk ICPC experts en episode-constructie-controleurs oftewel het toezicht op de kwaliteit van gegevens. En getuige de hoeveelheid publicaties in peer review tijdschriften met succes.

Han van Snellenberg heb ik bijkans echt gek gekregen met al die verzoeken van databestanden voor de meest vreemde lieden en instellingen. Patricia Swords was de heldin van de 112 praktijkprofielen. Jan Gravensteijn, Mike Ho A Hing en Ellen Wismeijer leerden ons systematisch met bestanden om te gaan; Gerda Doornbos, Angela Claessens en Margot de Waal hebben de bestanden handelbaar gemaakt en daarmee de productie van publicaties op gang gebracht; Dinny de Bakker is voor de data analyse van de gehele Nationale Studie van kolossaal belang geweest, zo ook voor delen van dit proefschrift. Harald Abrahamse introduceerde de mooie plaatjes, maar is vooral ook de data-analist van vrijwel alle in dit proefschrift opgenomen artikelen. Met François Schellevis is het thema comorbiditeit op de agenda van onderzoekend Nederland terecht gekomen. Inge-wikkeld maar de moeite meer dan waard. De ggz-groep onder leiding van Peter Verhaak leverde de eerste internationale publicatie en nog velen volgden. Peter deed preventie er gewoon even bij. Gé 'daktari ya Bukumbi' Donker heeft een unieke bijdrage geleverd aan de beschrijving van een aantal weinig of juist veel voorkomende ziektebeelden in de huisartspraktijk. Jack Hutten deed èn kwaliteit èn werkbelasting op zijn bekende vrolijke wijze. Douglas Fleming, Director of the Royal College of General Practitioners Research Unit in Birmingham UK, helped me a lot with numerous advices on technical and grammatical matters. De overige niet genoemde NIVEL onderzoekers hebben evenzeer bijgedragen aan de lijst van publicaties uit de vele projecten, maar daar was ik niet steeds als eindverantwoordelijke direct bij betrokken.

Een productieve relatie bestond er met de Vakgroep Huisartsgeneeskunde en het Sophia Kinderziekenhuis van de Erasmus Universiteit Rotterdam. Goed voor

meer dan 25 artikelen uit de Nationale Studie. Met de vakgroepen huisartsge-  
neeskunde van de Vrije Universiteit ('diagnostiek'), Rijksuniversiteit Groningen  
( 'de praktijkassistente'), Katholieke Universiteit Nijmegen ('chronische zie-  
ken'/'kwaliteit van zorg') en Universiteit Utrecht ('luchtweginfecties') en het  
Instituut Sociale Geneeskunde van het AMC ('gezonde levensverwachting') kon-  
den specifieke projecten goed worden afgerond. De contacten met RIVM VTV  
waren vanaf het begin productief en hebben geleid tot de huidige intensieve  
samenwerking rond een Tweede Nationale Studie.

Ondertussen werden vergelijkbare registratieprojecten in Almere, Urk en Aletta  
aangepakt en tot een goed einde gebracht. Vervolgens ging de Nationale Studie  
Europa in; eerst de Europese Unie, daarna de landen van Midden en Oost  
Europa. Wienke Boerma was er steeds bij betrokken. Door al het gereis en  
getrek zijn onderdelen van dit proefschrift op wonderlijke wijze tot stand  
gekomen. Wachtend op een vliegveld (met name Otopeni, Feryhegi) op een  
volgende vlucht is menigmaal een stuk tekst geschreven. Soms raakte een stuk  
zoek. Meest productief was echter mijn verblijf in het prachtige huisje van Vic  
en Josephine Dubois in Gaastmeer.

Toen het op afwerken aankwam had ik fantastische hulp van Rinske van de Berg  
en Linda Schoonmade uit de NIVEL bibliotheek bij het ordenen van de grote  
hoeveelheid literatuur uit de Studie. Mieke Cornelius werd snel enthousiast voor  
een vuurtoren op haar kaft. Karen Laird was de snelle corrector voor het Engels.  
Ria Karamat Ali heeft zich altijd met volle overgave ingezet voor de Nationale  
Studie. Vrijwel alle meetinstrumenten, codelijsten, rapporten en artikelen gingen  
door jouw handen, waarvoor ik jou van harte bedank. Tussendoor deden we het  
boek 'Health Matters'. Ter afronding deze pil, waarbij José Velthuis en Christel  
van Aalst af en toe insprongen. Nu ècht nooit meer WP 5.1. Ter compensatie  
hebben we veel gelachen.

Over de familie en thuis durf ik haast niet te schrijven, want hoeveel aandacht  
was er eigenlijk voor jullie? Het parool in het gezin waarin ik opgroeide was  
gewoon hard werken en verder niet te veel poespas. Dat ik dat mengde met de  
nodige ongein moet een klein gendefect zijn. Het moet mijn ouders veel voldoe-  
ning schenken, dat ze nu eindelijk een bijzonder stukje oogst van hun opvoeding,  
onder dankzegging, kunnen meemaken.

Tot slot ON 11, Els, Maarten, Max, en Daan; ja, ik was er af en toe. Aan de te-  
lefoon ergens ver weg, aan de lijn bij voetbal of hockey, tijdens de vakanties en  
vooral als er werd gesurfd of gezeild. In die korte tijd hadden we wel steeds een  
hoop lol, een soap was er niks bij. Met zo'n familieleven werd zelfs het schrij-  
ven van een proefschrift draaglijk. Dit proefschrift is daarom mede jullie boek.

## ABOUT THE AUTHOR

Koos van der Velden (1952) was born in Ouderkerk aan de Amstel as fifth member of a family of six children. He attended HBS-B in Alphen aan den Rijn. He started studying veterinary medicine in 1969 and medicine in 1970 at Utrecht University. In 1978 he finished his medical training. From 1978 he worked one and a half year as junior staff at the Juliana Hospital Veenendaal as part of his practical training in tropical medicine, followed by the NTA course at the Royal Tropical Institute. From 1980 to 1983 he was employed as Medical Officer of Health at Kola Ndoto Hospital Shinyanga Tanzania. This job included supervision of a large scale primary health care programme serving 215 villages and 55 clinics, and, temporarily, coordination of the regional TB/leprosy programme.

Back in the Netherlands, he followed the one year general practitioner vocational training programme, but instead of establishing at a practice he went for training in Community Medicine at the London School of Hygiene and Tropical Medicine. Since 1985 he has been a senior staff member at NIVEL, the Netherlands Institute of Primary Health Care. He was appointed overall responsible projectmanager of the Dutch National Survey of General Practice. Since 1989 he has been partner manager/projectleader of several international programmes on primary care research under the aegis of the Dutch Ministry of Foreign Affairs (PSO 1993-1994; MATRA 1995-1999), the European Union (AIM 1989-1990; Phare/Tacis 1994-1999) and the World Bank (1998-1999).

Since 1998 he has been working as director of the Netherlands School of Public Health. Besides his management duties he covers topics such as international health, primary health care (research) and health information systems. Koos van der Velden has been member of several committees related to general practice and tropical public health and has performed various consultations for the World Health Organization and the European Union. Furthermore he is member of the governing councils of the Netherlands Society of Public Health and the European Public Health Association.





