ILLNESS IN EVERYDAY LIFE

A health diary study of common symptoms and their consequences

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Contents

1	GENERAL INTRODUCTION	7
1.1	On the need for the study of every day illness	7
1.2	Common symptoms as illness, not disease	9
1.3	The three topics of this study	10
1.3.1	The measurement of the occurrence of common symptoms	11
1.3.2	Social and behavioural determinants of common illness	13
1.3.3	Illness behaviour and care seeking for common symptoms	16
2	EXPLORING THE ICEBERG OF MORBIDITY: A COMPARISON OF DIFFERENT SURVEY METHODS FOR ASSESSING THE OCCURRENCE OF EVERY DAY ILLNESS	21
2.1	Introduction	21
2.2	A comparison of methods	25
2.3	Hypotheses	28
2.4	Data	32
2.5	Methods	36
2.6	Results	37
2.7	Conclusion and discussion	40
	References	46
	Appendix 1	50
	Appendix 2	53
3	SMOKING HABITS AND SYMPTOM REPORTING USING HEALTH INTERVIEW AND HEALTH DIARY DATA	57
3.1	Introduction	57
3.2	Material and methods	59
3.3	Results	61
3.4	Discussion	66
	References	68
4	INEQUALITIES IN HEALTH: THE INTERACTION OF CIRCUMSTANCES AND HEALTH RELATED BEHAVIOUR	70
4.1	Introduction	70
4.2	The scope of this chapter	72
4.3	Health, lifestyle and circumstances in the UK	73
4.4	The Dutch and Danish health studies	75
4.5	Results	81
4.6	Conclusions	91
	References	95
	Appendix 1	99
	Appendix 2	101

5	THE RELATIONSHIP OF HEALTH AND ILLNESS BEHAVIOUR. DOES AN UNHEALTHY LIFESTYLE INFLUENCE THE CARE FOR COMMON SYMPTOMS?	104
5.1	Introduction	104
5.2	Materials and methods	112
5.3	Findings	115
5.4	Conclusions and discussion	120
	References	126
	Appendix	130
6	EXPECTATIONS OF MEDICAL CARE AND ILLNESS BEHAVIOUR FOR EVERYDAY ILLNESS	134
6.1	Introduction	134
6.2	Methods	135
6.3	Analysis	137
6.4	Results	138
6.5	Discussion	145
	References	146
7	THE ROLE OF LAY ADVICE AND FAITH IN MEDICINE IN SEEKING PROFESSIONAL CARE FOR COMMON SYMPTOMS	148
7.1	Introduction	148
7.2	Material and methods	152
7.3	Findings	155
7.4	Conclusion and discussion	163
	References	166
8	GENERAL DISCUSSION	171
8.1	Main findings of this study	171
8.2	A discussion of the results	175
8.2.1	Measuring common symptoms	175
8.2.2	Social and behavioural determinants of illness	179
8.2.3	Illness behaviour and care seeking for common symptoms	181
8.3	An outlook on further studies of everyday illness	182
9.	AN OVERVIEW OF THE HEALTH DIARY STUDY	186
9.1	The lay-out of the health diary	186
9.2	The response in the diary study	187
9.3	The number and nature of symptoms	192
Samenvatting		199
Literature		208
Acknowledgements		224

1 GENERAL INTRODUCTION

1.1 On the need for the study of every day illness

A growing literature on the increased burden of chronic conditions in the aging populations of western societies might lead one to forget that a common feature of these societies is good health for the majority of the population (Olshansky, Rudberg, Carnes, Cassel and Brody 1991; OECD, 1993). In the Netherlands, the focus of this study, objective measures reveal a healthy population: life expectancy at birth is 74 years for men and 80 years for women; infant mortality is 6,5 per 1000 live births. The Dutch population also experiences good health from a subjective point of view. Survey research shows that 84 percent of the male and 79 percent of the female population report good or very good health (CBS, 1995).

Verbrugge and Ascione assert that "as population longevity increases, health policy concern is shifting from length of life to quality of life. Life quality depends greatly on physical symptoms experienced day by day and on having satisfactory ways of care for symptoms" (Verbrugge & Ascione, 1987). While some of these day-to-day symptoms may be related to chronic conditions, most symptoms fall in the category of everyday illness: headaches, coughing, fever, heartburn, backpain, fatigue and the like.
One of the most striking characteristics of these symptoms is the frequency of their occurrence. Several surveys carried out in the Netherlands demonstrate the omnipresence of day-to-day symptoms.
Huygen and his co-workers carried out a survey in a General Practice in the Nijmegen area in the beginning of the 1980s , where a sample of 830 persons from 222 families completed a symptom checklist (Huygen et al., 1983). Given the fact that respondents with serious conditions were excluded, it is noteworthy that about 81 percent experienced one or more symptoms of ill health in a period of 14 days. Headache (20,5%) and backpain (17%) were most frequently reported. These symptoms notwithstanding, almost 90 percent of the sample reported good or very good health and medical care was sought for only 10% of the symptoms. Another survey in the Nijmegen area included more than 3000 respondents between 18 and 65 years of age (Furer & Tax, 1987). The occurrence of symptoms was solicited with an open-ended question about symptom experiences in the previous 14 days. With this method nearly 51% of the sample reported one or more symptoms and again a large majority, 82 percent of the respondents, reported generally good health. The nationwide sample of patients (13,000) in the Dutch Natio-

nal Survey of General Practice recorded symptom experience over 14 days using a symptom checklist (Foets, Van der Velden, De Bakker, 1992).
Around 80 percent of the sample reported one or more symptoms while nearly 85 percent of the respondents reported good or very good health (Foets & Sixma, 1991).

These studies and studies from other countries lead to similar conclusions: symptoms of ill health occur frequently, the experience of symptoms is compatible with good health, and most symptoms do not give reason to seek professional help [1] (Wadsworth, Butterfield, Blaney, 1971; Hannay & Maddox, 1976; Van de Lisdonk 1985a; Verbrugge & Ascione, 1987; Benzten, Christiansen, Pedersen, 1988). Because common symptoms do not pose a serious threat to individual or public health, they have received scant attention from a scientific or a health policy point of view. For example, the most recent and most encompassing report on public health in the Netherlands, *The Public Health Status and Forecasts* from the National Institute of Public Health and Environmental Protection, pays almost no attention to symptom experiences as a health indicator (RIVM, 1994). With little research to go on, little progress has been made in the measurement of symptom occurrence. Not surprisingly, large differences in the estimated frequency of symptom occurrence abound. The paucity of research in this area also has clinical consequences: practitioners lack a scientific basis for the treatment of everyday complaints (De Melker, 1994). Given the threat of serious illnesses like AIDS and cancer, and given declining resources for public health, why should we spend time studying the occasional headache, backpain or flu? There are several reasons. Common symptoms are important from a quality of life point of view and they have noteworthy economic consequences. Among the majority of the population that is in good health, common symptoms are the primary illness experience. They determine short time sick leave, self care strategies, and influence the number of GP visits. Common symptoms keep the large industry of Over The Counter (OTC) medicine thriving. In the Netherlands in 1981, over the counter medications were used by 16 percent of the population during a two week period; by 1992 that number had grown to 24 percent. The sales of OTC medicine is estimated to range between 750 and 800 million guilders annually with a yearly growth rate of 7 percent (Tweede Kamer, 1995b).
Furthermore, failure to consider common health symptoms in public health research overlooks an important dimension of the 'inequalities in health' debate (Townsend & Davidson, 1982). An emphasis on 'inequalities in health between different socio-economic groups' and on influencing the social, behavioral and environmental determinants of (ill-)health is one of the targets of current health policy in the Netherlands (Tweede Kamer, 1995a). In research stemming from this 'new' perspective, a recurrent finding is that disad-

vantaged groups are in much poorer health in almost all respects than more privileged members of society (for the Netherlands see Mackenbach, 1993; the international literature is reviewed in Feinstein, 1993). Because day-to-day symptoms are an important aspect of 'quality of life', it follows that it is important to find out the extent to which disadvantaged groups of society experience a higher burden of daily symptoms as well.

The ~new~ public health emphasizes health promotion and fostering a healthy lifestyle, paying a great deal of attention to the risks of voluntary, unhealthy behaviour like smoking or a poor diet (Parish, 1995). It asserts that the heaviest toll of disease in modern society is lifestyle related. While this may be true for disease and death, few have explored if lifestyle is related to symptom experiences. In other words: do unhealthy habits bring more day to day symptoms? An affirmative answer to this question is not as obvious as it may seem. From the point of view of biomedicine, poor health habits bring serious illness and the attached symptoms. But sociological and psychological studies show that the actual reporting of symptoms depends on cognitive and developmental processes and a sense of well-being (Mechanic, 1980; Gijsbers van Wijk, 1995). ~Illness behaviour~ does not have a perfect correlation with disease: some seriously sick people report no symptoms and, as we have seen, healthy people often report symptoms.

Common symptoms present the individual with the choice of seeking professional medical care or using self treatment. The exercise of that choice is of great interest to the medical profession and health policy makers. General Practitioners report that patients frequently seek care for symptoms that could be treated with self-care or do not need treatment at all (Van de Lisdonk, 1985a). Policy makers point at the necessity of financial incentives to reduce unnecessary spending on health care. In the Netherlands practically the entire population is insured against the costs of health care. The majority (60 percent) is insured through a sick fund that fully reimburses the costs of GP and hospital care and pharmaceuticals. Financial reasons do not play a major role in the decision to seek care and, in their absence, lay people find it difficult to judge the seriousness of their symptoms or to employ a strategy of care that is both effective and cost conscious.

1.2 Common symptoms as illness, not disease

This study proceeds from what might be termed an *illness* perspective. I pay little attention to symptoms as manifestations of disease, rather I am concerned with the behavior of person who feels ill. In everyday speech, illness and

disease are treated as synonyms. In academic sub-disciplines like medical sociology, health psychology and social medicine, illness and disease are considered distinct categories. Disease refers to 'abnormalities in the structure and function of body organs and systems' while illness is the 'experiences of disvalued changes in state of being and social function' (Eisenberg, 1977). In *Culture, Health and Illness,* Helman describes illness as the 'subjective response of the patient and those around him to his being unwell; particularly how he and they interpret the origin and the significance of the event; how it effects his behaviour, and his relationship with other people; and the various steps he takes to remedy the situation. It not only includes the experience of ill-health but also the *meaning* he gives to that experience' (Helman, 1990). The term 'disease' stands for the doctor's perspective, based on the premises of scientific rationality, objective numerical measurement of physico-chemical data and on viewing diseases as entities [2].

This study uses data that were gathered with a social survey. A structured health interview was completed by 13,000 respondents and 85 percent of these respondents kept a daily log of symptoms and behavioural responses (a detailed overview of the data used in this study can be found in the data sections of each of the following chapters and in chapter 9). The social survey is an adequate method to provide insight in the subjective experience of changes in social functioning and the response to that change but is not designed to establish the presence or absence of abnormalities in the structure and function of body organs and systems. This study therefore restricts itself to the illness experience.

1.3 The three topics of this study

Getting an accurate estimate of the frequency of symptom occurrence requires the use of a valid and reliable instrument. Methods of measuring day-to-day symptoms have not been greatly improved or put under the same degree of scrutiny as have other methods of measuring health in survey research. This has created confusion about the extent of symptoms in the population, with different methods leading to wildly diverging estimates of symptom occurrence. In order to clear up this confusion, it is necessary to begin with a careful consideration of the question of measurement. Only after sorting out the problems associated with the measurement of common complaints can we explore the substantive issues related to symptom occurrence and illness behaviour.

This study covers three topics:

1. the measurement of symptom occurrence,
2. the association of symptom occurrence with various social determinants of ill health like social circumstances and voluntary behaviour,
3. illness behaviour and care seeking in response to these symptoms.

The findings of this study have been reported in six papers, reprinted in this book as chapters two through seven. The remainder of this section serves as an introduction to these papers and explains how these three topics are approached.

1.3.1 The measurement of the occurrence of common symptoms

Because the experience of symptoms of ill health is a phenomenon that is almost exclusively restricted to the perceptions of individuals, the possibilities for measuring symptom occurrence are limited. Only between 10 and 20 percent of the symptoms that are experienced are brought to the attention of a professional. The registration of symptoms as reported during consultations in General Practice greatly underestimates the actual occurrence of symptoms in the population. Most practical examples of symptom measurement and reports about symptom occurrence are based on questionnaire data administered to a sample of a certain population. Social scientists have put a great deal of work in the development of written material for health status measurement. These efforts have been aimed at mapping various dimensions of health status including functional capacity, or limitations (e.g. the *Functional Limitations Battery* and *Physical Abilities Battery* developed by the RAND corporation, see: Brook, 1979; Christiansen, 1990 and chapter four in this book), lay definitions of illness (e.g. the *Nottingham Health Profile*, see: Hunt, McEwen, McKenna, 1986), the impact of illness on daily life (e.g. the *Sickness Impact Profile*, see: Bergner & Gilson, 1981), or the presence of chronic conditions (Koenig-Zahn, Furer & Tax, 1993).

Relatively little effort has been put in the development of instruments for symptom measurement. Some instruments that cover various aspects of health like the *Duke University Health Profile* and the *Quality of Well-Being Scale* do contain symptom checklists (Koenig-Zahn, Furer & Tax, 1993) but these instruments are rarely used outside the circle of their creators and have not led to an uniform and widely used list of symptoms. Other instruments for symptom measurement can be found in the questionnaires used in clinical practice for the purpose of taking a patient's medical history or a (work related) health examinations. The *Cornell Medical Index* (CMI) has become widely known for that purpose. The CMI served as a source of symptom descriptions for the *Vragenlijst voor Onderzoek van de Ervaren Gezondheid*

(VOEG, "questionnaire for research of perceived health"). This instrument was designed to measure work related stress that translates into physical symptoms. Thirty-two of its 48 items are drawn from the Cornell Medical Index. An individual's score, calculated by the addition of the simple yes/no questions, was taken as an indicator of dissatisfaction related to working conditions.
While not intended to measure single groups of physical symptoms, it has been used for that purpose because it contains symptom descriptions easily related to specific organs like chest/heart, stomach, eye, throat or nose. The symptom descriptions of the VOEG have also been used to construct lists of symptoms for the purpose of measuring recent health complaints in retrospective interviews. In the *Nederland Oké* study, a symptom list was used that contained 39 symptoms, 25 of which were taken from the VOEG (Halfens, Drop & Philipsen, 1984). This 39 symptom list was used to estimate the occurrence of symptoms during the week preceding the interview.
With some modifications and additions, this list was also used to measure the occurrence of symptoms in a 14 day period in the health interview of the *Dutch National Survey of General Practice*.

Although it was not the intention of the authors, practical experience with the CMI shows this checklist to be particularly well suited for the detection of psychological problems. The scores on symptom lists correlate strongly with measures of neuroticism. Several researchers have commented that high scores on symptom lists indicate both psychological distress and physical ill health, and that these two are difficult to separate (Van der Zee, 1982; Visser, 1983). This highlights a problem with symptom lists: they are an open invitation to complain because they present a long list of health complaints. Respondents with a tendency to somatize are baffled by a long list of symptoms and are more ready than others to answers these questions affirmatively. How can the measurement bias of symptom checklists in the direction of psychological problems be avoided? One of the simplest alternatives would be to replace the symptom list with open ended questions about recent health complaints. This method has been used in retrospective interviews (Furer & Tax, 1987; Van Sonsbeek, 1990a). One of the striking results is that the number of symptoms reported over a two week period is significantly lower than that obtained with a checklist. The researcher now faces a dilemma: which method is a better measure? While checklists tend to overestimate the number of symptoms, without the aid of a checklist, respondents tend to forget symptoms and underreport the incidence of minor illnesses. This problem of 'memory lapse' found in open-ended questions might be avoided by asking respondents about their symptoms within a short time span after their occurrence. Health diaries with daily entries offer a third way of measuring common symptoms. A recurrent finding with health diaries is that the rate of incidence

of symptoms almost always exceeds the rate obtained during an retrospective interview [3] (Verbrugge, 1980). Verbrugge points out that diaries excel in recording incidence but not prevalence.
Their main advantage lies in recording recent acute conditions and diffuse symptoms. Since most common symptoms fall in that category, diaries seem an ideal instrument for recording common symptoms. But of course health diaries pose problems of their own. Apart from sensitization, health diaries mean a lot more work on the part of the respondent. Compliance with the regime of daily record keeping may differ between groups within the population. Individuals with little time to spare because of work or household obligations may not always find the time to complete the diary. People with a higher level of education are better able to articulate symptoms, leading to more reported symptoms than would be expected among this group on the basis of other survey research. Respondents with little interest in health matters might lack the motivation to keep the dairy on a daily basis. The *Dutch National Survey of General Practice* includes both a health diary study with open-ended questions preceded by a face to face interview with the same respondents that assessed symptom reports with a questionnaire. Hence this survey offers the rare opportunity to compare different methods of reporting acute common symptoms. In this study two questions can be addressed: (1) Is it true that symptom reports obtained with a symptom checklist are biased towards picking up psychological symptoms compared to the symptom reports obtained in the health diary with open-ended questions? and (2) Is it true that respondents with little interest in health matters, or limited education or severe time pressures underreport symptoms in the health diary compared to interview data? The answers to these questions are vital to the study of common symptoms. They shed light on the decision to use health diaries or questionnaires in combination with either symptom lists or open-ended questions. This comparative study is also helpful in interpreting symptom reports found in the literature, drawing the reader's attention to the methods with which these reports were obtained. The results of this comparative study are reported in *Social Science and Medicine* (Vol., 41, 317-332, 1995), and reprinted in this book as chapter 2.

1.3.2 Social and behavioural determinants of common illness

This study of everyday illness looks at the occurrence of common symptoms from a health policy point of view. In the Netherlands, health policy has two major concerns: health promotion and the efficient delivery of health care. In its recent policy paper 'Gezond en Wel' (the title refers to a Dutch saying that combines the state of good health with well- being) the government outlines its aims for the second half of the 1990s (Tweede Kamer, 1995a). In an overview that links major diseases to their determinants, special attention is given to the effect of individual behaviours like smoking, alcohol consumption

and diet on the occurrence of disease. With a host of health promotion activities, current health policy seeks to encourage healthy behaviour, like a balanced diet and regular physical activity, and to discourage unhealthy behaviour like smoking.

Current epidemiological knowledge on risk factors for developing serious and fatal conditions is the source of our emphasis on health promotion activities and the targeting of individual behaviours as determinants of disease. A recent study, *The Public Health Status and Forecasts*, from the National Institute of Public Health and Environmental Protection (RIVM) has helped the government in formulating its goals for health promotion by compiling the available knowledge on the relationship of diseases and their determinants and extrapolating trends in the incidence of diseases. In the epidemiological framework of this study, the concept of 'disease' plays a pivotal role. While the study describes health as a multidimensional concept, risk factors like individual behaviours are linked solely to a unidimensional measure: the presence or absence of disease. Consequently, the relationship of individual-behaviours to other aspects of health -- disability, social functioning, and common symptoms -- is neglected. This study of every day illness provides additional information showing how behaviour considered unhealthy from a epidemiological point of view is related to poor health from an 'illness' or symptom experience perspective.

Among the currently known behavioural risks smoking stands out for a number of reasons that make the relationship between smoking and common symptoms a particularly interesting study. The scientific community is unanimous in its condemnation of smoking. A recent British study shows that men who smoke heavily have a 50 percent chance of surviving to 70 after age 35, while men who never smoked regularly have an 80 percent chance of surviving to that age after their 35th birthday (Doll et al., 1994). The risks of smoking are well known among the public. In contrast to other habits, like alcohol consumption, there seems to be no safe amount of smoking beyond which the increased risk starts. In the Netherlands smoking is a prevalent habit: 43 percent of Dutch men and 37 of Dutch women are smokers (CBS, 1995). It is no surprise then, that *The Public Health Status and Forecasts* concludes that smoking is the risk factor that leads to the highest number of avoidable deaths and that a substantial reduction in the number of smokers would have the largest positive effect on public health. While the links between smoking and diseases are intensively studied, the effect of smoking on illness has not received much attention. The exploration of the relationship between smoking and illness is important for health promotion because smokers are motivated to quit, not because of abstract information on health risks, but because of personal experience with their own deteriorating health. So far, studies of smoking and illness experiences have focused on symptoms

that are easily linked to the habit, like respiratory symptoms and psychological symptoms (smokers often motivate their habit with the need to calm their nerves see: USDHHS, 1986). Little is known about other symptoms. Studies that are available base their conclusions on surveys with structured questionnaires and symptom lists. As we have discussed earlier, scores on symptom checklists tend to indicate psychological distress as well as physical ill health. The material of this study offers the opportunity to assess how smoking habits (by extent of daily use and use in the past), are related to symptom experiences. It also allows for a comparison of symptom reports obtained with a questionnaire using a symptom checklist to symptom reports obtained with health diaries using open-ended questions. These comparisons make it possible to examine bivariate relationships as well as models with statistical controls for social factors that determine ill health. The results of these descriptive comparisons are reported in chapter 3.

In its formulation of the objectives of health policy, the Dutch government pays particular attention to groups within society, whose poor health is attributable to socio-economic factors like unemployment, low income, adverse working conditions, poor housing, single-parenthood or low education. The government claims that further improvement of the population's health depends on improving the health status of the disadvantaged groups within society. It aims at crafting strategies of health promotion among these groups and seeks to maintain the accessibility of health care to them (Tweede Kamer, 1995a). The determinants of adverse health seldom come alone. More often than not, ill health is found among individuals where a combination of unfavourable social circumstances cluster: poor housing, low status, an unsafe job, and stressful, unstable living arrangements. Unhealthy habits are also more prevalent among deprived members of society. This skewness in the distribution of both poor health and poor health habits is an issue that merits careful study by public health researchers. Such study is required in order to make good health policy: Should priority be placed on the improvement of the social circumstances like providing more jobs, safe working conditions and better housing or should policy be geared to changing established behavioral risks like smoking? A recent book by well-known British sociologist Mildred Blaxter makes a provocative assertion in this regard. Her monograph *Health & Lifestyles*, provides a detailed account of how social position, health habits and reported illness are related in British society. She concludes her analysis with the following statement: "if circumstances are good, 'healthy' behaviour appears to have a strong influence upon health. If they are bad, then behaviours make rather little difference".

(Blaxter 1990: 216). The message for health policy is clear: because those in deprived circumstances do not gain much in terms of health from a change in lifestyle, health policy should devote its energy to changing circumstances, giving less priority to behaviour. This conclusion rings true for a traditional,

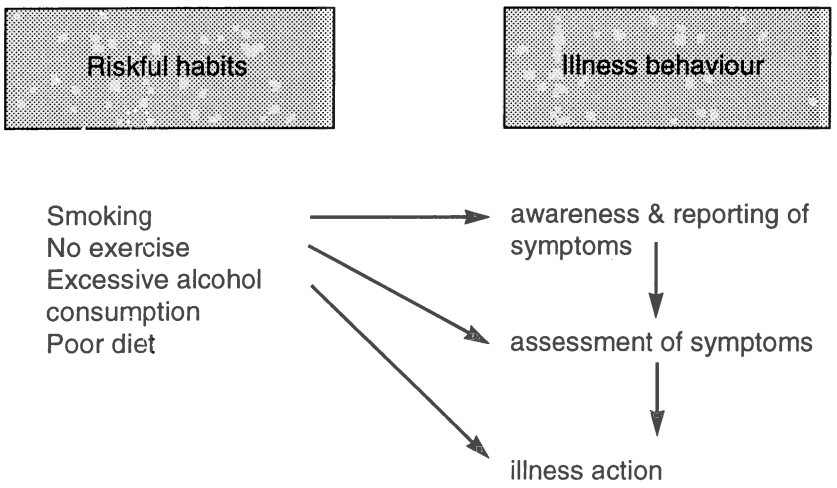
class ridden society like Britain, but hardly seems applicable in 'advanced' welfare states like the Netherlands or the Scandinavian countries. Blaxter's book is based on the Health and Lifestyle Survey which is nearly identical with the kind of data gathered here making replication possible. The analyses carried out here begins with an exploration of how various indicators of self reported health are related to social and material deprivation or privilege [4]. In a second step, the distribution of unhealthy habits among deprived and privileged groups of society is explored. Third, the association between a cumulation of unhealthy habits and health indicators is explored. Finally, the conclusion of Blaxter's study is treated as a hypothesis: is it true that among the deprived groups there is less 'effect' of health habits on self reported health than among privileged groups? In addition to the Dutch data, data from a similar survey in Denmark are used. This replication of Blaxter's study is published in *Sociology of Health and Illness* (Vol. 17, 495-524, 1995) and reprinted in this book as chapter 4.

1.3.3 Illness behaviour and care seeking for common symptoms

The third topic of this study concerns the behavioural response to the symptom experience. Throughout this introduction, I have emphasized that symptom occurrence and the actions to alleviate symptoms cannot be treated as separate entities. The perception of symptoms, the evaluation of their seriousness and the actions that should be taken form an integral part of illness behaviour (Mechanic, 1978). This study seeks to establish if risky habits bring an increased probability of experiencing the symptoms of illness. The illness behaviour of smokers and non-smokers may not be the same and this may influence the number of symptoms reported during a health interview or with any other instrument. There is reason to believe that unhealthy behaviour leads to a reduced awareness of bodily processes. Unhealthy behaviour may also lead to reluctance on the part of the individual to label physical sensations as symptoms of illness. The link between poor health habits and reduced reports of common symptoms can be explained in the following manner. Most people are well aware of the health risks of certain habits. Despite widespread knowledge about the health risks of smoking, fatty food, excessive drinking or unsafe sex many people are unwilling or unable to change behaviours they know entail health risks. Believing one thing an doing another is a situation that psychologists describe as *cognitive dissonance*. The theory of cognitive dissonance rests on the assumption that individuals strive towards consistency in their beliefs and that inconsistency leads to discomfort, which the individual seeks to avoid or reduce. Smoking has often been mentioned as a classic example of a habit that induces cognitive dissonance. Although the topic of smoking and cognitive dissonance attracted wide interest among researchers in the past, there is surprisingly little reference to it in the literature on illness behaviour. The reduction of dissonance through illness behaviour

is quite plausible: because smokers do not like to be confronted with the signs of illness attributable to their habit, they neglect important symptoms or delay necessary care. Illness behaviour is a process of learning to respond to bodily signs and, as Mechanic has shown, past experiences influence present responses (Mechanic, 1980). The strategy of avoidance, crafted for specific symptoms related to smoking, may spill over to the assessment of, and reaction to, symptoms in general. An unhealthy lifestyle may lead to a certain degree of "numbness" to these bodily signs. Assessment of illness and response to symptoms are influenced by unhealthy habits. The following graph depicts this model, a model that can be tested with the health diary data.

Figure 1.1 Simple model of the relationship between riskful habits and illness behaviour



The first aspect, awareness and reporting of symptoms among smokers and non-smokers, is described in chapter three. Building on that analysis, a new hypothesis is formed: it is expected that an unhealthy lifestyle comes with a tendency to belittle one's symptoms, to worry less about them, and to a

reluctance to consult other 'lay' people, written material or medical professionals (i.e, a General Practitioner) for information and/or treatment. The structured health diary asked respondents to describe their symptoms in their own words and answer a series of questions about their assessment (e.g., bothering, irritating, worrying, self-limiting, new or pre-existing) It also included a checklist of 16 illness actions, including consulting lay others, finding information in books or magazines, and seeking of professional help. With these data the hypothesis can be tested. The results are reported in chapter five.
When confronted with common symptoms, the individual has more freedom in seeking care than when faced with acute injury or with the symptoms of a serious or fatal condition. Most of the symptoms recorded in the health diary belong to the first category. The decision to seek professional help or to rely on self care depends on the expectations one has about the relief that a visit to the doctor or the use of prescribed medicine will bring. In this respect professionals (GPs) and lay people (patients) hold different opinions. Patients more often expect that treatment will bring relief than most GPs do (Van de Lisdonk, 1985b; Van der Voort, Grundmeijer Hendrick, 1995). The current study explores the effect that patient opinion has on care seeking. During the interview that preceded the health diary study respondents were asked to complete a form with statements about consulting a doctor for 12 self-limiting conditions. The respondents were asked if they believed care seeking to be necessary. It may be expected that those who agree with these statements are more likely to report having seen a GP or applied prescribed medicine for symptoms reported in the diary. But what about self care? Are those who intend to seek professional care, single-mindedly focused on the relief that professional care may bring, foregoing the possibility of self care? Or is it more likely that having strong inclinations to seek care is a sign of an active approach to health problems, which comes with an elevated probability to apply self care seek professional care? Health diaries provide information on both types of care. The unit of analysis for this exploration is the "illness episode:" uninterrupted days with symptoms. The results are important for educating the public about how to deal with common symptoms. For those with strong beliefs in professional care only, the possibilities of self care should be stressed. Those who use an (over)active approach to common health problems will benefit from education that emphasizes that most common symptoms subside without treatment. The results of this analysis were reported in Huisarts en Wetenschap (General Practitioner & Science) Vol. 39, 50-55,68, 1996. Chapter 6 is an English version of this article.

While the beliefs and attitudes of the individual may be important in the process of decision making, the decision to consult a physician is rarely made in isolation. One of the well established findings of medical sociology is that one who suffers from a certain ailment is most likely to consult a lay person befo-

re seeing a professional (Suchman, 1972; Sanders, 1982). The most likely outcome of lay referral is the seeking of professional help (Foets, 1985; Cameron, Leventhal, Leventhal, 1993). However, it is not clear what determines the outcome of lay advice. In this respect, the role of beliefs about the necessity of care seeking are worth examining again. It is assumed that patients have the same (or similar) opinions about care seeking as the persons they turn to for advice. Lay advice, therefore, amplifies the effect of the opinions that someone holds. Following this logic, it is expected that lay advice increases the probability of seeking professional care among those who have strong faith in medicine, while it reduces this probability among respondents with low expectations of medical care for common symptoms. This hypothesis is tested by examining the sequence of illness behaviour during the episode of illness. The results are reported in chapter seven. The theme connecting all these chapters is the importance of common symptoms for public health and for health policy. A clearer understanding of day-to-day complaints will result in better strategies for health promotion. My final chapter considers the relevance of the findings from both a scientific and a health policy point of view.

Notes

1. This finding suggests that most of the frequently occurring symptoms are relatively harmless. The current study indeed assumes that most of the reported symptoms are of a kind that one would call 'common illnesses' like flu, headache, bowel or stomach problems, hence the reference to these symptoms in the title.
2. While physicians refer to the object of their work in the terms of the objective and scientific, it should not be overlooked that anthropologists have shown that biomedical knowledge is socially produced and culturally specific (Brown, 1995).
3. This is not the case in the data that are analyzed in this study. Appendix 2 of chapter two compares incidence rates of several health diary studies.
4. This analysis uses several subjective health indicators. The replication of Blaxter's study requires us to go beyond the illness experience and to treat (reported) health as a multidimensional concept. It uses the number of symptoms reported during the interview and the number of symptomatic days reported in the health but also other indicators like the number of chronic conditions, psychological symptoms obtained with the GHQ, and the self-assessed health status.

2 EXPLORING THE ICEBERG OF MORBIDITY: A COMPARISON OF DIFFERENT SURVEY METHODS FOR ASSESSING THE OCCURRENCE OF EVERY DAY ILLNESS[1]

Abstract

This paper examines problems in measuring the occurrence of acute symptoms of ill health. Health interview surveys and health diaries often lead to different results. Two key hypotheses assume that: 1. interviews using checklists are more sensitive to the respondent's psychological distress than are the open-ended questions of health diaries, and 2. health diaries demand high levels of compliance leading to underreporting of symptoms. An additional 3rd hypothesis assumes that the effect of psychological distress on response patterns is strong for reporting psychological symptoms but insignificant for musculoskeletal symptoms.

The hypotheses were tested and explored with data from the Dutch Survey of General Practice, a nationwide study among 161 GPs. A random sample of 100 patients per GP was approached for a health interview and asked to keep a structured health diary during three weeks. Symptoms were recorded during the interview with a checklist and queried in the health diary with open-ended questions. The occurrence of symptoms was modelled with logistic regression.

High levels of psychological distress increase the likelihood of recording symptoms for both instruments, but the increase is greater for the interviews. Respondents who have only received limited education, heavy smokers and those who suffer from chronic conditions have a significantly lower likelihood of recording symptoms in the diary as compared to the questionnaire. There was no significant of taking an interest in health matters, gender, and work and domestic role obligations. Taking the nature of symptoms into account, it was found that psychological distress had indeed a great effect on the response pattern for psychological symptoms, but not for musculoskeletal symptoms.

The criticism that symptom checklists are sensitive to psychological distress rather than to physical illness alone, is confirmed in this study. Open-ended questions prevent biased responses, but result in fewer symptoms being recorded. Health diaries with open-ended questions 'produce' more symptoms but take more effort to complete, requiring sufficiently motivated respondents. It is recommended that a less biased specific list for the assessment of acute symptoms be developed.

Key words: *health interview survey, health diary, symptom measurement.*

2.1 Introduction

Estimating the health status of the general population has never been an easy task in either epidemiological or sociological research. One of the main

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problems is that most symptoms of ill health are not brought to the attention of medical professionals. In the 1960s, Wadsworth and his colleagues discovered that 95% of their sample experienced health complaints in the two weeks preceding the interview, but only 20 % of the respondents saw a physician for these complaints [1]. In the three decades since Wadsworth's study, other studies reported similar or even lower consultation rates [2-4]. Unreported health problems consist mainly of minor every day illnesses like headaches, fatigue and the common cold, although some serious conditions also remain unreported [4-5]. Using a well known metaphor, medical practitioners speak of unreported health problems as the 'clinical iceberg' [6]. Epidemiologist and social scientists draw on the same metaphor when they speak of the 'iceberg of morbidity' [7].

Medical practitioners are interested in the early detection of diseases and to them the clinical iceberg consists of undiagnosed but serious conditions like diabetes, glaucoma or tuberculosis [6]. These are conditions, that remain undetected because their development is a-symptomatic for the patient. Epidemiologist are less concerned with clinical practice, but share the clinician's focus on disease. Epidemiologist aim at obtaining accurate estimates of the amount and distribution of disease in the population, which requires an assessment of unreported morbidity [8].

Social scientists, but also researchers in General Practice or Community Medicine, focus on 'illness' or perceived morbidity [5,9,10]. To them the iceberg metaphor relates to reported (above water) and unreported (below water) symptoms.

The clinical iceberg and the iceberg of morbidity overlap, but are not identical. This paper is primarily concerned with the methodology of measuring perceived morbidity.

Social scientists and researchers in General Practice, have tried to the estimate the total amount of perceived morbidity in the general population [5,7,10]. Their research typically consists of an oral or postal survey, asking a random sample of the population to report the experience of symptoms of ill health during a certain period. Only rarely are these surveys accompanied by physical examinations carried out by trained physicians [11].

Comparing the results of these surveys leads to a troubling discovery: estimates of the occurrence of health complaints differ substantially, not only *between* countries but *within* countries. Most of these differences can be attributed to the method of inquiry, as demonstrated in table 2.1.
This table summarizes the results of several studies, done in Netherlands,

that used either open-ended questions about symptom experiences or symptom checklists. Most studies used a retrospective questionnaire, with a reference period of 14 days, although on occasion prospective methods like health diaries were used. It should be noted that when the same instrument is used in different studies (e.g. questionnaire with checklist and 14 day reference period) a high level of agreement is achieved. A slight difference in the wording of the question however, can have large effects on the outcome. The study from Nijmegen put specific emphasis on reporting minor complaints in the wording of its open-ended question, leading to the higher rates of reporting. It is also clear that the prospective health diary leads to a higher probability of symptom reporting, as compared to the retrospective questionnaire. Compared to the instrumental effects are the time trends that may have occurred in the period 1983-1986 of minor importance.

With the conflicting results of these studies in mind, one must ask how the truest picture of population symptom experiences can be obtained. Verbrugge and Ascione addressed this question in their influential paper on the iceberg of morbidity [7]. They mention a number of requirements that should be fulfilled in health surveys in order to obtain the most valid assessment of population symptoms. Their recommendations encompass data collection, coding and publication. In their view, the instrument must allow for a full scope of symptoms, and reports of symptoms should not depend on whether or not any action was taken for them. They prefer open-ended queries over a symptom checklist and favour prospective queries (health diary) over retrospective interviews. This list of requirements is helpful, but as all researchers know, to list requirements is one thing, to meet them is quite another. Financial and time constraints limit the choice of methods and often a retrospective interview with a symptom checklist is the best a researcher can get for his or her money. What harm does it do to settle for this option? In the next section, I explore the advantages and disadvantages of different methods of inquiry.

Table 2.1 The occurrence of health complaints in a period of 7 or 14 days in different studies from the Netherlands

Study	checklist 14 days	checklist 7 days	open-ended question
CBS 1983[2]	78 %		42 %
Uniken Venema 1986[3]			41 %
Survey General Practice 1987/1988[5]	81 %		63 %[4]
Nederland oke 1983[6]		65 %	
Regio Nijmegen 1983[7]			51 %
Huygen et al.1983[8]	81 %		

2. Central Bureau of Statistics. Respondents ≥ 16 years, private households (N=1054). Weighted sample. Checklist with symptoms similar to studies 4 and 5 [12].

3. Regional sample of Dutch and Turkish respondents, ages 16-69 years (N=489). The percentage with health complaints in 14 days was the same for both groups [13].

4. First two weeks in the health diary (data mentioned below).

5. Dutch National Survey of General Practice. Sample of respondents listed with General Practitioner (N=13014). For comparison with CBS respondents ≥ 16 years in private households are presented. Weighted sample. Checklist similar to studies 1 and 5 [14].

6. Respondents from a panel-study, ages 20-67 years, living in private households (N=884). Checklist of symptoms similar to studies 1 and 4 [15].

7. Regional sample of Nijmegen and environs. Respondents in private households, ages 18-64 years (N=3245) [16].

8. One General Practice in the Nijmegen area. Sample of families with children ≥ 12 years. Families with a chronically ill patient were excluded (N=857). Checklist differs from studies 1,4,5 [4].

2.2 A comparison of methods

Researchers designing a health survey to assess the occurrence of symptoms of ill health are confronted with at least two fundamental choices: (1) the use of either a retrospective assessment of symptoms during an interview or a prospective method (i.e a health diary) and (2) the use of either a symptom checklist or an open-ended question about symptom experiences. The decisions made, most often depend not on theoretical premises, but on a number of practical considerations like availability of resources, time constraints and sample size.

Several authors have considered the strengths and weaknesses of various methods. Table 2.2 summarizes their work [7, 12, 17-21].

A comparison of the characteristics of different methods shows that a retrospective interview with a checklist is both inexpensive to carry out and easy to process for data-analysis. There are, however, some doubts about the validity of the results. It is doubtful that respondents will remember the occurrence of symptoms in a reference period correctly [22]. They may also completely forget some symptoms. This is especially true for symptoms at the bottom of the list or those not explicitly mentioned but solicited in an auxiliary, open-ended category. With checklists some bias seems inevitable: symptoms at the beginning of the list are overrated, while those at the bottom are under reported. Another problem is the choice and the wording of the symptoms: should only symptoms be mentioned (fever, running nose) or should the list contain common names for frequent diseases (flu or cold)? Most symptom lists are derived from questionnaires intended for clinical settings, like the Cornell Medical Index (CMI) [23]. As such they are designed to establish the medical history of individual patients and are ill-suited for epidemiological purposes.

Checklists are often criticized for measuring psychological distress or neuroticism rather than actual illness or disease [24-28]. Mechanic argues that symptom reporting reflects a pattern of illness behaviour which is to a great extent influenced by the affective state of the individual. These reports are not necessarily a sign of an underlying disease. Support for Mechanic's position is found in the strong correlation between scales that measure 'neuroticism' or 'psychological distress' and the number of symptoms reported on a symptom list [26,29]. Furthermore, in a number of experimental studies, Skelton & Pennebaker found that: "there is no one-to-one correspondence between responses that occur at the physiological level and our experiences of bodily sensations and symptoms" [30]. Pennebaker and his colleagues also

Table 2.2 A comparison of data collection methods in health surveys

1. Type of questions: checklist versus open-ended

1.a. checklist with symptoms

advantages:
- uniform definition and coding of symptoms and easy analysis
- aided recall for minor symptoms

disadvantages
- selection of symptoms
- unknown symptom terminology
- tedious for respondent and tail effect
- triviality of symptoms
- complaining on request

1.b. open-ended questions

advantages
- all types of complaints possible
- easy to answer
- recording of non-trivial symptoms

disadvantages
- no uniform definition of symptoms, respondents mix symptoms and diagnoses
- coding problems

2. Type of questionnaire: retrospective (interview) versus prospective diary

2.a. retrospective interview

advantages
- easy to administer (e.g. telephone) with minimum trouble for respondent
- interviewer can check data quality
- inexpensive

disadvantages
- recall error: telescoping and memory lapse
- difficult to combine complaints with illness action

2.b. diary

advantages
- minimum recall error
- monitoring complaints and illness action from day to day

disadvantages
- conditioning: sensitization and fatigue
- cooperation is time consuming for respondent
- data quality is like postal survey
- high costs
- difficult to exploit data adequately in analysis

observed that patients who were informed about their high blood pressure or high blood glucose levels, indicating diabetes, began to experience symptoms that they had not experienced before [31].

What alternatives are available to a researcher who wishes to avoid the problems associated with retrospective interviews with symptom lists? Open-ended questions about symptom experiences seem less sensitive to psychological distress since they are less of an open invitation to complain, but empirical evidence about this assumption is lacking. When open-ended questions are used on a retrospective questionnaire, it is likely that many minor complaints are forgotten and hence not reported. Although many of these symptoms are not serious, recording these symptoms provides valuable information on the extent to which illness behaviour, like self-medication, is driven by symptoms. The problem of memory lapse can be addressed with a prospective instrument, like a health diary, but the use of a health diary demands more time and effort on the part of the respondent [32]. People with very little time to spare or those who lack motivation are likely to refuse participation. Moreover, participation does not mean compliance with the task of completing the diary every day. Health diary studies therefore frequently use compliance enhancement strategies, like weekly phone-calls or lotteries, all of which have an effect on the outcome of the study [18,19,33,34]. A further problem with the open-ended question is coding. Respondents are invited to define their complaint in their own words: symptoms, lay terminology for common diseases and medical diagnoses, are all included in health diaries. Coding becomes very time consuming and may not be reliable.

In sum, there is no ideal method to assess the occurrence of common daily health problems. The best one can hope for is to develop a set of rules to guide researchers in their choice of a particular method for a particular situation. In order to develop these rules, one must have a thorough understanding of the actual operation of different data gathering techniques. This study contributes to this understanding by comparing reports of symptom experiences obtained with a health diary using open-ended questions with the results of a health survey using a retrospective checklist, both completed by the same respondents. The respondents were approached for a face-to-face interview, after which they were asked to keep the health diary for the following three weeks. This study was part of the Dutch Survey of General Practice, and the main results on the occurrence of symptoms were mentioned in table 2.1 [14]. The interested reader will find details on both diary and questionnaire in the data section, in the appendix and in chapter 9. Previous research allowed me to formulate some hypotheses about the differences that are likely to occur between health diary and questionnaire. Since the questionnaire only contains a checklist and the diary only open-

ended questions, it is not possible to compare all four combinations that come with these two instruments (ref. table 2.2).

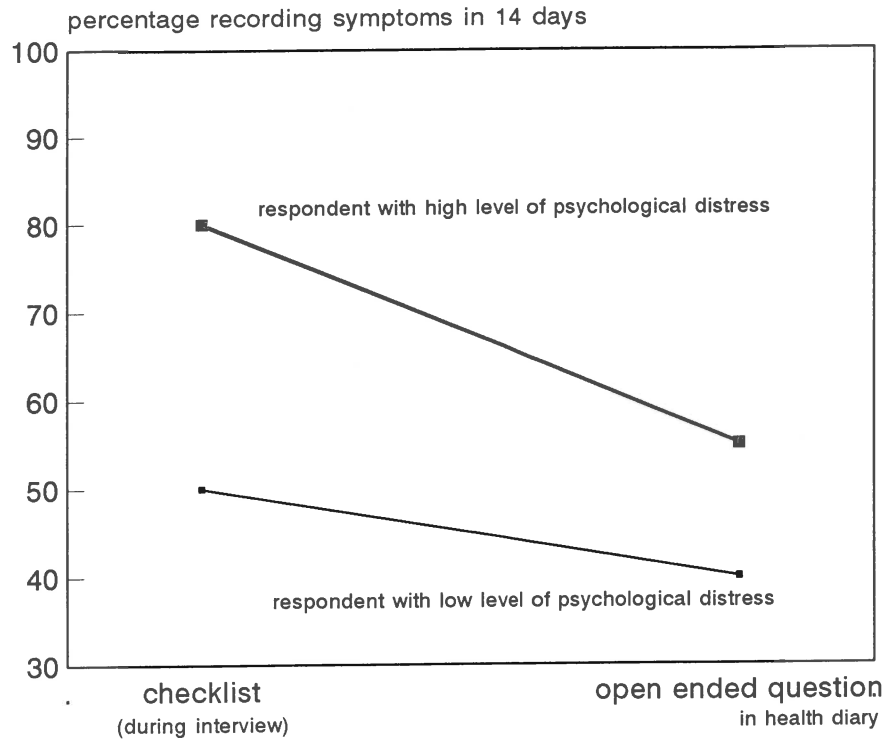
2.3 Hypotheses

I conduct this comparison by exploring two key hypotheses. The first hypothesis relates to the assumption that in particular checklists measure psychological distress or neuroticism.

Hypothesis 1
The increase in the likelihood of reporting health complaints with increasing levels of psychological distress will be disproportionally high for the interview data with the checklist method as compared to the health diary data with open-ended questions.

If it is true that a symptom checklist is biased towards psychological distress, especially when compared to open-ended questions about symptoms in a health diary, then the following situation should apply. Respondents who are in a state of psychological distress will have a high probability of reporting complaints when completing the checklist. They also have a more than average probability of reporting complaints in the health diary. However, the odds of reporting complaints will be higher for the checklist than for the diary, since the checklist is more sensitive to psychological distress. Respondents who are emotionally stable will have a low probability of reporting complaints, both on the checklist and in the diary. Figure 2.1 illustrates this hypothesis.

Figure 2.1 Expected probability of recording symptoms when either checklist or open-ended questions are used



The rates obtained with the checklist are placed on the left hand side because the questionnaire precedes the diary in time. Table 2.1 has shown that the symptom rate of the questionnaire is higher than the rates in the health diary. This finding is unusual in this type of research and a comparison of diary studies has shown that the symptom rate in this diary study is relatively low among the elderly and towards the end of the diary keeping period (see Appendix 2).

The second hypothesis deals with the personal characteristics of respondents that are associated with compliance with the regimen of diary keeping. The comparison of data collection methods showed that compliance is a crucial issue in diary studies. The chances that the health diaries are completed properly at the end of each day is to a certain extent determined by the motivation and the time constraints of the respondents. Although the data do not allow compliance to be assessed directly, we can infer compliance by comparing results obtained with the questionnaire to those from the diary. The null hypothesis assumes equal probabilities of symptom reporting for both questionnaire and diary. The alternative hypothesis assumes that lack of

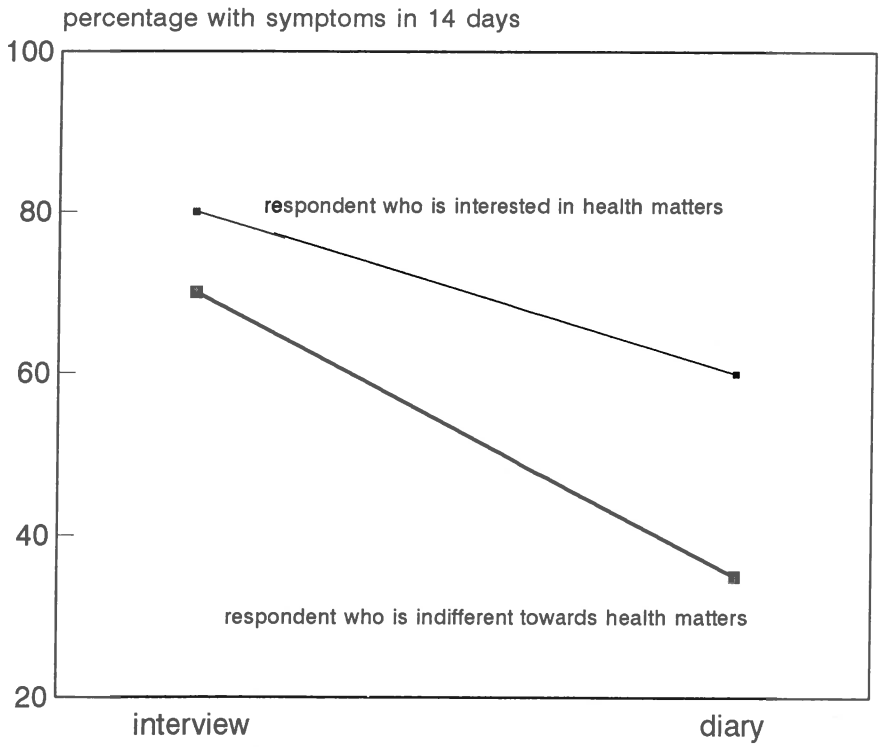
compliance leads to relatively low symptom rates in the diary.

Hypothesis 2

Respondents who are not interested in health matters and/or have many time constraints or role obligations are less likely to complete the health diary accurately. The lack of compliance leads to relatively low symptom rates in the diaries as compared to the interviews

The effect of compliance on the answering pattern for both the health diary and the interview differs from the previously mentioned effect of psychological distress. Responding to the symptom list during the interview is not very demanding for the respondent. Consequently, individual differences in motivation will not lead to large differences in the probability of mentioning symptoms during the interview. In the diary study on the other hand will motivation have larger effects on the probability of mentioning symptoms. This effect is illustrated in figure 2.2.

Figure 2.2 Expected probability of recording symptoms during interview or with health diary



The data that are used in this study contain an assessment of the interest that the respondent takes in health matters. They also contain information on the daily activities of the respondents with which time pressures (like family or work) can be inferred. Individual characteristics like gender, education and lifestyle seem of importance too. They determine the individual's concern with health and illness and are expected to be related to compliance.

Women are more attentive to their health than men, a fact confirmed by leafing through some popular women's (or men's) magazines, but reported in the literature as well [35]. Some researchers who used health diaries have gone as far as to approach only women as informants about the health of their families [20,21,34,36]. Evidently, this procedure may lead to a serious underestimation of men's health problems [37]. In this study with both male and female respondents we expect a higher level of compliance among women.

Studies of response behaviour in social surveys have shown that people with only lower education give less reliable answers to socio-medical questions [38]. Extending this finding to this health diary study we expect higher compliance among those who have attained a higher educational level.

The concern with the relationship of lifestyle and symptom reporting is based on the assumption that those who have a relatively 'unhealthy' lifestyle (e.g. smoking, excessive alcohol consumption) are less interested in health matters and less attentive to bodily experiences that may signal ill health. An 'unhealthy' lifestyle leads to *cognitive dissonance*, caused by the disparity between knowledge about health risks and the awareness of actually engaging in unhealthy behaviour [39]. Dissonance may be reduced by dis-valuing health, which in turn leads to a lower level of compliance. The individual may also seek to reduce or prevent dissonance by ignoring bodily experiences that provide evidence that one is actually damaging one's own health. As a result, these bodily experiences are not framed as illness. It is therefore less likely that they are mentioned in the diary with its open-ended question about illness experiences. The task of completing the diary is likely to provide a threse elderly with os that are considered part of every day life. On the other hand, when symptoms as coughing, nausea, headache or nervousness are mentioned one by one on a checklist they are more likely to be acknowledged, since the checklist is more of an open invitation to complain.

It is possible to develop some extension of these two key hypotheses. For instance, so far the nature of the symptoms has not been taken into account. By grouping symptoms, a refinement can be made of the previous assumptions. Psychological symptoms and musculo-skeletal symptoms provide

interesting examples for this comparative study. Symptoms like dizziness, fatigue and nervousness, which are readily identified as related to psychological distress should, in accordance with the first hypothesis, result in larger differences between instruments. This phenomenon was in fact observed in a methodological study of Van Sonsbeek, who compared the results obtained with a questionnaire using a symptom checklist with those that were obtained with a similar questionnaire employing open-ended questions about acute symptoms [12]. In his study the checklist and the open-ended question showed the highest similarity for the occurrence of musculo-skeletal symptoms. With this result in mind, a third hypothesis may be stated:

Hypothesis 3
Psychological distress plays a minor role in explaining the difference in symptom rates between health diaries with open ended questions and questionnaires with a symptom checklist for musculo-skeletal symptoms, but not for psychological symptoms.

An extension of this comparative study that is of an explorative nature concerns the effect of longstanding health problems on the answering pattern of questionnaire and dairy. The presence of chronic conditions and their effects on daily functioning are receiving increasing interest from the socio-medical research community [40]. But this is an area where it is difficult to formulate hypotheses. Opposing effects seem plausible. On the one hand, it may be assumed that individuals with one or more chronic conditions have become sensitized to the effects of their health problem on day to day functioning, causing them to monitor their health rather closely. When it comes to completing a health diary, the answering pattern of these individuals would resemble the answering pattern of highly motivated respondents, increasing the probability of recording symptoms. Equally plausible, however, is that the presence of chronic conditions leads to a decrease in the probability of recording symptoms. The symptoms that accompany these conditions have become familiar and are not sufficiently unusual to be reported in the diary. In this case, the answering pattern would resemble the pattern of those with an unhealthy lifestyle, since these individuals have also learned to treat their symptoms as not unusual.

2.4 Data

My study consists of a secondary analysis of data from the Dutch National Survey of General Practice; a nationwide study conducted in 1987/1988 among 161 General Practitioners in 103 surgeries using a non-proportional

stratified sampling scheme with urbanization, region and distance to the hospital as stratifying variables [14]. A random sample of 100 listed patients of each General Practitioner was approached for a health interview. In the Netherlands nearly the entire population is listed with a GP. The patients were visited at their homes. A letter from their GP helped to gain entry for an interview. At the end of the interview, the respondents were asked to keep a structured health diary about the daily occurrence of health complaints and illness behaviour for the following three weeks. The short interval between those two measurements allows to assume that the health status of the respondents did not change dramatically. The interviewer made an appointment to collect the diary from the respondents who agreed to take part in the diary study. During the diary keeping period the interviewer phoned twice to check if there were any problems with the completion of the health diary. The interviewers checked the entries of the respondents when collecting the diaries. The response rate is 77 % for the questionnaire and of those respondents 85 % completed the health diary for the entire 3 weeks (Total N = 11038). For children of ages up to 14 years old proxy interviews were held with one of the parents or guardian. These data are not used in this study.

The health diary consists of a 21 paged booklet with a simple one-page questionnaire to be completed each day. The respondents were asked to provide a daily rating of their health, mood and activities and whether or not any health complaints occurred that day. Those who had complaints were asked to describe the nature of their complaints (with a maximum of two) in their own words, followed by a series of precoded questions on the assessment of the complaint and the illness action prompted by the complaint on that day (Appendix 1 lists the questions of the diary). In other words: on days with complaints there was more work to do than on days without complaints, an artifact which is one of the explanations for the relatively low symptom rate in this study.

The health interview provided the information on the respondent, including health status and background variables like sex, age, education etc. (see Appendix 1). During the interview the respondents were asked to complete several checklists on their health status, with one list of acute symptoms. This list contained 42 precoded items and 3 open-ended items for additional complaints. The respondents were asked to indicate for each item if they experienced that symptom/condition during the previous fortnight. This checklist was originally developed for a study designed to have physicians estimate the severity of daily symptoms and was used in several other studies, of which the results are shown in table 2.1 [12,15]. The present version of the checklist contains some additional symptoms and some minor alterations. The respondents were also asked to complete a checklist on the

presence of chronic conditions. In the present analysis, the total number of chronic conditions was used, with weights for the severity of these conditions (see Appendix 1).

Data related to the effect of psychological distress or neuroticism on symptom reporting were gathered with several instruments assessing the mental health status of the respondents: Goldberg's General Health Questionnaire (GHQ) and the BIOgraphic PRObIem list (BIOPRO), a scale aimed at measuring the presence of psycho-social problems [41,42]. The survey did not contain an instrument specifically designed for measuring neuroticism like the Eysenck Neuroticism scale or its Dutch equivalent. Goldberg's questionnaire is a screening instrument for use in general practice settings. It performs well in detecting anxiety and depression but is not intended to be used for the detection of psychoses [43]. While several authors have described the GHQ as an indicator of psychological distress or neuroticism, It should be noted that the GHQ is intended to register acute psychiatric symptoms based of the respondents experiences in the previous four weeks and not meant to measure neuroticism as a personality trait [44-46]. Researchers using the GHQ and a Eysenk's Neuroticism scale simultaneously, found similar associations with socio-demographic variables but report that there are some marked differences between the instruments among the elderly (75 years and over) [47]. These results have led to the decision to exclude the elderly of 75 years and over from the analyses. Because some of the questions on the 30 item version of the GHQ resembled questions on the symptom checklist (e.g. both lists contain questions about sleeping problems and nervousness), it was necessary to validate the results obtained with the GHQ. The Biographic Problem list contains 22 questions covering a wide variety of common problems ranging from 'difficulties in establishing relationships with others' to 'worries about the future' (see Appendix for a list of all items). The BIOPRO has satisfying scaling properties. In a panel-study on psycho-social problems, Cronbach's α was 0.76 and 0.78 in the first and second wave respectively [48]. Previous users of the problem list argue that in several studies a simple counting of problems was strongly correlated with indicators of distress [16,42,49-51].

The analysis of the relationship between available time and diary keeping requires some measure of time use. In this study time constraints were defined differently for men and women; for men heavy time constraints were primarily related to the demands of work whereas for women combining work and the rearing of children was considered as such. For both sexes combining a job with being a head of a one-parent family was considered as a living condition with severe time limitations. It was assumed that (disability) pensioners, the unemployed and women who are housekeeping in a family

without children, face very little time constraints and consequently have less trouble keeping the diary on a daily basis. Accurate completion of the health diary also depends on the motivation of the respondent. Respondents who show more interest in health matters were assumed to be keener on completing the diary than others. The respondent's interest in health matters was rated by the interviewer at the end of the interview.

In order to get a measure of the effect of health habits on reporting daily symptoms, respondents were asked about their current and previous alcohol and tobacco consumption. Three levels of drinking were distinguished: abstaining, light or moderate drinking and excessive drinking [52]. There were only very few abstainers who reported heavy drinking in the past. Previous drinking habits were therefore not considered. For smoking habits, a distinction was made between former and current smokers (light, moderate and heavy smokers) and respondents who have never smoked.

Both the checklist and the health diary could be used to assess the occurrence of health complaints in a period of 14 days: the checklist uses 14 days as a reference period and from the diary study we use the first two weeks. Both studies then provide us with a comparable estimate about whether or not any health complaints occurred. When it comes to the nature of complaints, checklist and health diary differ: the checklist records the *number* of different complaints in two weeks while the health diary records the *number of days* with complaints, restricting the number of different complaints on each day to two. It follows that only the dichotomous variable (yes or no complaints; specified or unspecified) is comparable for both instruments.

The diary contained two open-ended questions on the nature of the symptoms of ill health requiring a coding system to be developed. The health complaints of the diary were coded with the aid of the coding system that is widely used in General Practice research [53].

Three comparisons between checklist and diary were made. For hypothesis 1 and 2, the reporting of complaints was compared, irrespective of the nature of the complaints. For the third hypothesis, I made two additional comparisons on the occurrence of specific complaints: (1) complaints related to psychological distress and (2) musculo-skeletal complaints. The following procedure was used to group these symptoms. The checklists contains a number of complaints like dizziness, fatigue, nervousness that could easily be labelled as related to psychological distress or 'psychological symptoms' for short. With other complaints, like headache or extreme perspiration, there was less certainty. A Principal Components analysis on all items of the checklist helped in distinguishing a set of complaints that have psychological distress as a

common denominator (these complaints are listed in Appendix 1). A similar procedure was carried out to distinguish musculo-skeletal problems. After defining these groups for the checklists the closest matching titles from the 97 categories in the diaries were grouped under the same headings.

2.5 Methods

This section deals with the statistical analysis of the hypotheses. Under H_0 the questionnaire with symptom checklist and the health diary with open-ended questions about health complaints are equivalent instruments and both should result in the same percentage of respondents that record symptoms over a period of 14 days. The alternative hypotheses assume that these percentages differ. How should these differences be assessed? For both instruments the dichotomous variable, occurrence or non-occurrence of symptoms, could be modelled with logistic regression, using the variables pertaining to the hypotheses as predictors. The effect of each of these predictors on the occurrence of symptoms in either health diary or questionnaire is of limited interest, however. The primary concern of this paper lies with the (magnitude and sources of) the difference between instruments. These differences can be modelled in a single equation when a dummy variable for instrumental effects is created and interactions of this dummy variable with each of the predictors are incorporated in the model [54].

The respondents in this study completed both questionnaire and health diary and these response variables could therefore not be treated independently in one equation. Independent observations were obtained by assigning respondents randomly to two groups, which contributed to the analyses with either the diary or the questionnaire data on the occurrence of symptoms. Three logistic regression were carried out in this way: the first analysis used the probability of the occurrence of symptoms, irrespective of its nature as response variable, whereas the two other analyses looked at the occurrence of specific symptoms. The following independent variables were entered in the analyses simultaneously:

(1) psychological distress (GHQ or BIOPRO);
(2) interest in health matters;
(3) educational level;
(4) time- and role obligations;
(5) smoking and drinking habits;
(6) the number of chronic conditions;
(7) sex;
(8) the dummy variable for the instrument that is used and finally

(9) age is entered as control variable.

The design of this analysis required that interactions with the dummy variable for method are included as well. The inclusion of all independent variables simultaneously ensures that the variables that are included for the first hypothesis on psychological distress act as 'controls' for the analysis of the second hypothesis on compliance and vice versa.

2.6 Results

The following tables display the results from these logistic regressions. They show the main effects of the predictors pertaining to the hypotheses, and interactions of these variables with the dummy variable for the method of enquiry. Table 2.3 shows the results for analysis of the occurrence of symptoms in general.
In this table the diary data are used as a reference category. The significant dummy variable 'method' indicates that the likelihood of reporting complaints is significantly higher for the questionnaire. What does the analysis show with respect to the hypotheses? First of all, the analysis clearly points out that psychological distress (GHQ) is an important predictor of reporting health complaints for both health diary and questionnaire. The strong interaction of 'method' with GHQ shows that the effect of distress is much stronger for the questionnaire than for the diary, which confirms the first hypothesis. An analysis that uses the questionnaire as a reference category shows much larger main effects (and interactions of the same magnitude, but opposite sign) for distress than the diary data do, which is in accordance with the expectations shown in figure 2.1.

Regarding the second hypothesis, only educational level leads to clearly significant differences between instruments, with a much lower probability of reporting symptoms in the diary for those with only limited education. A comparison of main effects shows that education has much larger effects for the diary than for the questionnaire data (for which they are not significant), which is in accordance with figure 2.2. Of further interest is that heavy smokers have a significantly higher probability of reporting symptoms in the questionnaire than in the diary, which partly confirms the predicted effect of lifestyle. Other categories of smoking and also drinking behaviour do not have the expected effects. The predictions about the effects of time pressures, gender and the interest that individuals have in health matters were not confirmed in this analysis. It is noteworthy that having one or more chronic diseases comes with a significant lower probability or reporting complaints in

the diary as compared to the interview.

The regression analyses for the occurrence of specific symptoms may be interpreted in a similar vein as the previous analysis, with some important differences for the response variable. The dichotomous response variable treats respondents with one or more days with specific symptoms (or entries on the checklist), as the occurrence category, whereas the non-occurrence category consists of respondents who either did not experience symptoms at all or only symptoms that do not belong to the specific category at which the analysis aims.

During the interview, 59% of the respondents (age 15-74 years) reported to have experienced one or more psychological symptoms in the previous fortnight. In contrast, only 32% of the respondents reported psychological symptoms on one or more days in the first two weeks of the diary. The results of the logistic regression for the occurrence of symptoms related to psychological distress is shown in table 2.4.
Evidently, higher scores on the GHQ increase the likelihood of reporting psychological symptoms with a strong excess of reporting complaints during the interview. Again the educational level is a variable that has strong effects on the answering pattern in the diaries but much less so in the questionnaire. The interaction is statistically significant for all categories of education combined (Wald statistic: $p=0.013$) but not for separate dummy variables. Respondents who have attained a higher educational level are apparently more willing and/or able to report psychological symptoms in a health diary than others. During the interview smokers reported more psychological symptoms than non-smokers do, with heavy smokers having the highest probability of reporting symptoms. This relationship is virtually absent in the health diaries. Respondents with one or more chronic conditions are more likely to report psychological symptoms during the interview than in the diary. Respondents who were indifferent towards health matters have a very low probability of entering psychological complaints in the diary, as compared to the interview. Again, the interaction is not significant, although the differences between instruments are much larger than in the previous analysis. Women report more psychological symptoms than men do but without the expected difference between instruments.
Musculo-skeletal problems were also more often reported during the interview than in the diary. About 38 % of the respondents ticked one or more of these symptoms on the checklist, while only 20 % wrote about musculo-skeletal symptoms in the diary. The results from the logistic regression are shown in table 2.5.

Table 2.3 Logistic regression of the probability of having health complaints in 14 days, recorded in either health diaries or during an interview with a retrospective questionnaire. *)
Data from Dutch National Survey of General Practice (n=7993; ages: 15-74 years)

Independent variables main effects	Regr. coeff.	Standard error	P-value	Independent variables interaction with method (m)	Regr. coeff.	Standard error	P-value
GHQ				GHQ * m			
1-2	.3729	.0894	.000	1-2	.6742	.1508	.000
3-4	.6537	.1565	.000	3-4	.8906	.2983	.003
≥ 5	1.2574	.1434	.000	≥ 5	1.0247	.3327	.002
not interested in health matters	-1.1254	.3349	.001	not interested * m	-.0228	.4953	.963
interested in health matters	.0329	.0717	.646	interested * m	-.0855	.1138	.452
lower education	-.3903	.0834	.000	lower education * m	.3432	.1316	.009
higher education	.2499	.1016	.014	higher education * m	-.1136	.1572	.470
low time pressure	.0696	.1161	.549	former smoker * m	-.0865	.1535	.573
high time pressure	.0108	.0996	.914	light smoker * m	.2372	.1785	.184
				moderate smoker * m	.0177	.1723	.918
former smoker	.3761	.0977	.000	heavy smoker * m	.5219	.2140	.015
light smoker (≤ 10 c/d)	.1449	.1098	.187				
moderate smoker (11 - 20 c/d)	.3030	.1119	.007	light/mod. alc. * m	.2115	.1471	.150
heavy smoker (> 20 c/d)	.1839	.1289	.154	heavy alc. * m	.2257	.2957	.445
light/mod alc. cons.	.1917	.0914	.036	chronic disease * m	.1866	.0371	.000
heavy alc. cons.[-)]	.0515	.1836	.779				
				Age * m			
chronic disease (weighted)	.2134	.0189	.000	25-34	-.4841	.1783	.007
				35-44	-.3393	.1844	.066
age				45-64	-.2351	.2111	.265
25-34	.1378	.1134	.224	55-64	.0944	.2443	.699
35-44	-.1321	.1170	.259	65-74	.1026	.2806	.715
45-54	-.2980	.1333	.025				
55-64	-.6018	.1516	.000	male * m	.0069	.1193	.954
65-74	-.9552	.1789	.000				
				low time press. * m	-.2405	.1829	.189
male	-.6616	.0744	.000	high time press. * m	-.0385	.1564	.806
method (questionnaire)	.5341	.2006	.008				

*) Logistic regression with indicator coding, reference categories: GHQ: 0; interest in health matters: neutral; education: intermediate; time pressure: intermediate; smoking: never smoked; alcohol consumption: abstainer; age: 15-24 yrs; sex: female. The number of chronic diseases is a numerical variable; severity is weighted in 3 categories ref. Appendix 1.

-) Heavy alc. cons.: ♂ 4 glasses alcohol or more every day or 5 glasses alcohol or more almost every day; ♀ 3 glasses alcohol or more every day or 4 glasses alcohol or more almost every day. Abstainer: no alcohol consumption during past 6 months; Light moderate alc.consumption of alcohol during past 6 months but less than heavy drinker

These results differ in a number of ways from the previous analyses. Firstly, there is no significant interaction between psychological distress and the instrument of inquiry, although it remains true that the probability of reporting symptoms increases with higher levels of distress. This finding is in accordance with the third hypothesis. Respondents with severe time limitations or role constraints are less likely to report musculo-skeletal symptoms in the diary than during the interview, which was not found in the previous analyses. Smokers are again more likely to report symptoms during the interview than in the diary. The differences between the sexes are smaller than in the previous analyses.

All of these logistic regressions have been repeated with scores on the Biographic Problem list (BIOPRO) as indicator of psychological distress. The results of these analyses are very similar to those presented above with the GHQ and therefore not shown in separate tables, but may be obtained from the author. The expected interaction of distress with method of inquiry holds equally for the occurrence of symptoms in general and for the occurrence of psychological symptoms. For musculo-skeletal symptoms the interaction is larger than in the analysis with Goldberg's GHQ, but not clearly significant (Wald statistic: p =0.08 for all categories combined).

2.7 Conclusion and discussion

With the goal of improving our understanding of the 'iceberg of morbidity', this chapter addressed the issue of the differences that occur in survey research that aims at measuring the amount of self reported morbidity in the population. Two key hypotheses were tested:

1. interviews using checklists are more sensitive to the respondent's psychological distress than are the open-ended questions of health diaries; and
2. health diaries demand high levels of compliance leading to underreporting of symptoms among those who are less likely to comply.

Compliance was assumed to be related to taking an interest in health matters, time restrictions, gender, education and lifestyle. These two hypotheses were tested with a comparison of the reported occurrence of symptoms during a face-to-face interview and in a health diary. The nature of the reported symptoms was not taken into account. A third hypothesis assumed that psychological distress is of particular importance when assessing the occurrence of psychological symptoms, but much less so, for musculo-skeletal symptoms. The effect that the presence of chronic conditions may have on

symptom reporting was also assessed, but in an explorative manner. The results of the analyses are summarized with in table 2.6.

This table clearly shows that most empirical support is found for the first hypothesis. We may conclude that symptom checklists, like the one that was used in this paper, are likely to lead to biased results, due to psychological distress. Why? An examination of the contents of the symptom list may help in the explanation of this result. The Dutch checklists mentioned in this paper (table 2.1) have origins of measuring both psychological and physical symptoms. They are modifications of the 'VOEG' (Questionnaire for assessment of subjective health) checklist that was developed in the 1960s to measure distress of workers in an industrial environment [55]. In turn, the VOEG took 32 of its items from the Cornell Medical Index (CMI) [12]. The CMI was designed as a checklist of a patient's medical history which the patient could complete independently in the waiting room [23]. Subsequent research with the CMI showed that it was particulary well suited to measure psychological problems that physicians do not detect during a consultation [56]. The checklists that are currently used in the Netherlands contain up to ten 'psychological' symptoms which are prominently placed at the beginning of the list (see Appendix 1). There is reason to believe that a different checklist with a list of well defined physical symptoms would be less prone to the psychological distress bias. Our comparison of the reporting of musculoskeletal complaints in the diaries and in the questionnaire is a case in point: levels of distress are still significant predictors in both diary and questionnaire but the difference in sensitivity to distress is slight. Future research of the occurrence of health complaints would be well advised to develop a new symptom list, rather than using one of the prevailing lists.

The second hypothesis on compliance received much less support. It only became clear that a health diary study is less suited for examining the symptom experience of respondents with only few years of education. Using diaries for the assessment of the health status of the entire population means running the risks of an under-representation of disadvantaged groups like the elderly with only limited education.

The analyses also showed that respondents with a chronic condition and smokers resemble each other in their response to the two instruments. Both groups report far more symptoms during the interview than in the diary. Although this may be interpreted as lack of compliance, this response pattern may also provide a clue about the way that respondents have used the health diary. It seems that the health diary is primarily used to report symptoms that are outside the range of normal experience. Smokers and respondents with a chronic condition may have become insensitive to minor disturbances in their

Table 2.4 Logistic regression of the probability of having psychological symptoms in 14 days, recorded in either health diaries or during an interview with a retrospective questionnaire*)
Data from Dutch National Survey of General Practice (n=7993; ages 15-74 years)

Independent variables main effects	Regr. coeff.	Standard error	P-value	Independent variables interaction with method (m)	Regr. coeff.	Standard error	P-value
GHQ				GHQ * m			
1-2	.2625	.0905	.004	1-2	.7473	.1271	.000
3-4	.4025	.1420	.005	3-4	1.1882	.2202	.000
≥ 5	.9638	.1117	.000	≥ 5	1.3534	.2102	.000
not interested	-1.4641	.5376	.007	not interested * m	1.0829	.6439	.093
interested	.0839	.0738	.256	interested * m	-.1286	.1045	.218
lower education	-.2770	.0863	.001	lower education * m	.2208	.1216	.069
higher education	.3497	.0974	.000	higher education * m	-.1837	.1394	.188
low time pressure	-.1455	.1173	.215	former smoker * m	.0089	.1395	.949
high time pressure	.0914	.1004	.362	light smoker * m	.3303	.1624	.042
				moderate smoker * m	.2115	.1587	.183
former smoker	.0837	.0977	.392	heavy smoker * m	.3629	.1878	.053
light smoker (≤ 10 c/d)	-.0976	.1139	.392				
moderate smoker (11 - 20 c/d)	-.0226	.1144	.843	light/mod alc. * m	.2270	.1334	.089
heavy smoker (> 20 c/d)	.0032	.1308	.980	heavy alc. * m	.1829	.2739	.504
light/mod alc. cons.	-.0283	.0921	.759	chronic disease * m	.1162	.0259	.000
heavy alc. cons. **)	.0168	.1936	.931				
				age * m			
chronic disease (weighted)	.1171	.0161	.000	25-34	-.2310	.1592	.147
				35-44	-.1523	.1677	.364
age				45-54	-.0603	.1928	.755
25-34	.1658	.1119	.139	55-64	.1266	.2245	.573
35-44	.0065	.1191	.957	65-74	.0753	.2708	.781
45-54	-.1344	.1367	.325				
55-64	-.2913	.1601	.069	male * m	-.0030	.1073	.978
65-74	-.7920	.1975	.000				
				low time press. * m	.0415	.1652	.802
male	-.8503	.0756	.000	high time press. * m	-.1937	.1431	.176
method (questionnaire)	.5530	.1849	.003				

*) Logistic regression with indicator coding, reference categories: GHQ: 0; interest in health matters: neutral; education: intermediate; smoking: never smoked; alcohol consumption: abstainer; age: 15-24 yrs; sex: female. The number of chronic diseases is a numerical variable; severity is weighted in 3 categories ref. Appendix 1

**) Heavy alc. cons.: ♂ 4 glasses alcohol or more every day or 5 glasses alcohol or more almost every day; ♀ 3 glasses alcohol or more every day or 4 glasses alcohol or more almost every day. Abstainer: no alcohol consumption during past 6 months. Light/moderate alc: consumption of alcohol during past 6 months but less than heavy drinker.

Table 2.5 Logistic regression of the probability of having musculo-skeletal symptoms in 14 days, recorded in either health diaries or during an interview with a retrospective questionnaire *)
Data from Dutch National Survey of General Practice (n=7993; ages 15-74 years)

Independent variable main effects	Regr. coeff.	Standard error	P-value	Independent variables interaction with method (m)	Regr. coeff.	Standard error	P-value
GHQ				GHQ * m			
1-2	.3259	.1008	.001	1-2	.1023	.1334	.443
3-4	.2792	.1616	.084	3-4	.1904	.2127	.371
≥ 5	.5562	.1214	.000	≥ 5	.2444	.1659	.141
not interested	-1.1369	.5955	.056	not interested * m	-.0753	.7405	.919
interested	.0019	.0831	.982	interested * m	-.0199	.1104	.857
lower education	-.0625	.0968	.519	lower education * m	.1568	.1280	.221
higher education	.0795	.1147	.489	higher education * m	-.1831	.1517	.228
low time pressure	-.0254	.1256	.840	former smoker * m	-.0235	.1478	.874
high time pressure	-.3107	.1198	.010	light smoker * m	.3593	.1726	.037
				moderate smoker * m	.0304	.1663	.855
former smoker	.1666	.1099	.130	heavy smoker * m	.2893	.1962	.140
light smoker (≤ 10 c/d)	-.0284	.1318	.829				
moderate smoker (11 - 20 c/d)	.1503	.1269	.236	light/mod alc. * m	.0882	.1406	.530
heavy smoker (> 20 c/d)	.0129	.1484	.931	heavy alc. * m	.4175	.2860	.144
light/mod alc. cons.	.0522	.1044	.617	chronic disease * m	.1399	.0248	.000
heavy alc. cons. **)	-.0570	.2172	.793				
				age * m			
chronic disease (weighted)	.1461	.0166	.000	25-34	-.1629	.1758	.354
				35-44	-.2434	.1830	.184
age				45-54	-.2491	.2020	.218
25-34	.1956	.1354	.149	55-64	.1503	.2353	.523
35-44	.2834	.1403	.043	65-74	.0275	.2766	.921
45-54	.5318	.1522	.001				
55-64	.1302	.1793	.468	male * m	-.0940	.1131	.406
65074	-.0489	.2093	.815				
				low time press. * m	-.0380	.1675	.820
male	-.1625	.0852	.056	high time press. * m	.3282	.1562	.036
method (questionnaire)	.5128	.2062	.013				

*) Logistic regression with indicator coding, reference categories: GHQ: O; interest in health matters: neutral; education: intermediate; smoking: never smoked; alcohol consumption: abstainer; age: 15-24 yrs; sex: female. The number of chronic diseases is a numerical variable; severity is weighted in 3 categories ref. Appendix 1.

**) Heavy alc.: ♂ 4 glasses alcohol or more every day or 5 glasses alcohol or more almost every day; ♀ 3 glasses alcohol or more every day or 4 glasses alcohol or more almost every day. Abstainer: no alcohol consumption during past 6 months. Light/moderate alc: consumption of alcohol during past 6 months but less than heavy drinker.

Table 2.6 Summary of results of comparison of diaries and interviews (sig. $p < .05$ two tailed)

		Nature of symptoms	
Effect	General	Psychological	Musculoskeletal
psychological distress	high distress high prob. interv.	high distress high prob. interv.	not significant
time pressure	not significant	not significant	high time press. low prob. diary
interest in health	not significant	not significant	not significant
gender	not significant	not significant	not significant
education	low education low prob. diary	not significant	not significant
lifestyle	heavy smoker low prob. diary	light smoker low prob. diary	light smoker low prob. diary
chronic conditions	more chr. cond. low prob. diary	more chron. cond. low prob. diary	more chron. cond. low prob. diary

daily health and therefore do not enter these symptoms in the diary. They have raised the threshold for labelling a physical symptom as illness. The respondent's assessment of the symptoms reported in the diary supports this interpretation. The structured questionnaire of the health diary not only required mentioning the symptoms of that day but also asked to provide an assessment of each symptom (i.e. is the symptom: new or unknown, bothering or irritating, reason for worry? see Appendix 1). During new episodes of illness, symptoms were rated as bothering/irritating on more than 70% of the days with illness. It is plausible that the respondents did not take the trouble to mention symptoms in the diary that interfere only very little with daily life, which may also add to the explanation for the lower symptom rate in the diary as compared to the interview.

This paper began by asserting the need to fully explore the iceberg of morbidity. This study shows that the amount of self reported morbidity is not a quantity that lends itself to precise measurements. Respondents may report (and think) of their symptoms differently, depending on the method with which these symptoms are assessed. In metaphoric language this would mean that the boundaries of that part of the iceberg that lies below water cannot be clearly delineated. What is ice to some is water to others. Not surprisingly,

Stellingen behorend bij het proefschrift *Illness in everyday life. A health diary study of common symptoms and their consequences* van S.E. Kooiker.

1. Er bestaat op dit moment geen betrouwbare en algemeen aanvaarde methode om het voorkomen van alledaagse gezondheidsklachten te meten.

2. Rokers zijn oostindisch doof voor de signalen van hun lichaam.

3. De bevinding dat na het stoppen met roken de kans op ziekte afneemt terwijl de kans op klachten toeneemt, kan verklaard worden door een onderscheid te maken tussen *disease* en *illness*.

4. Het bespreken van gezondheidsklachten met personen in de naaste omgeving vervangt het bezoek aan de dokter meestal niet maar stimuleert dit juist.

5. Een toekomstverkennning voor de volksgezondheid die gebaseerd is op de epidemiologie van ziekten en geen aandacht besteedt aan subjectieve gezondheidsklachten en de determinanten daarvan, zal het gebruik en de kosten van gezondheidszorg ernstig onderschatten.

6. Het gebrek aan belangstelling van mannen voor hun gezondheid en het verhoogde sterfterisico van mannen rechtvaardigen eerder een stimulans van overheidswege voor mannengezondheidszorg dan voor vrouwengezondheidszorg.

7. De vervroeging van de promotieleeftijd als gevolg van de invoering van het natuurwetenschappelijk georiënteerde AIO-stelsel komt de creativiteit in de sociale wetenschappen niet ten goede omdat sociale wetenschappers in tegenstelling tot natuurwetenschappers hun creatieve hoogtepunt veelal pas op gevorderde leeftijd bereiken.

8. Een proefschrift schrijven is de beste manier om alles over een onderwerp te weten te komen, maar daar vervolgens nooit meer op aangesproken te willen te worden.

9. In de discussie over de sociaal zwakkeren of kwetsbaren in de samenleving blijft vaak onvermeld dat velen die tot deze categorie gerekend worden, fysiek juist erg sterk zijn.

10. Kantoorliefdes kunnen leiden tot familiebedrijven.

estimates of the size of the iceberg do not exist independently of the instruments used to make the estimates. For clinicians the iceberg metaphor remains apt: for them reported morbidity remains some small percentage of the total amount of diseases in a population. But for social scientists whose interest lies below the surface, the metaphor of the iceberg melts, precisely because what they find there is much too unsolid to be referred to as ice. Reports about the occurrence of symptoms of ill health should therefore always contain detailed information on how these symptoms were assessed.

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APPENDIX 1. VARIABLES IN THE DUTCH SURVEY OF GENERAL PRACTICE USED IN THIS PAPER

1. Checklist of complaints experienced in the 14 days prior to the interview[1]:

Q: "This form mentions various complaints from which everybody may suffer once in a while. Please, indicate for each complaint if you suffered from that complaint in the past 14 days".

Checklist contains the following symptoms:
dizziness, headache, fever, fatigue, nervousness, insomnia, general weakness, aggressiveness (frustration), unbalanced nerves, extreme perspiration, soar throat, ear pain, buzzing in the ear, hearing problems, nasal congestion, nose bleeding, cough, palpitations, swollen ankles, nausea, chest ache, vomiting, diarrhoea, heartburn, stomach ache, cramps, constipation, gaining weight, eating disorders, toothache, painful urination, incontinence, menstrual problems, complaints about neck shoulder or hip, back pain, complaints about limps, problems at work, family problems, problems with contraception.

In this paper the following subdivisions are made for separate analysis:

1.a. complaints related to psychological distress:
dizziness, headache, fatigue, nervousness, insomnia, general weakness, aggressiveness (frustration), unbalanced nerves, extreme perspiration

1.b. musculo-skeletal complaints
complaints about neck shoulder or hip, back pain, complaints about limps

2. Checklist with chronic conditions[2]:

2.1. not very limiting or severe (weight=1):
hayfever, haemorrhoids, varicose veins, eczema nervousness, allergy, migraine

2.2. moderately limiting or severe (weight=2):
hypertension, ulcis cruris, chronic back pain, rheumatism, stomach and bowel problems, bile and liver diseases, diseases of thyroid gland,disorders of eye or ear, disorders of the joints

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1. The current health problems in this checklist are described in the terms that a lay person would use. The translation into English is intended to remain as close to the Dutch wording as possible. It is inevitable that divergences exists between the Dutch and English lay persons terminology of health complaints.

2. Most of the chronic conditions on the checklist are also formulated in the lay persons terminology. Occasionally a medical term has been used (which is translated into English for this paper) when it may be assumed that this term is very common. The rating of severity of chronic conditions is bases on a paper from Van den Berg & Van den Bos (1989) with some minor alterations.

prostate problems (♂ only), menstrual problems (♀ only).

2.3. limiting or more severe (weight=3):

bronchitis or asthma, heart problems, arteriosclerosis, cancer, diseases of nervous system (e.g. epilepsy), diabetes, diseases of the kidney, lasting consequence of an accident, hereditary handicap.

3. Health diary

Respondents were asked to rate their self perceived health, their mood and their daily activities on a 5 point scale. After that there were asked about their symptoms.

Q: Did you have any complaints about your health today?

Respondents who answered 'yes' were asked to mention their complaints in their own words, with a maximum of two complaints on each day in separate boxes. When experiencing more than two complaints they were asked to mention the two most important complaints. Related complaints (e.g. coughing, sneezing, fever) should be entered together in one box. The respondents were allowed to use their own words. They used terminology that could be related to both symptoms and diagnosis.

Complaints were coded in 97 categories. The coding scheme was based on ICPC chapters. This scheme was also used in the questionnaire to assess reasons for encounter with the GP, as reported by the patient. In this paper the following subdivisions are made for separate analysis (category in parenthesis):

3.a. complaints related to psychological distress:
(57) fatigue, insomnia, nervousness; (58) dizziness, vertigo; (59) headache, migraine
(89) depression, other psychiatric complaints.

3.b. musculo-skeletal complaints
(49) backpain; (50) joints; (51) muscles; (52) sprain, lacerations; (54) fractures;
(55) bruises; (61) neck; (62) shoulder; (63) arm, hand, finger; (66) leg, foot, ankle
(85) bone; (87) surgery of the back; (88) surgery of the limbs.

Following the nature of their complaints, respondents were asked to assess their symptoms as as either: (1) new/unknown, (2) lasting > 1 year, (3) irritating, troubling (4) reason for worry, (5) self limiting (6) known why existing

Finally they were asked to choose on one or more of 16 different actions to alleviate their symptoms.

4. Goldberg's General Health Questionnaire

The 30-item version was used which was translated in Dutch.
(0) no items marked, (1) 1-2 items marked, (2) 3-4 items marked (3) 5 or more items marked

5. BIOgraphic PROblem list

This list contains 22 problems. Respondents could answer with yes, no or does not apply.
Problem list: financial, housing, parents, education, job, ageing, partner or marital problems,

children, other relationships, establishing relationships, sexual, religious, self-development, self-image, worry about the future, abuse of alcohol, medicine, illegal drugs, loneliness, societal change, neighbourhood, leisure time, worry (in general), other problems.
(0) no items marked, (1) 1-2 items marked, (2) 3-4 items marked (3) 5 or more items marked

6. Lifestyle

Smoking: (0) never-smoked, (1) former smoker, (2) light smoker: ≤ 10 cigarettes*) daily, (3) moderate smoker: 11-20 cigarettes daily,(4) heavy smoker: > 20 cigarettes daily.
*) or pipes, cigars

Alcohol consumption: (0) abstainers: no alcohol during the past 6 months,(1) moderate or light alcohol consumption: drinking alcohol during the past 6 months but less then heavy.(2) heavy drinking: ♂ ≥ 4 glasses daily or ≥ 5 glasses almost every day, ♀ ≥ 3 glasses every day or ≥ 4 glasses almost every day.

7. Education

Highest attained educational level (not necessary completed). (0) intermediate general education or vocational training (o-level), (1) primary school only or lower vocational level (2) secondary education (a-level) or higher vocational training or university

8. Demographic variables

sex: (0) female, (1) male;
age: (0) 15-24 yrs, (1) 25-34 yrs, (2) 35-44 yrs, (3) 45-54 yrs, (4) 55-64 yrs, (5) 65-74 yrs

9. Role and time constraints

♂ (0) intermediate = default; (1) low time pressure: unemployed, (disability)pensioner, house-keeping
(2) heavy time pressure: self-employed / working at managerial level / head of a one-parent family combined with paid employment or enrolment in full-time education
♀ (0 intermediate = default; (1) low time pressure: unemployed, (disability)pensioner, house-keeping (2) heavy time pressure: self-employed / working at managerial level / head of a one-parent family combined with paid employment or enrolment in full-time education / combining work and housekeeping in a family with children

10. Interest in health matters

Interest of the respondent in topics discussed in the health interview (as rated by the interviewer): (0) neutral, (1) not interested, (2) interested.

APPENDIX 2. A COMPARISON OF DIARY STUDIES

After her extensive review of available health diary studies, Verbrugge asserted that diary studies always lead to higher rates of symptom prevalence than retrospective interviews. [1]. Table 2.1 of my article showed that this is not the case for the diaries and interviews from the Dutch Survey of General Practice: the interview data show the highest rates. Table 2.1 also shows that the rates that were obtained with the questionnaire do not differ much from similar studies. Consequently, we have to ask ourselves how typical our data are in comparison with other studies that use health diaries. In the Netherlands, there exists only one diary study with which comparison is possible [2]. We therefore included two studies from the U.S [3,4]. One of these studies and the Dutch study use longer periods of diary keeping, which rules out a direct comparison. A comparison can however be made, by extrapolating the occurrence rate for three weeks to an estimated occurrence rate for four or six weeks. For this purpose we fitted several versions of the (piecewise) exponential model to our data [5]. This model assumes that the duration or 'survival' without complaints during the diary keeping period is governed by a process in which the probability of obtaining complaints (the hazard rate) is constant over (certain parts of) the diary keeping period. The following equation, shows the survival for either the entire period or pieces of that period.

$S(t) = \exp(-b*t) - a;$

S(t)	=	survival without having had symptoms in the diary keeping period.
a	=	intercept indicating proportion surviving until certain days in different versions of the model.
b	=	hazard rate; indicating the daily decline in the proportion surviving.

Three versions of the piecewise model were estimated with unconstrained non-linear regression, using different time intervals to estimate the regression coefficients (day 1-21; day 8-21; day 15-21). A model without intercept: $S(t) = \exp(-b*t)$ was estimated with OLS regression of Ln {S(t)} or non-linear regression of S(t). This model uses the entire period of day 0-21, assuming the absence of symptoms before the beginning of the study.

Several models were estimated because the hazard rate (b) may not be the same during the diary keeping period: at the beginning of the study respondents may become sensitized to monitoring symptoms whereas towards the end, respondents might grow weary of completing the diary every day. The complement of the estimated survival curve, the cumulative distribution function: $F(t) = 1-S(t)$, allowed us to estimate the percentage of the respondents with complaints in the periods of either four or six weeks.

The next table shows the results of several health diary studies (percentages of the sample with symptoms) along with estimates of these percentages for similar sub-samples of data from the Dutch Survey of General Practice.
This last comparison of this table demonstrates that in particular the percentage of elderly respondents with health complaints in a period of three weeks is relatively low in the Dutch data. It should be noted that the study of Stoller et al. uses health diaries with a checklist whereas the Dutch data use open-ended questions. The comparison with other studies has to be made with

Table A1 A comparison of the observed percentages of respondents with symptoms in health diary studies with the expected percentage on the basis of the diary study of the Dutch Survey of General Practice

	percentage observed	period	percentage expected extrapolating day 1-21*)	R^2	percentage expected extrapolating day 8-21	R^2	percentage expected extrapolating day 15-21	R^2
Verbrugge & Ascione								
♂ ≥ 18 years	89%	6 weeks	1. 88%	.91	1. 89%	.97	1. 70%	.99
			2. 90%	.95				
			3. 92%	.62				
♀ ≥ 18 years	95%	6 weeks	1. -	.86	1. 90%	.95	1. 83%	.97
			2. 96%	.94				
			3. 98%	.64				
Van de Lisdonk								
15-60 years families	86%	4 weeks	1. 82%	.89	1. 74%	.95	1. 76%	.98
			2. 84%	.94				
			3. 89%	.61				
Stoller et al.								
independent elderly (≥65 years)	83%	3 weeks	51% (observed)					

*) three different models are used: 1. S(t)=exp (-bt)-a 2. Ln {S(t)}=-bt (OLS) 3. S(t)=exp (-bt)

extrapolations of the Dutch data. An extrapolation of the survival function of the entire 3 week period leads to results that are similar to the diary studies that asked their respondents to keep the diary for 4 or 6 weeks. When on the other hand only the last week of the diary keeping period is used, which is more realistic for extrapolation than the entire period, the results do differ. Extending the hazard rate of the last week leads to lower estimates of the percentage of respondents who will have had complaints in 4 or 6 weeks. This means that towards the end of the diary keeping period in the Dutch study only few respondents (of those who did not have recorded complaints during the previous days) have mentioned complaints. An extension of our diary study to 4 or 6 weeks would most likely lead to a lower percentage of respondents with health complaints than is observed in other studies.

There are a number of plausible explanations for the lower rates. One of them is the lay-out of the diary: on days with complaints there was more work for the respondent than on days without symptoms. Respondents were in this way rewarded for not entering their complaints. They probably entered symptoms that were unequivocally experienced as illness, while skipping minor symptoms. Verbrugge's diary study also meant more work on days with symptoms, but these differences were relatively small in comparison to our study [6]. Another difference is that in our study only complete records are used, whereas Verbrugge used data from respondents who completed the diary for one week or more. The analysis of cooperation with our study showed that respondents who completed only part of the study are in poorer health than respondents who completed the diary for the entire three weeks. The other Dutch study of Van der Lisdonk used a health diary that is very similar to ours. In fact, Van de Lisdonk was consulted for the design of our study. His study however, differed in two ways. First, his sample of respondents was not representative, because he aimed at having equally large groups of high, low and average users of medical care. Second, his study was carried out in January and February, whereas our study took place in different periods throughout the year. It is very likely that in wintertime more people have health complaints.

Despite the lower rates in our study, it should be noted that our diary study with open-ended questions did indeed show a higher probability of recording symptoms than health interviews with similar open-ended questions (ref. table 2.1). When using the same method of query there is some 'gain' in using a diary. Unfortunately, our data do not allow us to compare diaries with questionnaires that both use checklists.

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3 SMOKING HABITS AND SYMPTOM REPORTING USING HEALTH INTERVIEW AND HEALTH DIARY DATA

Abstract

This chapter compares two methods to explore the relationship between smoking habits and the reporting of symptoms of illness. Data come from the Dutch National Study of General Practice. Symptom reports are obtained with a questionnaire that uses a symptom checklist and a health diary that solicits symptom reports with open-ended questions. The questionnaire data show that the number of different symptoms increases with the amount that is smoked daily. This association is absent in the health diary data. It is suggested that health diaries inserts more layers between symptom experience and symptom reports and that smokers have a higher threshold for considering physical sensations as illness.

3.1 Introduction

It has often been observed that we live in the era of 'diseases of civilization' where the largest burden of disease is lifestyle related [1]. In particular the health risks of cigarette smoking are well known. While the relationship of lifestyle and *disease* attracts considerable attention, the relationship of lifestyle and *illness* does not. There is a clear distinction between illness and disease. As Eisenberg pointed out, disease is only one aspect of ill-health: disease refers to 'abnormalities in the structure and function of body organs and systems' while illness is the 'experiences of disvalued changes in state of being and social function'[2]. The illness experience requires the awareness of physical sensations and labelling them as abnormal and signs of ill-health. Helman points out that becoming ill is a social process because others must cooperate to allow the patient to adopt the sick role and be exempted from day to day responsibilities [3]. This confirmation of illness by others rests on a shared definition on what constitutes normality. Cultural factors play a more important role in the definition of illness, than they do in disease. Illness does not necessarily coincide with diagnosed disease.

This chapter explores the relationship between smoking and illness with a comparing two methods to assess illness. So far, studies of the effect of smoking habits has provided relatively little insight into the relationship between smoking behaviour and illness. Only when the mechanism between smoking and symptoms is obvious, as is the case with respiratory problems, have symptom experiences drawn attention in epidemiological studies [4]. The lack of research on the experience of symptoms associated with smoking belies the importance of the subject. It has for instance been shown that the

personal experience of health detoriation and symptoms of ill health are crucial in the decision to quit smoking [5]. Symptom experiences are routinely studied by social scientists and researchers in community medicine who mostly use a checklist naming 20-30 common symptoms [6,7]. The measurement of symptom experiences with checklists has been criticized. Scores on symptom checklist correlate strongly with attitude scales that measure neuroticism, suggesting that checklists are better indicators of psychological distress than physical health [8,9]. Psychological problems are often somatized and reported as physical symptoms, which are easily picked up by symptom checklists. Somatization may explain why neuroticism is correlated with reporting symptoms of illness but not with objective criteria of health, like mortality [10]. Symptom lists also have a tendency to pick up trivia that many respondents would not think to mention as an illness experience. A symptom list offers only a sample of possible symptoms, reflecting the researcher's interest, not the respondent's experience. Furthermore, the sequence in which symptoms are listed may influence the answering pattern [7].

Several studies have found that smokers experience more symptoms than non-smokers. Respiratory symptoms, psychological symptoms and symptoms related to depression are found more often among smokers than non-smokers [6,8,11-13]. These studies are based on questionnaires with symptom lists. It may well be that the high number of symptoms reported by smokers is partly due to the bias of symptom lists mentioned before.

The use of open-ended questions can remedy some of the drawbacks of checklist studies, but open-ended questions pose problems of their own. When respondents name their symptoms in their own words, coding is difficult. Without the memory aid of the symptom list, respondents forget symptoms: studies with open-ended questions about ill-health report a lower symptom frequency than studies with checklist [7,14,15]. These memory problems occur more often with a retrospective instrument like a questionnaire than a prospective instrument like a health diary. In most cases do health diary studies solicit the highest symptom rate. They are therefore preferred over retrospective questionnaires for the study of common symptoms [16].

This chapter describes how smoking behaviour relates to symptom experiences. It compares the symptom experiences that are solicited with different instruments: a symptom checklist administered during an interview and open-ended questions about symptoms as recorded in a health diary. Most of the respondents with which an interview was held, also completed the diary, offering an unique opportunity of comparison of the effect that these different methods have on symptom reporting.

3.2 Material and methods

population
Data come from the Dutch National Survey of General Practice; a nationwide study conducted in 1987/1988 among 161 General Practitioners in 103 practices in the Netherlands [17]. A random sample of 100 patients of each General Practitioner was approached for a health interview. Almost the entire Dutch population is listed with a GP, which makes the GP's list a suitable sampling frame. At the end of the interview, the respondents were asked to keep a structured health diary on the daily occurrence of health complaints and illness behaviour for the following three weeks. The response rate is 77 percent for the questionnaire and of those respondents 85% completed the health diary for the entire 3 weeks. While compliance with diary keeping was generally very satisfying, low levels of completion were found among the elderly, respondents with a poor self reported health and among respondents who expressed little interest in health matters during the interview.

questionnaire
During the interview respondents were asked to complete a number of checklists on their health status, with one list for acute symptoms. These checklists were presented before the respondents were asked about their smoking habits. The list with acute symptoms contained 42 precoded items and 3 open-ended items for additional complaints. The respondents were asked to indicate for each item if they experienced that symptom/condition during the previous fortnight. The checklist was not specifically designed for this study but adapted from an older checklist that was used in two previous studies [15]. With 42 different symptoms, the checklist contains too many categories for a concise presentation. A principal components analysis helped in grouping these symptoms in 11 relatively large categories.

health diary
The health diary consists of a 21 paged booklet with a simple one-page questionnaire to be completed each day. The respondents were asked to provide a daily rating of their health, mood and activities and whether or not any health complaints occurred that day. Those who had complaints were asked to describe the nature of their complaints (with a maximum of two), followed by a series of precoded questions on the assessment of the complaint and the illness action prompted by the complaint on that day. The lay-out of the diary was also based on earlier studies. In particular Verbrugge's review of previous diary studies and her own diary study should be mentioned [16,18]. The actual questions in the health diary were taken from an earlier Dutch study [19,20]. The health complaints of the diary were coded in 97 categories

along the lines of the International Classification of Primary Care [21]. The two digit categories system still contained too many categories that were reported by only very few respondents. The larger categories were therefore grouped in 18 categories, which were previously used in the Nijmegen Area Study which also used open-ended questions to assess the occurrence of common health complaints [14]. It is not the intention of this paper to compare checklist and diary for all reported symptoms. Therefore, no effort was made to force the reported symptoms to fit the same classification system. For some groups of symptoms (musculoskeletal and psychological) a comparison between the two instruments is made, and reported in chapter 2 [22]. The health interview provided the information on smoking status and personal characteristics. Regarding smoking behaviour, former and current smokers (light, moderate and heavy smokers according to the number of cigarettes, cigars or pipes that are smoked daily) were distinguished from respondents who have never smoked. Former smokers were subdivided in those who quit 5 years ago or less and those who quit more than 5 years ago. It may be expected that those who quit more than five years ago resemble life time non-smokers and experience relatively few health complaints, whereas those who quit more recently are probably experiencing more complaints [13].

Analyses

The association of smoking and illness is very likely to be most pronounced for adults. In younger age groups the effects of smoking are likely not to have led to serious symptoms, while the 'healthy survivor' effect diminishes health differences at later ages. For these reasons, the subsequent analyses were carried out with data from respondents between 25 and 65 years of age. The analysis started with simple tabulations of symptom rates for the questionnaire and diary data, showing the occurrence of symptoms in a period of 14 days, the reference period that allows for comparison with other studies. (these comparisons are available from the author on request). Logistic regression was used to show how the smoking status of the respondent increases or decreases the probability of experiencing (or better: reporting) of certain health complaints. For the diaries the dependent variable consists of the occurrence (or non-occurrence) of complaints in 21 days, using the entire time span of the diary study, whereas the checklist uses 14 days as a reference period. The analyses were carried out for men and women separately, controlling for age. The large number of response variables demands a summarized presentation of the results of the analyses. In the following tables only the estimated odds-ratios and the level of statistical significance of the Wald statistic are presented [23].

3.3 Results

The following two tables show the occurrence of health complaints in a period of 14 days for checklist and diary data respectively. Table 3.1 shows that psychological symptoms like fatigue and nervousness, musculoskeletal symptoms, common cold or flu and headache are among the most frequently occurring symptoms. Women have a greater likelihood of experiencing and/or reporting health complaints than men, with particular large differences for urinary complaints (irrespective of menstrual problems), complaints related to the digestive tract and weight problems. Table 3.2 shows the health problems as they were recorded in the health diary.
The probability of reporting health complaints is markedly lower in the diaries. An examination of the most frequently occurring symptoms shows some similarities with the interview data. Headache, fatigue and musculo-skeletal complaints are among the most frequently mentioned. Women report complaints more often than men, in particular fatigue, bowel and urinary/genital complaints.

Table 3.3 and 3.4 show the bivariate associations of smoking status and symptom reporting for checklist and diary data. Table 3.3 shows that women reported more symptoms that were associated with smoking behaviour than men did. Among men only heavy smokers and those who quit smoking reported more (or less in one case) symptoms than others. For women the pattern of symptoms that come with smoking behaviour is quite clear. Those who quit recently or a few years ago have more symptoms than those who either never smoked or quit a long time ago. With an increasing number of cigarettes the number symptoms increases as well. The type of symptoms that are associated with smoking behaviour differs between the sexes: among men only musculoskeletal problems occur twice in the list as problems that previous and current smokers experience more often. Women mention those complaints too, but they also mention psychological problems and problems of the digestive tract. The odds-ratios are in general not very large with an average about 1.5.
An entirely different picture emerges when we take a look at the results that are obtained with the health diaries as shown in table 3.4.
Moderate and heavy smokers do no longer report more symptoms but instead report less, in particular men. Respondents who quit smoking are more likely to report symptoms than never-smokers do, but only few symptoms overlap with the interview data. Again female former smokers are more likely to mention psychological symptoms than male former smokers, which is in agreement with the interview data. For the diaries the odds-ratios are larger than those of the questionnaire data.

Table 3.1 The occurrence of symptoms of illness in a period of 14 days of respondents age 25-64, as recorded with a checklist during a health interview*)

	Symptom group	♂	♀
1.	Headache/dizziness	27.9	44.2
2.	Fatigue/nervousness	43.1	58.2
3.	Cold/flu/respiratory	30.6	31.5
4.	Digestive	4.8	11.3
5.	Cardio-vascular	14.7	17.6
6.	Musculo-skeletal	36.6	44.2
7.	Bowel	9.2	19.2
8.	Stomach	10.7	11.6
9.	Weight problems	5.7	13.8
10.	Urinary **)	1.6	6.0
11.	Ear/hearing	12.9	14.8
Number of respondents		3406	3335

*) Data from the Dutch National Survey of General Practice. Symptoms on the checklist are grouped in 11 categories (sample weighted to represent the Dutch population)

**) Including menstrual problems for women

Table 3.2 The occurrence of symptoms of illness in a period of 14 days of respondents age 25-64 as recorded in health diaries*)

	Symptom group	♂	♀
1.	Common cold/flu	9.6	10.9
2.	Headache/migraine	16.0	28.9
3.	Musculo-skeletal (ex.4)	12.2	16.1
4.	Back	7.9	10.0
5.	Stomach	3.8	5.4
6.	Skin	1.4	2.4
7.	Urinary/genital	0.9	6.0
8.	Cardio-vascular	3.2	2.8
9.	Digestive system (ex. 5,10)	0.1	0.4
10.	Bowel/intestines	3.4	9.9
11.	Skin (wounds etc.)	0.2	0.2
12.	Psych-ological/-iatric	0.8	1.5
13.	Tooth-ache	1.4	0.9
14.	Fatigue/nervousness	12.2	22.4
15.	Eye/ear	1.6	2.3
16.	Respiratory (ex. 1)	6.8	9.1
17.	Centr. Nerv. system	1.2	2.3
18.	General	1.0	1.0
19.	Blood	0.1	0.2
20.	Rest	2.7	3.7
Number of respondents		2867	2802

*) Data from the Dutch National Survey of General Practice (sample weighted to represent the Dutch population). Respondents were asked to describe their symptoms, with a maximum of two in their own words. The symptoms are grouped in broad categories which were previously used in a health survey in the Nijmegen area to categorize open-ended questions

Table 3.3 The association of smoking behaviour with the recording of symptoms on a checklist during a health interview (controlling for age). Association as odds-ratios (reference category: non-smokers). Data from Dutch National Survey of General Practice (ages 25-64 yrs; N=6569)

Smoking and signific. more symptoms (p <.05)					Smoking and significantly less symptoms (p <.05)			
Smoking status	Sex	Symptom	Odss-ratio	Prob.	Sex	Symptom	Odds-ratio	Prob.
former smokers (quit > 5 years)	♂	musculoskel.	1.28	.042	♂	cold/resp.	1.42	.008
	♀	musculoskel.	1.33	.010				
former smokers (quit ≤ 5 years)	♂	cardiovasc.	1.52	.032				
	♂	stomach	1.70	.010				
	♀	fatigue/nervous	1.38	.013				
	♀	musculoskel.	1.37	.015				
	♀	bowel	1.37	.049				
	♀	stomach	1.70	.006				
	♀	weight probl.	1.81	.000				
light smokers (≤10c/d)	♀	fatigue/nervous	1.31	.016				
	♀	cardiovasc.	1.35	.046				
	♀	stomach	1.47	.027				
mod. smokers (11-20c/d)	♀	fatigue/nervous	1.48	.001				
	♀	cold/resp.	1.31	.022				
	♀	musculoskel.	1.28	.033				
	♀	bowel	1.53	.002				
	♀	stomach	1.65	.003				
	♀	urinary/menstr.	1.53	.003				
heavy smokers (>20c/d)	♂	fatigue nervous	1.35	.013				
	♂	cold/resp.	1.37	.012				
	♂	ear/hearing	1.54	.016				
	♂	musculoskel.	1.54	.001				
	♂	headache/dyzzi	1.47	.003				
	♂	fatigue/nervous	1.89	.000				
	♂	cold/resp.	1.45	.006				
	♂	digestive	1.53	.030				
	♂	musculoskel.	1.51	.002				
	♂	bowel	1.53	.030				
	♂	stomach	1.98	.000				
	♂	urinary/menstr.	1.47	.022				
	♂	cardiovasc.	2.23	.000				

Table 3.3 The association of smoking behaviour with the recording of symptoms on a checklist during a health interview (controlling for age). Association as odds-ratios (reference category: non-smokers). Data from Dutch National Survey of General Practice (ages 25-64 yrs; N=6569)

Smoking and signific. more symptoms (p <.05)					Smoking and significantly less symptoms (p <.05)			
Smoking status	Sex	Symptom	Odds-ratio	Prob.	Sex	Symptom	Odds-ratio	Prob.
former smokers	♂	musculoskel.	1.28	.042	♂	cold/resp.	1.42	.008
(quit > 5 years)	♀	musculoskel.	1.33	.010				
former smokers	♂	cardiovasc.	1.52	.032				
(quit ≤ 5 years)	♂	stomach	1.70	.010				
	♀	fatigue/nervous	1.38	.013				
	♀	musculoskel.	1.37	.015				
	♀	bowel	1.37	.049				
	♀	stomach	1.70	.006				
	♀	weight probl.	1.81	.000				
light smokers (≤10c/d)	♀	fatigue/nervous	1.31	.016				
	♀	cardiovasc.	1.35	.046				
	♀	stomach	1.47	.027				
mod. smokers (11-20c/d)	♀	fatigue/nervous	1.48	.001				
	♀	cold/resp.	1.31	.022				
	♀	musculoskel.	1.28	.033				
	♀	bowel	1.53	.002				
	♀	stomach	1.65	.003				
	♀	urinary/menstr.	1.53	.003				
heavy smokers (>20c/d)	♂	fatigue nervous	1.35	.013				
	♂	cold/resp.	1.37	.012				
	♂	ear/hearing	1.54	.016				
	♂	musculoskel.	1.54	.001				
	♀	headache/dizzy	1.47	.003				
	♀	fatigue/nervous	1.89	.000				
	♀	cold/resp.	1.45	.006				
	♀	digestive	1.53	.030				
	♀	musculoskel.	1.51	.002				
	♀	bowel	1.53	.030				
	♀	stomach	1.98	.000				
	♀	urinary/menstr.	1.47	.022				
	♀	cardiovasc.	2.23	.000				

Table 3.4 The association of smoking behaviour with the recording of one or more days with symptoms in health diaries, controlling for age. Association as odds-ratios (reference category: non-smoker). Dutch National Survey of General Practice (ages 25-64 yrs; N=5655)

	Smoking and significantly more symptoms				Smoking and significantly less symptoms			
Smoking status	Sex	Symptom	Odss-ratio	Prob.	Sex	Symptom	Odds-ratio	Prob.
former smokers	♂	skin	2.33	.045	♂	fatigue/nervous	1.49	.031
(quit > 5 years)	♂	back	1.71	.010				
	♀	eye/ear	2.41	.013				
former smokers	♀	cardiovasc.	2.10	.029				
(quit ≤ 5 years)	♀	psychological	3.71	.009				
	♀	eye/ear	2.27	.038				
light smokers (≤ 10c/d)	♀	psychological	3.56	.006	♂	headache	1.61	.008
	♀	urinary	1.57	.029				
mod. smokers (11-20 c/d)					♂	urinary	6.03	.023
					♂	bowel	2.36	.006
heavy smokers (> 20c/d)					♂	urinary	9.09	.037
					♂	fatigue	1.51	.032
					♀	respiratory	1.78	.027

[1] The large odds-ratio's for smoking and having less urinary complaints for men are based on very small numbers.

Two additional analyses were carried out that are not reported in this paper. The aim of these analyses was to assess to what extent the differences between these reports changes when other 'controlling' variables are inserted. These control variables included social class, level of education, living arrangement, employment status, religious participation and other health habits: alcohol consumption, exercise and overweight and also the attention that the respondent gives to health problems, measured with the interest that the respondent took in the topics discussed during the interview. The results of these additional analyses were very similar to the bivariate analyses. While the strength of some of the relationships diminished, the fundamental differences between health interview and health diary data remained intact.

3.4 Discussion

If this study would have assessed illness with a symptom list only, the main conclusion would have been that our data confirm earlier studies on smoking and illness. This study contained a health diary as another means to record symptoms of ill health. The surprising result of the diary study is that with this instrument smokers report *fewer* symptoms than never-smokers. Only with respect to ex-smokers is there a fair amount of agreement between the two studies. It is puzzling, perhaps disturbing that these results do not match. Are the data from the diary unreliable, bearing little or no relation to actual experiences of ill health? This is a possible explanation, but not a very plausible one, for three reasons. First, the reporting of symptoms generally agrees with what might be expected of symptom occurrences in the population at large: headaches, musco-skeletal, respiratory symptoms and fatigue are the type of symptoms that are reported most often in any study [6,18,20,24]. Second the associations between control variables and symptom reporting were as might be expected: e.g. more symptoms were found among disability pensioners, and higher rates of psychological symptoms and fatigue among respondents living alone. Third, there is a fair amount of agreement with an earlier study from the Netherlands that used open-ended questions (see chapter 9).

An explanation that seems more plausible is that the health diary inserts more 'layers' between symptom experiences and symptom reports than does a checklist. The diary must be kept every day, symptom descriptions have to be formulated and written down, and on symptomatic days there are questions about the interpretation of symptoms and illness behaviour that need to be answered. These layers between experience and report make it likely that only those symptoms are written down that are clearly experienced as

'illness'. This is less true for the symptom checklist. The hurdles that the diary keeping sets up, explain the lower symptom incidence in the diary.

Assessment of reported symptoms in the diary, reported in chapter 5, supports this explanation [25]. Respondents were asked to evaluate their symptoms with a series of dichotomous questions: are symptoms bothering or irritating, worrying, or self-limiting. These assessments varied greatly with the frequency and duration of symptoms when it comes to defining symptoms as self limiting or worrying, but not for defining symptoms as 'bothering or irritating'. Between 54% (respondents with 1 symptomatic day in 3 weeks) and 78% (respondents with 7 or more symptomatic days in 3 weeks) of the symptoms are considered as 'bothering or irritating'. If symptoms need to be "bothering" before they are entered in a diary, it seems plausible that many symptoms go by unregistered. These are the typical day to day ailments that do not interfere greatly with normal routines.

It is plausible that (heavy) smokers regularly experience physical sensations like breathlessness and wheeziness that come with their habit. But, are these symptoms sufficiently abnormal to be mentioned in a dairy? Probably not. In a study on smoking and respiratory symptoms it was found that only a minority of the men who reported these symptoms recall a doctor diagnosis [26]. The authors comment that these men apparently regard their problems as normal consequence of aging and/or smoking or work.
In the beginning of this chapter we referred to anthropological research which asserted that illness is usually not established in isolation. One needs the confirmation and assurance of others to translate unusual bodily experiences into symptoms of a legitimized illness. In this respect it is interesting to note that smokers talk significantly less about their symptoms than never-smokers do [25]. As a result, they are less likely to frame symptoms as illness and consequently are less likely to enter these symptoms in the diary. The questionnaire is different in that respect because it explicitly solicits a host of symptoms, facilitating the process of translation and reporting. The symptom lists that are used in the Netherlands take their descriptions of symptoms from medical inventories like the Cornell Medical Index that are more linked to disease than to the self expressed illness experiences in the diary. The high rate of symptoms that smokers report on the symptom lists of questionnaires may as a result not reflect their actual illness experience. Apparently, smokers build a relatively high threshold for the transformation of physical sensations into illness. A consequence may be that smokers are more reluctant than others in paying attention to the early signs of serious conditions, foregoing necessary treatment. Apart from the illness experiences of smokers, has this study also shown that reports of 'illness experiences' are heavily influenced by the methods that are uses to assess these experiences.

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4. INEQUALITIES IN HEALTH: THE INTERACTION OF CIRCUMSTANCES AND HEALTH RELATED BEHAVIOUR[1]

Abstract

This chapter derives its main hypothesis from results of the Health and Lifestyle Survey as reported in Blaxter's monograph 'Health & lifestyles'. In this book it is argued that in a favourable social environment a healthy lifestyle matters but in a unfavourable social environment a healthy lifestyle does not make much difference. This hypothesis is tested with data from health surveys from the Netherlands and Denmark. The Dutch data showed a highly significant relationship of unfavourable material and social circumstances with both poor health and an unhealthy lifestyle. In turn, an unhealthy lifestyle was also related to poor health. The Danish study showed similar, although generally weaker, associations. When the British findings would apply to Denmark and the Netherlands, we should find an interaction between material and social circumstances and health related behaviour in their association with health and illness. Neither the Dutch nor the Danish data showed an interaction of the type that the British study assumes. The paper concludes with a discussion of the reasons why the findings from the UK could not be replicated.

4.1 Introduction

The research agenda on public health in the 1980s marked an increased interest in socioeconomic inequalities in health and illness. These inequalities are by now documented for many European countries and seem to be persistent despite rising standards of living (Fox and Carr-Hill, 1989:4). The 'Health For All by the year 2000' programme of the WHO committed European Nations to a reduction of these inequalities by 25% between countries and between groups within countries (WHO, 1988:140). How can this goal be achieved? The Health for All strategy is based on the assumption that a deeper understanding of the causes of these inequalities is a prerequisite for designing adequate policies. Since the publication of the Black report in the UK the debate mainly revolves around four explanations: (1) measurement artefact related to the Registrar General's definition of social class, (2) social or natural selection, (3) a 'materialist' explanation emphasizing social and material circumstances and finally (4) health related behaviour like smoking, alcohol consumption and diet, often referred to as 'lifestyle' (Blane 1985). Research since the publication of the Black report has provided valuable information on the relative importance of each of those explanations. Currently the artefact and selection hypotheses are considered less important than

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the materialist and the behaviourial explanations (Blane, Smith, Bartley, 1993). This chapter deals with recent research on the latter two explanations and their policy implications.

There are obvious links between the alleged causes of inequalities in health and a public policy aiming at reducing them. If circumstances (adverse working conditions, unemployment, bad housing or limited access to health care) are responsible, this policy should accordingly be aimed at changing circumstances. If however the primary weight should be given to behaviour, policy should emphasize a healthy lifestyle. Determining which factor(s) carries the heaviest weight is not an easy task and the discussion seems to be influenced by political motives and cultural circumstances. In the UK a tendency exists to attribute inequalities to circumstances rather than holding the individual responsible for his or her behaviour. Not only because adverse circumstances come with poorer health but also because adverse circumstances leave the individual less 'free choice' in adopting a healthy lifestyle (Hart, 1986: 228-46). In the US some influential researchers have taken on a rather different attitude. Their main target is avoidable costs in health care and from this angle they bluntly ask if smokers and drinkers pay enough taxes to atone for their sins (Manning et al., 1989). It is probably not realistic (and probably not desirable too) to expect that the debate about the primacy of either circumstances or behaviour as causes of inequalities in health will be resolved in the near future with overwhelming evidence in favour of one particular explanation. Yet research in this area may help us to understand in more detail how both circumstances and behaviour are affecting health and how they interact with each other.

A recent British study based on the 'Health and lifestyle' survey made a substantial contribution to this aim. It gives a detailed account of the relationships between social circumstances, health related behaviour, attitudes on health and illness and a wide variety of health indices. Its emphasis is on the daily experience of health and illness rather than on specific diseases or mortality (Blaxter, 1990: 7). After examining bivariate relationships, a final chapter in this study is devoted to the joint effect of circumstances (like social class, area of residence, social support) and behaviour upon various aspects of health and illness. The main conclusion is: *"if circumstances are good, 'healthy' behaviour appears to have a strong influence upon health. If they are bad, then behaviours make rather little difference".* (Blaxter, 1990: 216). This is a remarkable finding which may provide new insights into the complex nature of inequalities in health. Its policy implication seems to be that as long as adverse circumstances outweigh the effects of lifestyle for those in disadvantageous circumstances, policy should be aimed at changing those circumstances first, rather than emphasizing behaviourial changes of which

only the already privileged members of society will benefit.

4.2 The scope of this chapter

As an immediate reaction to this new viewpoint on socio-economic health differences, we asked ourselves if a similar relationship exists in other, comparable, Western-European countries. With data at hand from the Netherlands and Denmark, that provide information on social and material circumstances, health related behaviour and various indices of self reported health, we tried to test the main idea or hypothesis of the British study, realising of course that an exact replication is impossible with a secondary analysis of existing data. As stated, the core idea of the British study on health and lifestyle is that adverse circumstances outdo the effects of health behaviours in particular among the 'disadvantaged'. In our understanding, this assumption implies that advantage and disadvantage can be placed on a continuum or scale with disadvantage or deprivation on one end, referring to the cumulation of undesirable circumstances like being unemployed *and* being a single parent or being an widowed elderly person *and* having little social interaction. On the other end we find advantage or privilege, a situation where desirable circumstances cumulate, like living as a two-parent family in one's own home with a safe job, providing a regular source of income. Various mixtures of advantage and disadvantage exist in between those opposing ends.

Now if the conclusions of the British study are valid generally, we are to expect that differences in health that are related to 'lifestyle' are more pronounced among the privileged than among deprived. In the language of social research, we are to expect a statistical interaction between the effects of social and material circumstances and behaviour or lifestyle upon health. A similar description of the main idea in this study can be found in review of *Health & Lifestyles* (West, 1991). The simplest test of this hypothesis would equally consider health behaviour as an additive scale of, for instance, dichotomous items (yes-no smoking etc) with a healthy lifestyle (all good health practices) on the one end and an unhealthy lifestyle on the other. Although various authors have criticised the practice of dichotomizing and the addition of various health behaviours, these scales have been used successfully to explain health differences (Belloc & Breslow, 1972; Slater & Linder, 1988).

In this chapter we will study this relationship with the Netherlands and Denmark as case studies. To our knowledge a similar analysis of this interac-

tion has not been carried out yet in those countries or anywhere else, apart from the UK. In a recent Dutch study, the differences between countries in subjective experiences of health are compared (Kunst et al., 1993). There are also studies from the Netherlands that examine both the effects of socio-economic status and lifestyles on health (Appels et al., 1990: 298-305; Ranchor et al., 1990; Schroër and Bullinga, 1991; Uniken Venema and Hogendijk, 1990; Spruit, 1987). In those studies however, no attention has been paid to the interaction of circumstances and lifestyle. The choice of the Netherlands and Denmark is more pragmatic than anything else. We happened to have data at hand that provide us with ample information to address the research question: the Danish Health Study and the Dutch National Survey of General Practice (Bentzen et al., 1988; Bentzen et al., 1989; Foets et al., 1992).

The ordering of our material will be as follows. In the next section we summarize the results from the British study on lifestyle and health. They deserve mentioning here because in a later section we will examine the same relationships for the Netherlands and Denmark respectively. The sections to follow will be dedicated to a presentation of our own data and analyses from the Danish and Dutch health surveys. We conclude our paper with a discussion of our findings.

4.3 Health, lifestyle and circumstances in the UK

The Health and Lifestyle survey is a nationwide study conducted in 1984-1985 with a sample size of 9000 of adults of 18 years and over. Its results are presented in Mildred Blaxter's monograph *'Health and lifestyles'* which contains an ordered presentation of the material from the survey (Blaxter, 1990). A combined index of overall health shows a strong relationship with *social class* after the age of 40. For the elderly the class related differences in fitness and disease shrink, whereas the differences in illness and psycho-social health remain wide. From this we may conclude that the class related differences in health are most pronounced for the middle aged, say between 40 and 60 years. In terms of *regional differences*, the South and the East of the UK are areas where people in all respects have a better health than those living in the North, the West or the Midlands. The *unemployed* are in poorer health than the employed on all dimensions of health that the Health and lifestyle survey covers, with particular marked differences in psycho-social health. Also *housing tenure* shows to be associated with health; owner occupiers are in better health than council tenants, whether or not they belong to the manual class. Women who are *single parents* are in poorer

health than women who are married or cohabiting. For the latter, living with or without children did not make much difference in terms of reported illness or psychosocial health. Those who have the fewest family, friendship, working and community roles have the lowest psycho-social health. This association of *social integration* and health holds for men and women alike in all social classes.

Blaxter's report also shows how these circumstances are related with health related behaviour. *Smoking* is strongly related with education, social class and area of residence, with the heaviest smokers in the industrial areas and among the manual classes. Men appeared to be *drinking* more than women and moderate or high levels of drinking were most common in traditional industrial and manufacturing areas. The relationship of social class with drinking is not wholly straightforward: in the industrial areas moderate and heavy drinking was most frequent among men in the manual social classes, whereas in high status areas, men in the non-manual classes are the most frequent drinkers. *Sports participation and exercise* are very much age related with the highest level of exercise among the non-manual classes and those with a higher education. A *good diet* is more common among men than women and diet showed to be associated with social class and region which confirmed other research in this field.

Not surprisingly each of these behaviours is associated with the indices of health and illness in the survey. *Smoking* shows the largest effects with ex-smokers having the poorest health. High levels of *exercise* go with better health on all indices, with fitness obviously showing the strongest correlation. Eating a *good diet* was particularly related to good psycho-social health. The association of alcohol consumption and health is less obvious; occasional and light drinkers have the best health with poorer health for abstainers and moderate to heavy drinkers.

These descriptions provide the groundwork for the exploration of the key issue: what is the combined effect of circumstances and behaviour on health and illness? This question is addressed with a detailed description of the available information that emphasises the protective health effects of behaviour like exercise or a proper diet for those who live in advantageous or disadvantageous circumstances. One table in particular bears upon the central idea rather closely (Blaxter, 1990: 220). It compares 'Health ratios' (the method of Standard Mortality Ratios applied to data on illness) of groups on both ends of the healthy-unhealthy behaviour scale; those with entirely healthy behaviour are contrasted with those who behave largely unhealthy (smoking, no exercise, poor diet). The health ratios of both groups are analysed along the dimensions of social class (manual versus non-manual)

area of residence (cities/industrial/high status) and gender. Three indices of health are shown: illness (acute complaints) psycho-social health and fitness. With the main conclusion of the study in mind, one would expect that a cumulation of undesirable circumstances, like living in an industrial area and being of manual class, would be associated with small differences in the 'health ratios' and consequently that in favourable circumstances the differences in health ratios between the contrasted groups would be much larger. This is by no means always the case: a comparison of groups with contrasting behaviour, who belong to the manual class and live in large cities or industrial areas, displays large differences in illness and psycho-social health, although small differences are to be expected. On the other hand the differences in fitness between contrasting groups of men belonging to the non-manual class who live in high-status areas rather small, where in turn large differences would have been expected. In our opinion, the analysis of this table could have benefitted greatly from statistical testing. Be that as it may, the general idea of the differential effect of healthy and unhealthy lifestyles, for the privileged and the deprived, provides a new focus for research and debate on the issue of inequalities in health and as such deserves the attention from researchers from both the UK and other countries where these inequalities are studied. The results from two of these countries are reported in the remainder of this chapter.

4.4 The Dutch and Danish health studies

This paper is based on a secondary analysis of two large data sets. The Dutch data come from the Dutch National Survey of General Practice; a nationwide study conducted in 1987/1988 among 161 General Practitioners in 103 surgeries, using a non proportional stratified sampling scheme with urbanization, region and distance to the hospital as stratifying variables (Foets et al., 1992). A random sample of 100 patients of each General Practitioner's list was approached for a health interview and asked to keep a structured health diary about the daily occurrence of health complaints and illness behaviour for the following three weeks. The response rate is 77 percent for the questionnaire and of those respondents 85% completed the health diary for the entire 3 weeks (Total N = 11038). Drawing upon information about all patients listed with the 161 GPs, we could verify that the respondents to the survey did not differ significantly from the non-respondents in level of education. We have therefore no reason to believe that an under-representation of the lower educated in our data will severely bias our findings. It should be noted that in the Netherlands only very few inhabitants (less then 1 per cent) are not listed with a general practitioner (Kohler, 1992: 116). The sample of

actual respondents could be considered representative for the Dutch population with respect to age, sex and marital status. Inhabitants of large metropolitan areas are however under-represented.

The Danish data come from the Danish Health Study, a large longitudinal study conducted in 1983. The sample was drawn as a stratified sample and households were used as sampling units. As a first step, a sample of geographical units was selected. By stratification it was made sure that greater municipalities were included. This would make the sample representative for the whole population with respect to age distribution and occupation. In the next step, a sample of addresses was drawn from each of the selected geographical units. Interviewers sought out the inhabitants at the selected addresses. If nobody could be found at home, they had an instruction to try again twice before a list of alternative addresses should be used. During the recruitment it was discovered that single-person households were under-represented, and therefore the panel was supplemented with a number of such households, based on the list of already selected supplementary addresses. People living permanently in institutions were not included. In the sample, people over 65 were slightly under-represented (11,4% versus 14,8% in the Danish population), while the age group 0-14 years was over-represented (24,6% versus 19,4% in the population). In this paper we use data from the background interview in which 3419 persons participated (Bentzen et al., 1988).

In the previous section we developed the hypothesis which we tested with the data mentioned above. In order to do so adequately we used variables which are comparable with the Health & Lifestyle survey. In her study Blaxter assesses four aspects of health related behaviour: smoking, alcohol consumption, exercise and dietary habits. In our analysis we used the same elements of lifestyle.

Health related behaviour

In the Dutch survey, the respondents were asked about three aspects of health related behaviours: their alcohol and tobacco consumption and whether or not they actively engage in sports. They were not directly asked about their diet but instead asked to give their height and weight from which the Body Mass Index was calculated. The same type of information was obtained in the Danish survey, with slightly different questions and response categories.

The risks of health related behaviour were defined as dichotomous variables. In our study all types and frequencies of current smoking were considered a health risk. In the Dutch survey, respondents were asked if they smoke or not (yes/no), while in the Danish survey, respondents could also indicate if they

smoke 'now and then'. These occasional smoker were also counted as smokers. With regard to exercise there were also some differences between our respective studies. In the Dutch questionnaire the respondents were only asked if they are actively participating in any sports. A negative answer to this question indicates risk. The Danish questionnaire offered more options to include other types of exercise, apart from leisure time sports participation, as well. In the Danish study lack of exercise was defined as either no participation in any kind of sports activities or no regular walking/cycling to and fro between home and work. Ordinary walking tours were not included as sports activities.

For both studies a Body Mass Index (BMI) of 27kg/m² was considered a threshold of obesity and consequently a health risk (Seidell et al., 1986: 586). The definition of the health risks of alcohol consumption posed more problems than the other aspects of behaviour. Several studies showed that the association of alcohol consumption and mortality is U-shaped with moderate drinkers at a lower mortality risk than heavy drinkers and abstainers (Marmot et al., 1981). It is also well known that questionnaires do often not elicit accurate reporting of alcohol consumption (Lemmens, 1991: 66). A recent Dutch study on the presence of unhealthy habits in the Dutch population, which also uses material from a questionnaire, dealt with the same problem in the following way (Bruin, de 1992: 5). It chose different levels of risk for men and woman based on recommendations of the Royal College of General Practitioners (Royal College of General Practitioners, 1986). For men, more than 28 glasses of alcohol in a week constitutes a health risk, whereas for women more than 21 glasses of alcohol in a week does so. Total abstinence of alcohol consumption was not considered a health risk, mainly because of ambiguities in the literature on this issue and the small differences in risk of contracting cardiovascular diseases between teetotallers and light drinkers.

The Dutch data that we are using offer information on the frequency of alcohol consumption during the week and the daily number of glasses. For men we considered '4 glasses or more every day' or '5 glasses or more almost every day' a health risk. For women we considered '3 glasses or more every day' or 4 glasses or more almost every day' a health risk. In accordance with the previous mentioned study total abstinence was not considered as hazardous to one's health. The Danish survey includes information on alcohol consumption on a normal week day and during a weekend. As the response categories were intervals of consumption of glasses, it was not possible to make the same distinction as in the Dutch survey. A consumption of either 4-8 glasses or more on a normal weekday or more than 8 glasses during a weekend was considered a health risk for both men and women.

In our analysis we only included respondents of ages between 25 and 65. There were several reasons to do so. Blaxter found that differences in health between socio-economic groups are in particular present in middle age, say between 40 and 60 years. Also the effects of a healthy or unhealthy lifestyle are not likely to be very pronounced in either young adults, for which the exposure to risk has not led to health complaints, or the elderly. The diminishing association of health and current lifestyle for the elderly is probably due to healthy survivor effect or to alterations in lifestyle in later life because of a worsening health.

In the analysis of the simultaneous effects of behaviour and circumstances upon health Blaxter excluded patients with limiting chronic diseases from her analysis. She argues that current health behaviour, in terms of lifestyle, is to some extent dictated by the presence or absence of limiting disease. Individuals with limiting disease take less exercise and are more often non-smokers, which may be partly attributed to the presence of these chronic conditions. A similar procedure is carried out with the Dutch and Danish data. Rather then excluding all respondents with whatever limiting condition, we opted for excluding those with severe limitations. A Dutch paper which is based on the same data showed that in particular respondents who receive a disability pension are a group with very low ratings of subjective health and more chronic conditions and functional disabilities than any other socio-economic category (Bensing et al., 1991). We therefore excluded disability pensioners from our analysis. In order to compare the Dutch and Danish data the same was done with the Danish data[1].

Material and social circumstances

Both the Dutch and the Danish study contain variables which allow for the construction of an index which combines various circumstances in what we may call an index of (multiple) deprivation or privilege. With this index of deprivation we can show the effect on health of a cumulation of adverse circumstances as intended in Blaxter's study. In the Dutch study the deprivation index is an additive scale consisting of the following variables: social class, degree of urbanisation, housing tenure, type of health insurance (which is mainly used as a proxy to income), living arrangement, and daily activities or sources of income. In addition to those variables which mainly cover aspects of material deprivation the following variables were used to define social deprivation or privilege: having close friends, membership of voluntary organizations and visited someone or received visitors during the last month.

As single variables none of the material or social characteristics establishes deprivation, but a cumulation of low values on each of this variables (e.g. an unemployed single parent with no friends) does indeed. Around 6.5 percent of

the respondents belong to the most deprived category (a net score result of -3 or less). On the other end of the scale are those individuals with high scores on all variables. This situation constitutes privilege rather than merely the absence of deprivation, which is indicated by positive scores on the index. Around 14 percent of the respondents belong to this category (a net score result of +2).

In the Danish study the deprivation index is also an additive scale, and it consists of the following variables: social class, health risk in the work environment, characteristics of the neighbourhood, living arrangement, income and daily activities or source of income. Like in the Dutch study, three variables pertaining to social deprivation were included. In the Danish data around 3 percent belong to the most deprived, whereas 17 percent are considered privileged.

In her account of the relationship between lifestyle and health Blaxter rightfully argues that health is by no means an unidimensional concept and means different things to different people (Blaxter, 1990: 35). In an attempt to encompass a wide range of aspects of health and illness we developed several indices. From the Dutch Survey of General Practice we used five variables: subjective health evaluation (Subject. health), the number of health complaints over the past two weeks (Symptoms), the number of days with complaints as recorded in the health diary (Symptom. days), the presence of one or more chronic diseases (Chron. conditions) and the level of psychological distress as indicated with Goldberg's General Health Questionnaire (GHQ).

The Danish study took its indices of health from the Rand Health Insurance Study (HIS) (Brook et al., 1979). In this paper six scales are used: Subjective evaluation of current health (Current health), limitation of physical abilities (Phys. abilities), days with activity restrictions (Restrict. days) and two mental health variables: positive wellbeing (Pos. well-being) and depression (Depression). These Likert scales were all composed of items adopted from HIS. The application of the items in the Danish health Study is validated in Christiansen (1990) and Bentzen & Christiansen (1993; 207-210). In addition the Danish study used a checklist with chronic conditions with various degrees of impairments (Limit. chronic).

Statistical Analysis

In the course of the analysis of our data we first examined bivariate relations between circumstances and health, circumstances and behaviour and finally between behaviour and health for men and women separately in two age groups: 25-44 years; 45-64 years. In the next section we summarize the

results on these relationships, emphasizing the patterns that emerge rather than reporting the results of each single statistical test. The strength of the reported relationships is analyzed with a number of analyses of variance and elaborations of crosstabulations. The results of these analyses are available on request from the first author.

The testing of the interaction hypothesis required a multivariate procedure in which several health indicators act as response variables with social circumstances and health related behaviour as the main predictors. As health and illness are likely to be distributed differently for men and women and illness levels increase with age, sex and age were included as confounders as well. It was decided to use multivariate analysis of variance (MANOVA) for this purpose, because we are interested in the effects of behaviour and circumstances across all dimensions of health and illness and by treating the response variables simultaneously in the analysis, MANOVA can greatly improve the power of our tests (Stevens, 1986: 139). In our analysis we cannot assume beforehand that the main effects and the interaction between circumstances and behaviour are linear. We therefore treated both the number of material and social circumstances and the number of unhealthy habits as categorical variables, thereby allowing for linear and non-linear effects. The response variables are treated as interval although strictly speaking the variable measuring 'subjective health' in the Dutch data is ordinal. Logit modelling is a common technique in analyzing ordinal data. Demaris has pointed out that, as the numbered of ordered categories increases, to beyond four levels, it may be safe to use OLS regression instead of ordered regression (Demaris, 1992: 77). Since OLS regression and Analysis of Variance are both expressions of the same linear model, we feel equally safe to use MANOVA for the entire set of dependent variables.

The MANOVAs assess the differences between the means of the cells in the multidimensional table that is constructed along the dimensions of the categorical variables for all response variables simultaneously while controlling for AGE as a covariate. The regression approach of MANOVA is used, indicating that parameters reflect separate contributions of explanatory variables holding the other explanatory variables constant. Model building started with a model that includes the four first-order effects of AGE, SEX, BEHAVIOUR and DEPRIVATION and the 6 second-order effects of bivariate interactions. Higher order interactions were pooled because of empty cells. In subsequent steps clearly non-significant effects ($p > .10$) were deleted. The tables presents multivariate and univariate F statistics with their p-value and post hoc estimates of power ($p < .01$).

The MANOVA procedure is based on the assumption of multivariate normality

of the response variables. A descriptive analysis showed that apart from subjective health in the Dutch data, the indicators of disease are skewed and more peaked than normal. The exploratory data analysis also revealed that some variables have outliers and extreme values. Taking either (natural) logs or square roots greatly reduced the number of outliers and improved skewness and kurtosis although strict normality was not achieved.

4.5 Results

This section briefly describes the associations of social and material circumstances with health and health related behaviour and the association of health related behaviour with the various indices of health and illness for both the Dutch and Danish health studies.

Circumstances and health

The results of the Dutch National Survey of General Practice resemble in many ways those of the British Health and Lifestyle survey. With respect to *social class* the respondents from the manual classes reported a poorer self perceived health than farmers and independent craftsmen or white collar workers. The respondents from the manual classes also reported more chronic conditions and generally had more acute symptoms. In the age group 45-64 years their mental health (as indicated by the GHQ) was also poorer. In the younger age group of 25-44 years however, the mental health score was particularly poor for women of white collar occupational class. *Housing tenure* and *health insurance* were in this study mainly used as indicators of wealth and income. Both variables were consistently related to all variables measuring health with a better health for owner-occupiers and the privately insured. Differences in *urbanisation* do not seem to play a major role in explaining health inequalities in the Netherlands; only for mental health the results were clear-cut with the inhabitants of the largest cities having on average the poorest mental health. The *unemployed* are generally in poorer health than those having a job, with larger differences for men than for women. Most indicators of health showed that those who are *living alone* are on average in a poorer health than those who are living together with a partner or another adult, either with or without children. More often than not, the poorest health is found among respondents living in *single parent* families; an association that holds for both men and women. With respect to *social integration* we found that the presence or absence of close friends seemed in particular to be important to the health of women between 45 and 65 years of age, who reported poor health in the absence of close friends. For younger women and men no clear pattern emerged. The other variables on social integration

showed, with males in the age range from 45 to 65 as a notable exception, poorer health for those who are not a member of a voluntary organization or have not visited anyone or received visitors during the previous month.

In most respects the results from the Danish study are similar to the results from the Dutch study. Thus, a higher than average income is associated with good health as indicated with the 'current health' and the 'physical abilities' scales. Those with a higher income also suffer less from chronic conditions or depression and experience fewer days with activity restrictions. Living in a neighbourhood, that is not located in a deprived area comes with better current health, fewer chronic conditions and a higher level of well-being. The respondents of non-manual social class report higher scores on both the 'current health' scale and the 'physical abilities' scale. The *unemployed* were generally in a poorer health than those who have a job. Those who were living *alone* were generally in poorer health than those who were living with someone, although *single parents* were in most respects in a poorer health than any other category. Like the Dutch study, differences in *social integration* were associated with differences in health status, with better health for respondents who are more integrated within the society.

Taken together, these variables which indicate material and social circumstances add up to an index of deprivation. It should not come as a surprise that in the Dutch study this index was very consistently related to all indices of health and illness. This relationship is also present in the Danish study, but to a much lesser extent. The graphs below show how in each country the subjective or current health worsens when the number of unfavourable conditions increases. The Dutch index of 'subjective health' ranges between excellent health (score=1) and very poor health (score=5), with an average score of 1.82. The Danish scale of 'current health' has a range between 0 and 36, with an average score of 9.13.

Figure 4.1a Subjective health and circumstances in the Netherlands

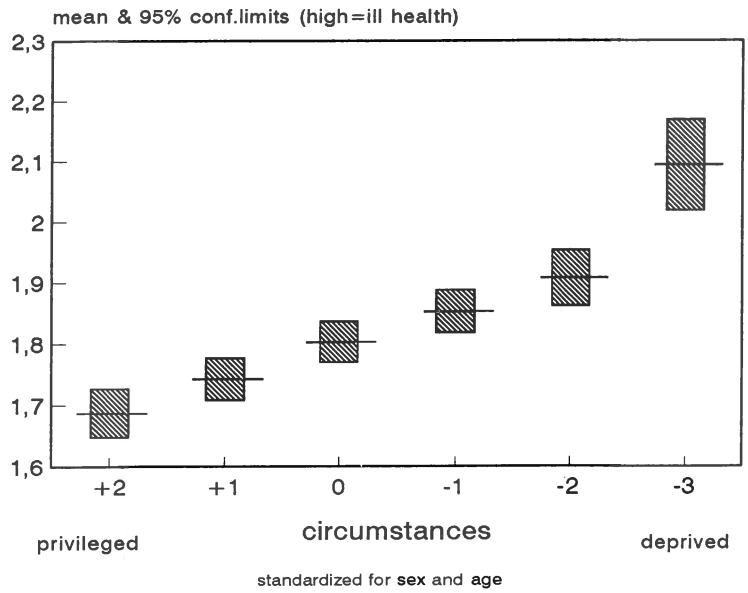
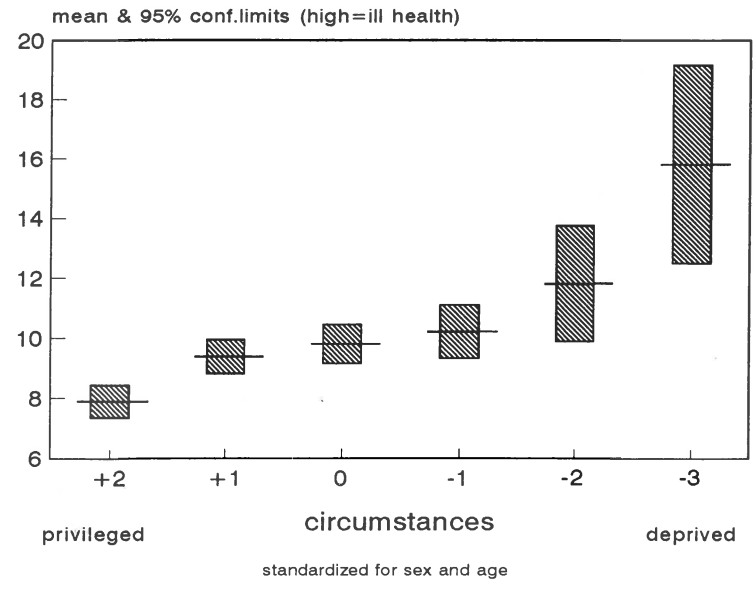


Figure 4.1b Current health and circumstances in Denmark



Circumstances and health related behaviour

The bivariate relationships between social circumstances and health related behaviour show remarkable parallels with the relationships between social circumstances and health that we examined above.

In the Dutch study *smoking, overweight* and *sports* participation are clearly class related, with the 'healthiest' behaviour among white collar workers. Also housing tenure and health care insurance show a similar pattern: home owners and those who are privately insured smoke less, are more active in sports and are less likely to be overweight than those who live in rented homes or are insured through a sickfund. For women in the age range from 25-45 years, smoking is in particular widespread among those who live in a single parents household. The unemployed smoke more than those who have a job, with the strongest relationship among males between 45-65 years of age. *Drinking habits* are a entirely different matter: for most variables there is no clear pattern and the relationships are generally weaker than those reported before. With regard to social class, it seems that in the age range 45-64, excessive drinking is more common among white collar workers than among people of other social classes. In the same age group also the privately insured reported higher levels of excessive drinking than those who are compulsory insured through a sickfund.

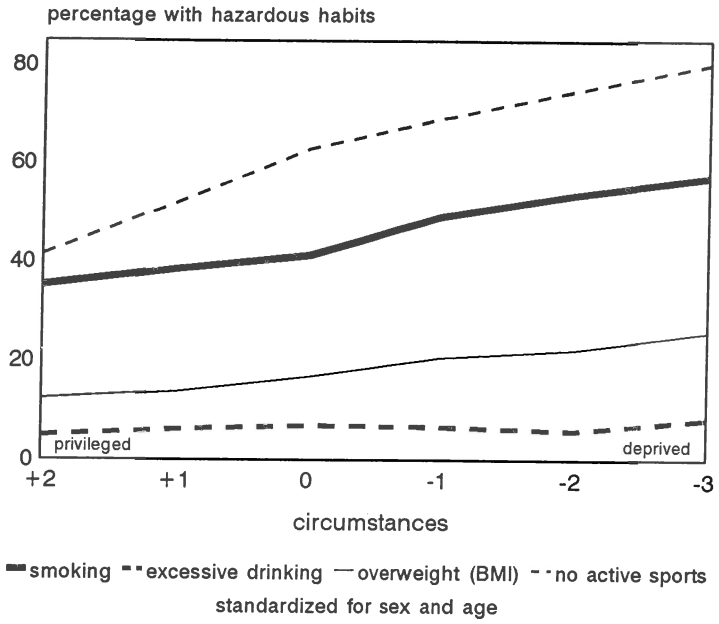
In the Danish study healthy behaviour was not unambiguously class related. In the age group 25-44 years, members of the manual occupational group participated less frequently in *sports* activities, were more often *smokers* and *overweight.* Their *alcohol consumption* was, however not significantly different from the non-manual occupational group. In the age group of 45-64 years, members of the non-manual group had a higher frequency of excessive drinking, compared to the manual group but sports participation, smoking and overweight differed not significantly between respondents from the manual and non-manual social class. Income was significantly related to a higher frequency of sports participation among both the younger and older age group. With respect to alcohol consumption a significant relationship was found for the younger age group only, with a higher rate of excessive drinking among respondents with a less than average income. Income was not related to smoking or overweight. For the age group of 45-64 years, living in a privileged neighbourhood was related to a higher rate of sports participation and less smoking. Alcohol consumption or overweight was not related to neighbourhood. For the younger age group we did not find any significant relationship between neighbourhood and health related behaviour.

In addition to these mutual variables on behavioral health risks the Danish study included a variable which measures the perceived *health risk* at the

work site. To our surprise we did not find a significant relationship between social class and the perceived health risk.

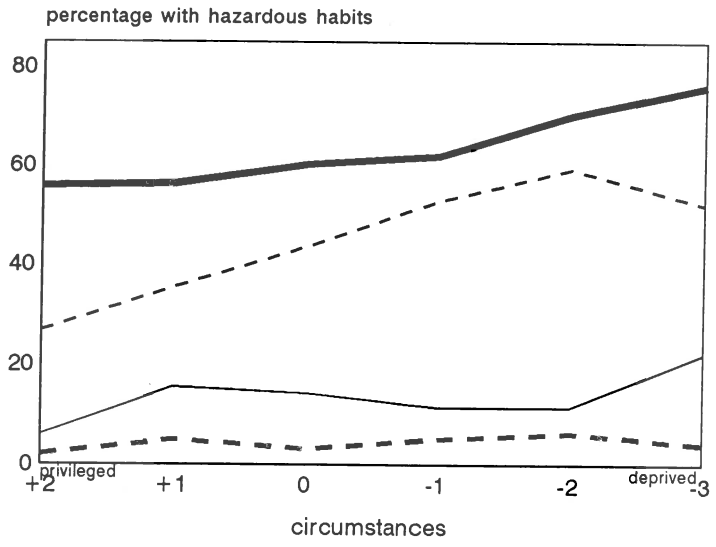
The following graphs show, on the aggregate level of the index of deprivation, how social and material circumstances are associated with health related behaviour in Denmark and the Netherlands. For smoking, exercise and overweight the Dutch data show a consistent increase in risky behaviour with the cumulation of disadvantageous circumstances ($p < .001$). Again, drinking stands out as being much less related to deprivation (n.s.). In the Danish study the cumulation of disadvantageous circumstances is increasing with smoking (n.s.), exercise ($p. = .001$) and overweight ($p. < .05$). For alcohol consumption the data show no consistent association with the degree of deprivation. In the Denmark the percentage of smokers is much higher than in the Netherlands[2].

Figure 4.2a Risk related health behaviour and circumstances in the Netherlands



standardized for sex and age

Figure 4.2b Risk related health behaviour and circumstances in Denmark



standardized for sex and age

Health and health related behaviour

Following the British Health and Lifestyle survey, we expected that four aspects of voluntary behaviour are in particular related to the daily experience of health and illness: smoking, excessive drinking, diet (with being overweight as a proxy variable) and exercise.

Not all of these aspects of a lifestyle were related to health in a similar way. In the Dutch study *smoking* was in particular related to a poorer mental health and a larger number of symptoms over the past fortnight, which is more so for women than for men. Active *sports participation* went with a better self perceived health and lower illness levels for chronic conditions, for both men and women of all ages. Mental health however was only weakly related to sports participation. Also *overweight* turned out to be particularly associated with a lower self assessment of health and a higher number of chronic conditions. When overweight, women were more likely than men to consider their health to be rather poor. *Drinking habits* do not appear to be strongly related (almost never statistically significant) with the various aspects of health and illness that were measured in the survey. For women of ages between 45 and 65 the relationship was reverse to what has been expected, the (few) women who drink excessively reported lower illness levels than women who either drink less or not at all.

The Danish study showed a statistically significant association between *smoking* and a poorer health in terms of current health, physical abilities, well-being and depression. Being *overweight* was associated with poorer current health, with a higher percentage of respondents with chronic and limiting chronic conditions, and with a lower score on the physical abilities scale. The respondents who participate in sports reported a better current health, a lower score on a depression scale and better physical abilities. Participation in sports was also associated with a smaller percentage of respondents with chronic conditions. In the Danish study, *excessive drinking* was not related in any conclusive way to the various indicators of health and illness.

In addition to the nature of risk related health habits, there is also the question of how a number of these habits was related to various indices of health. The best health was found among the respondents who abstain from any of these behaviours. With an average subjective health score of 1.66 (95% CI: 1.53-1.70) of the Dutch respondents and an average current health score of 8.38 (95% CI: 7.78-8.98) among the Danes, these respondents do show a significantly better health than the average Dane (current health: 9.13) or Dutchman (subjective health: 1.82). In particular among the Dutch we do see a gradually worsening of the subjective health, as the number of unhealthy

habits increased, with an average subjective health of 1.96 (95% CI: 1.90-2.02) among respondents with 3 or 4 unhealthy behaviours (standardized for sex and age).

Results from multivariate analyses

After examining bivariate relationships between health, behaviour and social circumstances we now turn to the combined association of both circumstances and lifestyle with various indices of health and illness.

For the data from the Netherlands, successive modelling steps led to a model with 4 significant ($p<.05$) main effects (sex, age, behaviour, deprivation) and 2 interaction effects (deprivation * behaviour; deprivation * age). Only the final model is discussed in this paper. It shows that sex (multivariate $F=49.14$; $p<.001$) and age (multiv. $F=81.25$; $p<.001$) have larger main effects than behaviour (multiv. $F=4.07$; $p<.001$) and deprivation (multiv. $F=1.58$; $p<.01$). The analysis of variance does not show the direction of the effects. These can however be obtained with separate tabulations. When comparing men and women, these tables show women in particular as having high levels of acute symptoms (univariate $F=202.16$; $p<.001$). Ageing is associated with an increasing number of chronic conditions (univ. $F=228.02$; $p<.001$) and with a less favourable subjective health (univ. $F=142.74$; $p<.001$) but does not necessarily mean a higher level of acute symptoms (univ. $F=0.36$; $p=.547$). A higher number of unhealthy habits is in particular related to poorer subjective health (univ. $F=11.07$; $p<.001$). Adverse material and social circumstances accounted for a higher number of chronic conditions as is shown in a statistically significant main effect (univ. $F=3.96$; $p<.01$) and in interactions with behaviour (univ. $F=1.75$; $p<.05$) as well as with age (univ. $F=2.69$; $p<.05$). The interaction of deprivation and behaviour is of particular concern to us since it relates to our main hypothesis. The results of the multivariate and univariate analyses of variance of this interaction are presented in table 4.1.

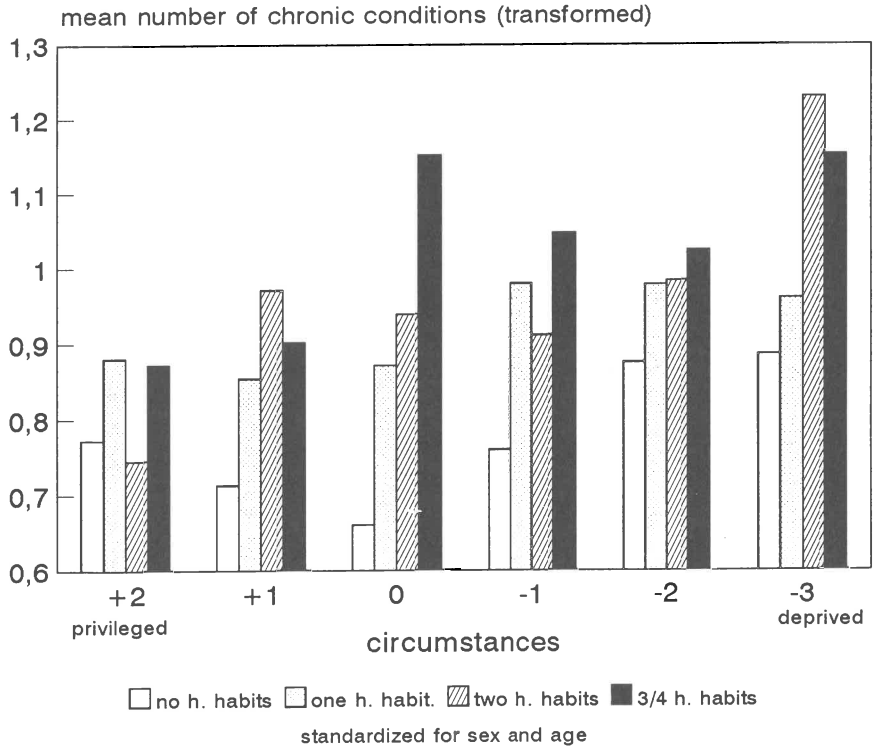
Does the significant interaction follow the hypothesized pattern in which the effects of unhealthy behaviour are stronger for those in favourable social circumstances? This question may be answered by plotting means, which have proven to be particularly useful for the inspection of interactions (Fox 1984: 105). The following graph shows the interaction of deprivation and behaviour for the number of chronic conditions. It displays the square root of the mean, because this transformed variable is also used in the analyses of variance.

Table 4.1 Multivariate and Univariate F-test of the Effect of Interaction of Deprivation and Health Behaviour upon five Indicators of Health (MANOVA). Data from the Dutch National Survey of General Practice 1987-88 (N=5399)

		Multivariate Test of significance		
Response variable	Test name	F-value	Sign.	Power
Combination of five indicators of health	Pillais	1.57	.001	1.00
	Hotellings	1.57	.001	1.00
	Wilks	1.57	.001	1.00

		Univariate Test of Significance	
Response variables	F-value	Sign.	Power
Subject, health	1.07	.379	0.48
Symptoms	1.21	.256	0.56
GHQ	1.15	.306	0.53
Chronic conditions	1.75	.035	0.82
Symptom. days	1.59	.069	0.76

Figure 4.3 Mean number of chronic conditions by circumstances and health habits (Dutch)



In the graph each of the different categories of deprivation has the same sex and age structure. The differences in the mean number of chronic conditions are small for the privileged and widen for the middle categories. With an increasing number of adverse social circumstances these differences are narrowing again but widen among the most deprived. Other variables like mean subjective health (graph not shown), display a pattern in which ill-health increases gradually with an increasing number of unfavourable circumstances. An inspection of means also shows that health habits make a similar difference in health for both the deprived and the privileged, hence no significant interaction was found.

The multivariate analysis of the Danish data is based on a much smaller number of respondents (N=1402) than the Dutch study. The effect size therefore need to be much larger than in the Dutch study to attain acceptable levels of significance. Modelling of the Danish data resulted in a model with 4 significant ($p<.05$) main effects (sex, age, health related behaviour and deprivation) and 2 significant interaction effects. In addition the interaction of deprivation and behaviour was retained in the model because of our particular interest in this interaction effect.

The analysis of the Danish data shows that, in particular, age accounts for most of the variation in the scores of the six indicators of health and illness that we use from the Danish study (multiv. $F=16.56$; $p<.01$). Ageing is associated with poorer current health (univ. $F=19.22$; $p<.01$), less physical abilities (univ.$F=75.33$; $p<.01$) and with a higher number of limiting chronic conditions (univ. $F=17.24$; $p<.01$). In the model the following variables had a significant main effect: Sex (multiv. $F=2.30$; $p<.05$), health related behaviour (multiv. $F=3.16$; $p<.01$) and deprivation (multiv. $F=1.92$; $p<.01$). The significant interaction effects were the effect of age*sex (multiv. $F=2.29$; $p<.01$) and age*behaviour (multiv. $F=3.14$; $p<.01$). Females scored lower on the health status measures, but only the effect of restriction of daily activities was significant (univ. $F=5.63$; $p<.05$). Health related behaviour was associated with a lower level of physical abilities (univ. $F=8.55$; $p<.01$), more limiting chronic conditions (univ. $F=9.02$; $p<.01$) and more activity restricted days (univ. $F=7.97$; $p<.01$), whereas deprivation was associated with less positive wellbeing (univ. $F=4.52$; $p<.01$), more depression (univ. $F=2.72$; $p=.03$), and more limiting chronic conditions (univ. $F=4.10$; $p<.01$).

Table 4.2 Multivariate and Univariate F-test of the Effect of Interaction of Deprivation and Health Behaviour upon six Indicators of Health (MANOVA). Data from the Danish Health Study 1982-83 (N=1402)

		Multivariate Test of significance		
Responsible variable	Test name	F-value	Sign.	Power
Combination of six indicators	Pillais	0.78	.858	0.77
	Hotellings	0.78	.859	0.77
	Wilks	0.78	.859	0.61
		Univariate Test of Significance		
Response variables	F-value	Sign.	Power	
Current health	0.65	.738	0.13	
Pos. well-being	0.59	.791	0.11	
Depression	0.61	.767	0.12	
Phys. abilities	0.24	.982	0.04	
Limit, chronic.	0.44	.173	0.42	
Restrict. days	0.96	.464	0.23	

The effects of interaction between deprivation and behaviour which is of particular concern, is shown in table 4.2. It appears that there is no interaction effect (multiv. F=0.78; p=.86), and even if the power of the tests are lower than in the Dutch case, their magnitudes are still substantial.

4.6 Conclusions

In this paper we examined the relationships between three groups of variables: social and material circumstances, indicators of health and illness, and aspects of health related behaviour or 'lifestyle'. It became evident that social and material circumstances are related both to health and illness, and to health related behaviour, with a better health and a healthier lifestyle among those who occupy a relatively privileged position within society. A healthier lifestyle was also associated with a more favourable opinion about one's own health and a lower number of reported acute symptoms or chronic conditions.

Although our analysis provided us with the general pattern of the relationships between the three groups of variables, we nevertheless encountered relationships that remained unclear. The ambiguity in the survey data about the association of alcohol consumption with both health and circumstances is a case in point. In both the Dutch and the Danish studies we could not reach firm conclusions about either the relationship of drinking behaviour with the

personal experience of health. In the Dutch study, the relationship between social or material circumstances and excessive drinking seem to contradict the other associations of deprivation and unhealthy behaviour. This was also found in another Dutch study on the relationship of lifestyle and health (Hulshof et al., 1991).

There are other studies from our respective countries that lend support to our findings. In the Netherlands, the Central Bureau of Statistics (CBS) carries out a continuous nationwide health interview survey with a sample size of approximately 10.000. An analysis of the combined data from the period 1983-1988 showed that indicators of social position like income, level of education and occupational prestige are inversely related to subjective health, the experience of health complaints and the number of chronic conditions (CBS, 1991: 14-17). Another analysis of the CBS data from the period 1989-1990 revealed that the number of unhealthy habits was inversely related to education: the less-educated had more unhealthy habits. Unhealthy habits were in turn related to a poorer subjective health (Bruin, de 1992). Two other Dutch surveys provided similar information (Halfens et al., 1984: 121-4; Loon, van 1992: 23-35). A recent Danish study (Rasmussen et al., 1988) showed that aspects of deprivation are related to health and health related behaviour. The study showed that blue collar workers and independents without subordinates rated their health status lower than other groups in the working population, and these groups also had a higher rate of persons with long standing disease. Prevalence of hampering symptoms were more frequent in the subordinate white collar group and among non-skilled workers. In general, the working population had a better health status compared to the non-working population when controlled for age and sex, except for the unemployed and students. As to health related behaviour, the greatest group of people who were physical inactive during spare time could be found among the self employed in agriculture and urban trades and among unskilled workers. However, these groups had the highest percentage of physical active during working hours. The higher white collar group had the biggest percentage of persons who consume alcohol in a weekday, and who were aware of the good dietary habits. Non-skilled workers had the biggest percentage of smokers, and the smallest percentage of persons who aimed at a health promoting behaviour.

A conclusion that may be drawn from all studies that we examined is that bivariate relationships between circumstances, health behaviour and health are fairly similar in Denmark, the Netherlands and the UK: the 'disadvantaged' of every society are in a poorer (self reported) health and, with the probable exception of drinking behaviour, have poorer health practices, than those in privileged circumstances. In each country it also true that poorer health

practices generally come with poorer health. From these studies, which are all cross-sectional, it is difficult to establish whether circumstances or behaviour are more decisive in shaping someone's health.

With this conclusion on bivariate relationships in mind, it is surprising that neither the Danish, nor the Dutch data support the hypothesis that in particular the privileged benefit from a healthy lifestyle. How may we account for the absence of this interaction between circumstances and lifestyle? Two explanations come to the fore. The first explanation is based on the differences in the way the data are handled in both studies. The British study aims at presenting descriptive results, whereas this paper aims at statistical testing of what is considered the main hypothesis. Despite the shortcomings of our analyses that lump both circumstances and behaviour in two uni-dimensional indices, these analyses have the advantage that the scientific criteria of statistical testing could be applied. With drawing attention to the interaction hypothesis we hope to encourage similar analyses with the data from the Health and Lifestyle survey, which would be of particular interest, now that the longitudinal panel data are available.

The second way of explaining the conflicting results rests on the assumption that, despite the differences in approach of both studies, the results that are reported in 'Health and Lifestyles' reflect genuine differences between the privileged and deprived of the British society, when it comes to the effects of health related behaviour, an opinion that is also held by one of the reviewer's of *Health and lifestyle* (West, 1991: 577). If so, we may assume that these differences are not present to the same extent in Denmark and the Netherlands. Why would that be? First of all it could be argued that the disadvantaged groups of society in Denmark and the Netherlands are relatively better off than those groups in the UK. The social and material circumstances that they find themselves in do not outweigh the effect of behaviour as it does in the UK. The following table shows that the disadvantaged groups are indeed better off in Denmark and the Netherlands. It should be noted that these cross sectional data can be complemented with data on social mobility in terms of 'standard of living'. A recent cross national study shows much higher rates of downward social mobility in the UK than in Denmark and the Netherlands (Ultee and Luijkx, 1986).

Table 4.3 Indicators of socio-economic inequalities

	Income inequality Gini[1]	Poverty rates households[2]		Social protection expenditure[3]
	1983-1986	1980	1985	1988
Belgium	0.27	6.3	5.2	28.7
Denmark	0.27	8.0	8.0	28.5
France	0.34	18.0	14.8	28.3
Netherlands	0.28	6.9	7.9	30.7
Great Britain	0.34	14.1	18.9	23.6
W-Germany	0.32	10.3	9.2	28.1

[1] Gini coefficients. Korpel et al., 1989.

[2] Poverty is defined as having less than 50% of the equivalent mean national expenditure of adults of one's country. Source: Eurostat. 1991.

[3] The share of social protection expenditure in GDP. Social protection encompasses the costs of health, old age, housing, unemployment, family/maternity. Source: Eurostat. 1991

It also shows that there is less income inequality in those countries, which leads to the second argument in favour of this explanation. Smaller differences in income would mean that the privileged and deprived are more alike in terms of material resources in Denmark and the Netherlands than they are in the UK. In that case the hypothesized interaction effect is probably not large enough to materialize in our statistical test.

In the end we have to conclude that this paper probably raises more questions than it answers. Its main purpose is to contribute to the discussion on the interplay of behaviour and circumstances in their effect on health. The British study on 'health and lifestyles' focused attention on a particular form that this interaction might have. The idea that the privileged of society benefit more from adopting a healthy lifestyle than the deprived, is both new and provocative. It deserves more attention than this paper alone. Further research should extend the testing of the core hypothesis to include other industrialized countries as well. Equally important would be to extend the present study in another direction and to includes objective health indicators (mortality), preferably in a longitudinal design. The question that is raised in *Health and Lifestyles* of who actually benefits from adopting a healthy lifestyle is important both from a scientific and from a public (health) policy point of view.

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APPENDIX 1. VARIABLES IN THE DUTCH SURVEY OF GENERAL PRACTICE

A. Health

1.	Symptoms:	Checklist of symptoms experienced in the 14 days prior to the interview. The list contains 42 common symptoms and 3 additional open-ended categories. Extension of the list used in: Halfens, Drop, Philipsen, 1984.
2.	Chronic	Checklist with 25 chronic conditions and 2 open-ended categories, with conditions weights for severity adapted from: Van den Berg & Van den Bos (1989)
3.	Subjective Health:	Q: How would you in general consider your health? : A: very good (1), good (2), not good but also not bad (3) bad (4) very bad (5)
4.	GHQ:	Goldberg's General Health Questionnaire. The 30-item version was used which was translated in Dutch (Bowling: 1991).
5.	Symptomatic	The number of days with symptoms as recorded in the health diary. days

B. Social & Material circumstances

1.	Social class :	manual/non-manual/independent farmers and craftsman (categories of social class adapted from the schema developed by Goldthorpe and his coworkers, ref. Erikson, Goldthorpe, Portocarero: 1983)
2.	Living arrangement:	alone/one parent household/two parent household /two (or more) adults living together (married or unmarried)
3	Urbanisation:	1: rural < 30.000 inh./2: towns & suburban areas < 50.000 inh./ 3 cities > 50.000 inh. (without 4) /4: metropolitan areas (Amsterdam, Rotterdam, The Hague)
4	Daily activities:	employed (incl. unpaid employment, military service)/unemployed/housekeeping/ full-time education/early retirement/ else. (excl. disability pensioners)
5	Housing tenure:	rental home/owner-occupier
6.	Health insurance:	compulsory/private (wage-earners with a below modal income have a compulsory insurance through a sickfund).
7.	Friends:	0/1-2/≥3 close friends

8. Membership voluntary organisations: yes/no

9. Visits: having visitors or visited someone past month: yes/no

C. Description of the index of deprivation for the analysis of the Dutch data.

The index aims to measure deprivation (or privilege) as a additive scale, starting with '0', with the following variables:

- social class (manual: -1)
- area of residence (Amsterdam, Rotterdam, The Hague: -1)
- health insurance (private insurance: indicating a higher than modal income: +1)
- housing tenure (owner occupier: +1)
- social deprivation (no close friends: -1; no member of voluntary organizations: -1; no visitors or visiting others over the past month: -1)

a combination of living arrangement and daily activities (possible scores in parenthesis):

daily activities:	alone (0/-1)	Living arrangement: single parent (-1)	two parents (0)	two adults (0)
employed (0)	-1	-1	0	0
housekeeping (0/-1)	-2	-2	0	0
education (0)	0	-1	0	0
unemployed (-1)	-2	-2	-1	-1
early retirement (0)	-1	(-)	0	0

The daily activities of the partner or head of the household are considered as well. When the respondent is not belonging to the above mentioned employed category (unemployed, doing the homework or student) and when his or her partner or head of the household is either unemployed or a disability pensioner: -1. Disability pensioners themselves are not included. With these variables a simple additive scale is constructed which ranges from +2 (privilege) to -3 (deprivation), higher levels of deprivation are truncated.

APPENDIX 2. VARIABLES IN THE DANISH HEALTH STUDY

A. Health

1.	Current Health:	Likert scale and composed of scores from 9 items with each 5 response categories. Cronbach's alpha: .89
2.	Positive Well-being:	Likert scale composed of scores from 5 items with each 2 response categories: yes/no. Cronbach's alpha: .64
3.	Depression:	Likert scale composed of 4 items with response categories as for Positive Wellbeing. Chronbach's Alpha: .61
4.	Physical Abilities	Likert scale composed of 3 items with each 3 response categories. Chronbach's Alpha: .87
5.	Limiting chronic conditions:	Checklist with 17 chronic conditions, with weights indicating how much the condition impeded the daily activities.
6.	Activity restricted: days:	Number of days during previous 6 months where respondent was unable to carry out usual activities (job, working around the house)

B. Social and material circumstances

1.	Social class:	Manual skilled and unskilled workers/ non-manual occupations, independent farmers or independent in urban trades.
2.	Neighbourhood:	Area with low and dense housing or blocks with flats and the respondent's house or block built of concrete/other types of neighbourhood
3.	Income:	Under/above mean household income
4.	Living arrangements:	Alone/one parent household/two parents household or two adults.
5.	Daily activities:	Employed/housekeeping/full time education/unemployed/early retirement
6.	Friends:	No close friends/one or more close friends
7.	Membership of voluntary org.:	No membership/one or more memberships
8.	Visits:	Visits paid by or to friends during 1 month: Only once or

less/more than once.

9. Occupational risk: No risk/some risk/substantial risk

C. Description of the index of deprivation for the analysis of the Danish data.

The index is constructed with a content as close as possible to the Dutch index. It consists of the following variables, were respondents were initially receiving a '0':

- social class (unskilled and skilled manual: -1)
- income (household income greater than the mean income: +1)
- neighbourhood (not living in a concrete building and residential quarter not consisting of a block of flats: +1)
- social deprivation (no close friends: -1; no membership of voluntary organizations:-1; no visitors or visiting during the past month: -1)
- health risk (substantive: -2, some: -1)

a combination of living arrangements and daily activities (possible scores in parenthesis):

daily activities:	alone(0/-1)	Living arrangement: single parent(-1)	two adults/two parents(0)
employed(0)	-1	-1	0
housekeeping(0/-1)	-2	-2	0
education(0)	0	-1	0
unemployed(-1)	-2	-2	-1
early retirement(0)	-1	(-)	0

In the Danish study, relevant information was obtained for both the male and female head of a household. When one adult in a two adults/parent household is not working, and the other is unemployed, the first adult/parent is assigned a additional score of -1.

Notes

1. A comparison with the British data is one reason to do so, on the other hand it may be argued that this particular group would exert undue influence in the analysis when they would for instance form a large part of the manual class. We also had difficulties with attaching a plausible deprivation score to these respondents, since disability pensioners are in the Netherlands for instance considerably better off financially than the unemployed. Moreover, the adoption of the sick role seems to be an issue here too. At present, and also at the time of the survey, the growing number of disability pensioners is a political issue of great public concern in the Netherlands. It is suspected that many who would otherwise be unemployed are making unjustified claims for a disability pension. Naturally, those who are granted a disability pension are under social pressure to demonstrate in their daily life and in an health interview that there claims are justly made. This observation does not imply that the authors believe that disability pensioners make unwarranted claims. It merely hints at the social pressures involved. In Denmark on the other hand, disability pensioners do not constitute an anomalous group. In some analyses of the Danish data disability pensioners without severe limitations of daily activities were included, mainly because of the smaller scale of the Danish study.
2. This is partly due to previously mentioned differences between the questionnaires, but also when only regular smokers are counted is the number of smokers higher than elsewhere in OECD countries, with the exception of Japan. According to OECD data, in 1983 (the year of our study) around 54% percent of the male Danes and 43% of the female Danes of 15 years and over were regular smokers (OECD 1993: 90-91).

5 THE RELATIONSHIP OF HEALTH AND ILLNESS BEHAVIOUR. DOES AN UNHEALTHY LIFESTYLE INFLUENCE THE CARE FOR COMMON SYMPTOMS?

Abstract

Health and illness behaviour are core concepts in health psychology and medical sociology. How do they affect each other? This chapter explores the effect that hazardous health habits like smoking may have on illness behaviour for common symptoms of ill-health. Cognitive dissonance theory provides the framework for two hypotheses. It is expected that people with risky health habits react different to symptoms than those with a healthy lifestyle: they will worry less about their symptoms, and are less inclined to seek information on the nature of their symptoms. These hypotheses were tested with data from the Dutch National Study of General Practice. A random sample of 11038 patients completed a health interview and reported symptom experiences and illness behaviour in a health diary. The statistical analysis supported the last hypothesis. For the other hypothesis the results were ambiguous. The paper concludes with a revised model of the relationship between health and illness behaviour.

***Key words**: health behaviour, illness behaviour, addictions*

5.1 Introduction

Health behaviour and illness behaviour are core concepts in the related fields of health psychology and medical sociology and obligatory material for textbooks in these disciplines (see e.g. Mechanic, 1978; Sarafino, 1990). In their seminal paper published in 1966, Kasl and Cobb defined health behaviour as the actions of healthy people to prevent disease and illness behaviour as the actions of people in response to the symptoms they experience (Kasl & Cobb, 1966). Health behaviour and illness behaviour have separate research traditions and are treated separately in textbooks (Gochman, 1988; McHugh & Vallis, 1986). The idea of treating these behaviours separately seems to be founded on a stereotype of the illness experience: illness begins with the occurrence of symptoms, like pain or fever, which prompt action from the individual to alleviate the complaints. He or she may consult a physician for treatment, cut down on daily activities or stay in bed. When illness interferes with one's daily activities the sick role may be adopted. The sick role grants the individual exemptions from daily duties such as going to work or school. In exchange for these exemptions, the individual accepts an obligation to get well (Parsons, 1951). The stereotypical illness episode has a clear ending. In most cases, time and treatment are expected to do the trick: the symptoms wither away, treatment stops and the normal responsibilities are resumed. This, in short, is the model of the illness episode on the basis of which the concepts of health-, illness- and sick role behaviour were developed

in the mid 1950s and 1960s.

Epidemiological and behavioural research suggest that this simple model is not wholly adequate. First of all, every day people experience common health problems for which no help is sought. Health surveys and health diary studies have revealed the ubiquitousness of symptoms of ill health. In a study carried out in the 1960s, Wadsworth Butterfield and Blaney found that more than 95% of their respondents experienced health complaints in the two weeks preceding the interview (Wadsworth, Butterfield & Blaney, 1971). Only 20 percent of these respondents saw a physician for these complaints. Other studies reported similar and even lower consultation rates (Banks et al., 1975; Folmer, 1968; Huygen, Hoogen & Neefs, 1983). These unreported problems mainly consist of minor every day illnesses like headaches, fatigue and common cold, although serious conditions remain unreported as well (Tuckett, 1976; Hannay, 1979; Huygen, Hoogen & Neefs, 1983).

Second, in many industrial nations chronic illness is increasing while acute illness declines (Gruenberg, 1977; Tapp & Warner, 1985). Many chronically ill typically experience flare up episodes during which the illness manifests itself but remain relatively symptom-free in between (Kleinman, 1988). The illness itself however, becomes a life long companion.

The borderlines between health and illness behaviour are not as clear cut as earlier work assumed: while experiencing symptoms people might do things to remain otherwise healthy: the experience of illness may affect people's health behaviour. The reverse aspect may also be of importance: how do people, who are either very conscious or rather careless about their health in terms of lifestyle, respond to symptoms of ill-health?

In this chapter we focus on one particular aspect of the relationship of health behaviour and illness behaviour: how do health related habits like smoking, alcohol consumption, diet and exercise affect the care for common daily symptoms of ill health? This question seems to of particular importance since, as Hamburg et al. argue, 'the heaviest burdens of illness are related to aspects of individual behaviour, especially long-term patterns of behaviour often referred to as "lifestyle". ' (Hamburg, Elliot & Parron, 1982). It seems therefore important to know how an 'unhealthy' or 'healthy' lifestyle affects the assessment of daily symptoms of illness and the process of care seeking. There is reason to believe that an 'unhealthy' lifestyle may lead to denial of symptoms and delay in seeking professional care. Consequently, those with an unhealthy lifestyle may worry too late, when the damage to their health has already taken effect.

In the development of our argument about illness behaviour, it is important to note that we live in a health conscious world. Research findings suggest that the health risks of smoking, excessive drinking, no exercise and a poor diet are well known to the population at large (O'Looney and Harding, 1982; Harding and Kristiansen, 1986). Health promotion campaigns have certainly increased the awareness of the risks of poor health habits. A recent British survey showed that those with the relevant unhealthy behaviour are most conscious of the links of these habits with disease (Blaxter, 1990).

Despite the widespread awareness of the dangers involved, many people are not able or willing to alter their lifestyle and a conflict between their knowledge and actual behaviour arises. In similar situations the theory of cognitive dissonance has often been very helpful in explaining which strategies individuals employ to resolve this conflict between inconsistent cognitions (Festinger, 1957). After its original formulation by Leon Festinger in the late 1950s subsequent refinements of the theory have been made. Aronson demonstrated that dissonance theory applies in particular when people engage in behaviour that violates their self-concepts (Dickerson, Thibodeau, Aronson & Miller, 1992). In an economic application of dissonance theory Akerlof put it nicely:

'Most cognitive dissonance reactions stem from peoples' view of themselves as "smart nice people". Information that conflicts with this image tends to be ignored, rejected or accommodated by changes in other beliefs'.
(Akerlof, 1984)

It is plausible to assume that unhealthy habits like smoking, cause cognitive dissonance. Surveys among smokers have repeatedly shown that the majority of current smokers have made attempts to quit, and many smokers express the desire to quit in the near future (StiVoRo, 1990). We may assume that most current smokers experience various levels of cognitive dissonance, which has also been proved in several studies (Pervin & Yatko, 1965). There are few research findings about the actual levels of dissonance that other risky habits induce. The link between smoking and cognitive dissonance is well established because the health hazards of smoking became widely known in the early 1960s, when dissonance theory experienced its heyday (Swinehart & Kirscht, 1966).

Dissonance is usually reduced by altering the cognition that is least resistant to change (Brehm & Cohen, 1962). Giving up hazardous habits is often difficult because of the addictive nature of those habits. It should be mentioned however, that the number of smokers has been rapidly declining over the past decades, in almost the entire western world (Pierce, 1989). In the

Netherlands alone the smoking rate among males has declined from 90% in the late 1950s to 37 % in 1994. (Stivoro, 1992; Centraal Bureau voor de Statistiek, 1995). Most smokers try to quit on their own. In therapeutical settings, it was shown that the amount of induced dissonance was related to the success of the attempt to quit (Best & Steffy, 1971).

Apart from giving up hazardous habits, there are several strategies that individuals may employ to either avoid or reduce dissonance (Pervin & Yatko, 1965)[1]. One strategy would be to belittle the value that is placed on good health, thereby reducing the importance of the dissonant cognitions. Smokers or excessive drinkers frequently say that they prefer a short life full of pleasure over a long but boring life, equating a healthy lifestyle to boredom[2]. The immediate gratification of smoking and excessive alcohol consumption is often valued over future health risks. Several studies suggest that smokers appear to be more risk taking than non-smokers and are less oriented towards the future (Jenks, 1992; Farrell & Fuchs, 1982).

Avoiding the exposure to unwanted information seems a simple strategy to keep cognitions consonant. The problem with this strategy is, that in our health conscious world most people are voluntary or involuntary exposed to information on health risks of certain lifestyles which is disseminated through the mass media. It seems that denial of the susceptibility to diseases which are known to be related to an unhealthy lifestyle, is a strategy that is more often employed. The denial of susceptibility may be both in general terms and/or related to the individual. Empirical studies have supported the existence of this dissonance reduction strategy. Smokers rated the health risks of the average smoker lower than nonsmokers did. They also rated their own health risks lower than the health risks of the average smoker (Lee, 1989; Harding & Kristiansen, 1982; Brownson, Jackson-Thompson, Wilkerson et al., 1992). Similar results have been found with respect to alcohol abuse (Hansen, Raynor, Wolkenstein, 1991).

It is not only information per see that is causing dissonance, but also unwanted criticism of others in one's social network may contribute to its arousal. This may explain why people with more social ties, who are more influenced by the norms of their social network, engage in a greater number of health promotion and fewer risk taking behaviours (Hibbard, 1988; Umberson, 1992). In Hibbard's study the relationship between social ties and health behaviour is more apparent among the elderly, than among younger age groups. She assumes that among younger age groups social norms may have a mixed influence, either encouraging behaviours like smoking and drinking behaviour or discouraging it. Among older people health is more of a salient issue than among young adults and the health norms of people of age

50 and over are primarily expected to encourage a healthy lifestyle and not to discourage it.

The denial or misreporting of the hazardous behaviour in question is another strategy of dissonance reduction, which is, for several reasons, more likely to occur for the consumption of alcohol than for smoking. Smoking is more visible, and hence more difficult to deny than problem drinking. Health care workers know very well that denial is a common strategy of problem drinkers to avoid criticism from their social environment (Wilkin, 1974). Self-reports on smoking behaviour are considered accurate, while self reported alcohol consumption is considered to underestimate actual consumption (U.S. Department of Health and Human Services, 1990; Midanik, 1982).

Although health is an important issue in the avoidance and reduction strategies of smokers, excessive drinkers etc., there is very little research that takes *illness behaviour* into consideration. We do not know if unhealthy behaviour leads to a different assessment of symptoms or to differences in help seeking behaviour. The lack of research in this area is probably due to the lack of exchange within the scientific community between those that are engaged in the study of health promotion and those that study illness behaviour as I pointed out in the first section.

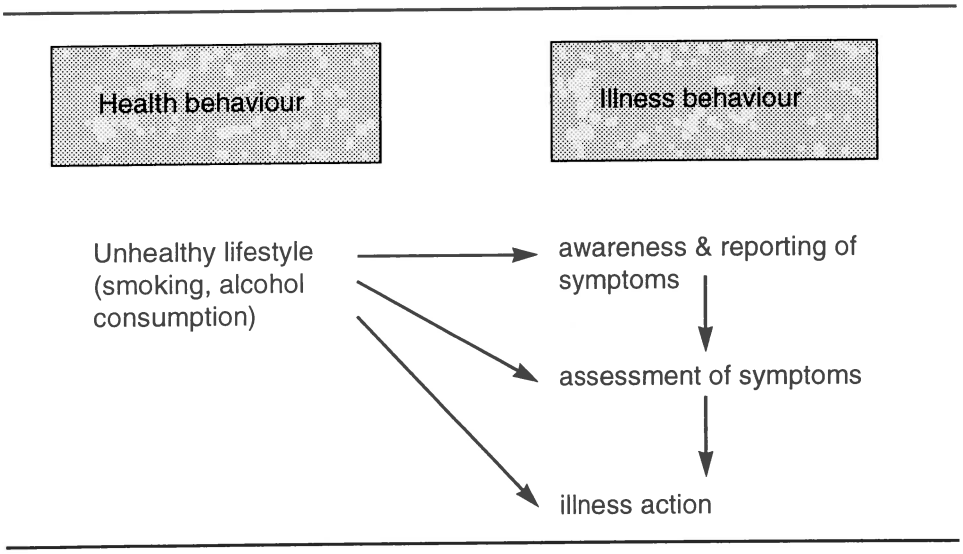
Two hypotheses

In this chapter we take a look at reports of actual illness behaviour in response to the daily experience of health complaints. These reports are based on a health interview and on a health diary that over 10,000 respondents kept for a period of three weeks. We focus on the occurrence of every day illness, rather than singling out the occurrence of major disease. There are several reasons to do so. Symptoms like headaches, flu, cold or stomach ache are much more common than major diseases and provide fruitful material to study the effect of health behaviour on illness behaviour for the population at large. Secondly, common symptoms allow the individual more freedom to develop a personal style of illness behaviour than major diseases for which professional help is sought.

What are the options to avoid or reduce dissonance with illness behaviour? Illness behaviour encompasses the awareness and reporting of symptoms, their interpretation and remedial action. It may be assumed that health behaviour has an effect on any of these stages in dealing with symptoms as depicted in figure 5.1.

Illness behaviour starts with the experiencing of bodily sensations and labelling them as signs of illness, which are to a large extent dependent on the individual's readiness to monitor bodily processes (Pennebaker, 1982). Individuals can learn or unlearn to react to the messages of the body. Dissonance could be avoided by building a high threshold for the awareness of symptoms. People who are confronted with the effects of an unhealthy lifestyle (i.e. coughing, wheezing, frequent hangovers, lack of energy) avoid the arousal of dissonance by not paying attention to these messages, gradually lowering their awareness of symptoms in general.

Figure 5.1 A model of the relationship between health behaviour and illness behaviour



There is evidence in our material that support this view. In chapter 2, I compared the symptom reports obtained during the interview with the symptom experiences reported in the health diary. I found that the number of reported symptoms was much lower in the health diaries, compared to the symptom reports during the face-to-face interview. I attributed these disparities to the methods with which the symptom reports were obtained. During the interview health complaints were solicited with a checklist that served as a memory aid and listed 42 common symptoms (see Appendix). Reporting symptoms was easy for the respondent. The health diary on the other hand

was more demanding to complete. It needed to be kept every day and respondents were asked to describe the symptoms in their own words. In addition, there was a set of questions about the assessment of these symptoms and the illness action to alleviate symptoms. The necessity to answer additional questions about the symptoms in the diary, builded a threshold to register symptoms, that was absent in the interview setting. As a result, respondents enter symptoms in the diary that they themselves clearly identified as signs of illness. Now, I was surprised to learn that the threshold to report, was much higher among smokers than non-smokers. Smokers reported fewer symptoms in the diary, but more symptoms during the interview. In chapter 3, I reported the occurrence of specific symptoms. The interview data showed that the symptom load increased with the amount of cigarettes that were smoked daily. Common symptoms like nervousness, fatigue, but also respiratory symptoms and bowel or stomach symptoms occurred significantly more often among smokers than non-smokers. These relationships were absent in the diary data. Most likely, smokers did simply not consider these bodily experiences worth mentioning in the diary as symptoms of ill-health, having learned to accept them as part of their every day life. When reminded about particular symptoms one-by-one during the interview, they were ready to acknowledge these bodily experiences[3]. Interestingly, much more agreement between instruments was found among ex-smokers, who reported more symptoms than never-smokers during both interview and in the health diary. With cognitive dissonance theory this finding could be explained by stressing the absence of the need for denial among ex-smokers. By giving up smoking they restored consonance between their awareness of health risks and their behaviour. While these findings deal with illness behaviour in response to risk related habits, it would be incorrect to report them in this chapter as new results, founded on previously conceived hypotheses. Two new hypotheses about other aspects of illness behaviour, concerning the assessment of symptoms and illness action may however be tested with this material.

When people with an unhealthy lifestyle experience symptoms they are able to reduce dissonance by telling themselves not to worry: these symptoms will eventually disappear and are not the tell-tale signs of a lifestyle related disease. Along with learning not to pay attention to bodily sensations, smokers for instance may have learned to minimise the worry that symptoms induce.

When a certain bodily experience is labelled as a sign of illness, the next step in the process of illness behaviour consists of finding a remedy to alleviate the symptoms. Very often people consult their friends or family for advice on what to do, before seeking professional help (Freidson, 1970). They may also

acquire information on their illness and possible remedies from books or magazines. Finally, they may decide to seek professional help and in countries like the U.K. and Netherlands, the General Practitioner is the most likely candidate to turn to.

Seeking advice and information is more likely to increase dissonance than reduce it. In our health conscious world, popular books and magazines about health almost certainly cover the detrimental effects of an unhealthy lifestyle (e.g. the Mayo Clinic Family Health Book). When turning to lay people or professionals for advice one runs the risk of getting (probably) unwanted advice to alter one's lifestyle. Health professionals are expected to play a role in health promotion and advice their patients accordingly (Fowler, 1982). We have already mentioned that people in one's social environment are likely to advocate healthy rather than unhealthy behaviour. It is therefore plausible that smokers and others who engage in unhealthy habits are not very likely to seek information about their symptoms.

People who maintain a healthy lifestyle, on the other hand are expected to be much more alert to health matters. When they experience symptoms they are more likely to develop some kind of illness behaviour refusing to deny the presence of symptoms, seeking instead to talk about their complaints, read about them, and when dealing with signs of more serious disorders, consult a professional.

These considerations may be formulated as two hypotheses. Individuals with an unhealthy lifestyle are expected to:

1. worry less about the complaints they experience
2. be less inclined to consult lay people, written material or the General Practitioner for information and/or treatment of their symptoms.

In this chapter we examine the relationships between illness behaviour and four unhealthy habits: smoking, excessive alcohol consumption, poor diet, for which overweight is a proxy, and lack of exercise. Although each of those habits is considered unhealthy, the degree of induced dissonance may vary. Dissonance is most likely to occur when the information about the health effects of a certain behaviour are widely known, the behaviour itself is visible and consequently the social pressure to alter an unhealthy habit is strong. Smoking induces more dissonance than any of the other unhealthy habits. Nowadays it is almost impossible to avoid information on the health risks of smoking. In most western countries, including the Netherlands, packages of cigarettes contain a warning about the detrimental health effects of smoking. Consequently, the percentage of smokers has dropped rapidly in the Netherlands, in particular among males. Campaigns to change other health habits

appear to be less successful (RIVM, 1994).

Smoking is also the best covered aspect of lifestyle in our data. We can distinguish between past and current smokers and make assumptions about the behaviour of each group. Former smokers are less than current smokers troubled by dissonance when it comes to reporting symptoms of ill-health. Those who quit smoking more than 5 years ago resemble non-smokers in their health risks and they have adjusted to a life without the habit. Those who quit more recently are in the process of cycling between cessation and relapse and their health risks are higher than non-smokers (U.S. Dep. of Health, 1990). A British study on health and lifestyle, that also used various indices of self-reported health, showed that this group experiences and reports more complaints than non-smokers, current smokers and former smokers who quit more than five years ago (Blaxter, 1990).

We must recognize that the appraisal of symptoms and the ensuing illness action will, to a large extent be determined by factors other than lifestyle. The response to symptoms will primarily be determined by the frequency of their occurrence, the perceived seriousness of these symptoms, the extent to which they disrupt family, work and other social activities, the respondent's previous experiences with these symptoms, cultural differences and the inclination of the individual to seek care (Mechanic, 1978). A reliable picture of the effect of lifestyle on illness behaviour will only be obtained after controlling for these other determinants.

5.2 Material and methods

Our study consists of a secondary analysis of data from the Dutch National Survey of General Practice; a nationwide study conducted in 1987/1988 among 161 General Practitioners in 103 practices (Foets, Van der Velden & De Bakker, 1992). A random sample of 100 patients of each General Practitioner was approached for a health interview and asked to keep a structured health diary for the following three weeks. The sample was not limited to patients who had recently visited the surgery or are currently undergoing treatment; patients who had not seen their GP for a long time were also approached. The response rate is 77 percent for the interview and of those respondents 85% completed the health diary for the entire 3 weeks (Total number of respondents = 11038).

A questionnaire that was completed during the face-to face interview provides the information on health status, lifestyle and background variables (the

appendix includes a list of relevant variables). The questions about health status preceded the questions about lifestyle. At the beginning of the interview the respondent was asked to complete a checklist with 42 common symptoms, that the respondent may have experienced during the past 14 days.

The questionnaire covered three aspects of health related behaviour: their alcohol and tobacco consumption and if they actively engage in sports. We distinguish three levels of drinking: abstaining, light or moderate drinking and excessive drinking. Abstainers are those who reported no alcohol consumption during the previous six months. The data we use offer information on the frequency of alcohol consumption during the week and the daily number of glasses. Excessive drinking was defined as follows: for men we considered '4 glasses or more every day' or '5 glasses or more almost every day' as excessive drinking. For women we used lower levels: '3 glasses or more every day' or '4 glasses or more almost every day'. This definition is based on another Dutch study on health related behaviour which considered more than 28 glasses for men and for women more than 21 glasses in a week a health risk (Bruin, 1992). This other Dutch study derived its definition of excessive drinking from recommendations of the Royal College of General Practitioners. The remaining category, falling in between abstainers and excessive drinkers, is considered as 'light or moderate' drinking[4]. The variables on smoking consider both smoking history as well as the present amount of cigarettes (or cigars, pipes) that are smoked daily. Ex-smokers fall in two categories: those who quit more than 5 years ago and those who quit five years ago or less. The respondents were not directly asked about their diet but instead asked about their height and weight with which the Body Mass Index (BMI) can be established. In our analyses the BMI serves as a proxy to dietary habits. Finally the respondents were asked if they actively engage in sports or not. We considered no engagement as a health risk. In agreement with De Bruin's study we did not distinguish different levels of physical activity.

The health diary consists of a 21 page booklet with a simple one-page questionnaire to be completed each day. The respondents were asked to provide a daily rating of their health, mood and activities and whether or not any symptoms of ill health occurred that day. Those who had complaints were asked to describe the nature of their complaints (with a maximum of two) in their own words. Then a series of precoded questions followed on the assessment of these complaints (new/existing, self limiting, worrying etc) and the illness action prompted by the complaints on that day. For both complaints 16 different actions could be listed, ranging from doing nothing, read or talk about the complaint, to consulting a GP. The assessments of com-

plaints as 'self-limiting' and/or 'worrying' are used to test the first hypothesis. The second hypothesis was tested with three types of illness behaviour: (1) talking to others about the complaint, (2) reading about the complaint in a book or magazine, (3) consulting a GP.

We restricted all analyses to respondents within the age range of 25 to 64 years. There are three reasons for this. First, the response rate for the diaries dropped significantly among those of 65 years and over. Second, the elderly are not under the same pressure as middle aged adults to change their health habits (Broer, Kuyvenhoven, Van der Werf & Heres, 1992). Finally, younger age groups are excluded because our analysis takes the smoking history of the respondents in account and young respondents have relatively short smoking histories. Our analyses are not tied down to illness behaviour in response to very specific symptoms because it is difficult to relate certain (groups) of symptoms to conditions that are 'caused' by a certain unhealthy habit. Instead I assume that illness behaviour consists of learned responses, that apply to symptom perception and action in general.

The statistical analysis began with examining bivariate relationships after which we used multivariate methods in order to include the necessary control variables. These multivariate analyses were carried out with the diary data in aggregated form. This means that the 21 daily records, of each day that the diary was kept, were combined in a single record for each respondent. The aggregated file contains information on the number of days with health complaints, the number of days with a particular assessment of the complaint and the illness action on days with complaints, which were turned into percentages. In the multiple regressions (OLS) the percentage of symptomatic days with a certain assessment or illness action served as dependent variable. Lifestyle characteristics and control variables are inserted simultaneously as independent variables.

All analyses are carried out for men and women separately because there are well known differences between men and women in the meaning that is attached to health, in symptom experience and in illness behaviour (Waldron, 1988; Gijsbers van Wijk & Van Vliet, 1989; Blaxter, 1990). Moreover, men and women may experience different levels of cognitive dissonance for the same habit. Women are for instance more concerned about their weight and complexity than men are and excessive alcohol consumption seems less accepted from women than from men.

The first hypothesis assumes that an unhealthy lifestyle comes with less concern about daily symptoms of ill health. For our data translated as assessing symptoms as either 'self limiting' or 'not worrying'. Control-variables in the

multivariate analyses consist of determinants of health, symptom assessment and care-seeking behaviour. We may expect that people with one or more chronic illnesses and/or high levels of psychological distress will worry more about their symptoms than others. When symptoms last longer they will be less often assessed as self limiting, meaning that duration should be included as well. Symptoms become more troublesome with age and we expect that in particular older adults who live alone will worry about their symptoms. People in paid employment or enrolled in full time education are expected to be healthier than those who have no fixed role, and will express few worries about their day-to-day symptoms. The effect of role obligations is likely to be different for men and women and an interaction of role obligations with age is expected as well. Lifestyle characteristics (smoking, alcohol consumption, exercise and BMI), role obligations and living arrangement were entered as dummy variables whereas age, education, the number of chronic conditions, the number of symptomatic days in the diary and the level of psychological distress were entered as numerical variables.

The second hypothesis focuses on 'illness action' in response to the recorded symptoms. In the multivariarte analyses pertaining to that hypothesis also the symptom assessment variables are entered as predictors. In the chosen aggregated form these are defined as the percentages of the symptomatic days that symptoms were assessed as new or unknown, lasting for more than one year, assessed as troubling or irritating, reason for worry, self limiting or known why occurring. Two kinds of regression analysis are used for the second hypothesis. In the analysis of the percentage of symptomatic days that people talk or read about their symptom a multiple regression (OLS) is used, whereas visiting a GP was treated as a dichotomous response variable. With a logistic regression I estimate which factors influence the likelihood of visiting a GP at least once on one or more of the symptomatic days within the three week period of the diary study.

5.3 Findings

In a three week period 62% of the men and 75% of the women in the ages between 25 and 65 experienced health complaints. While symptoms of ill health occur frequently, they do usually not last very long. Around 30 percent of the respondents had only one or two days of illness within the three weeks of the diary period and the majority of the respondents (63%) had less than seven symptomatic days. The most frequently mentioned symptoms are: headache, fatigue, common cold or flu, back pain and stomach ache or bowel complaints. There was no clear pattern that related symptoms to health habits.

The assessment of symptoms and the illness action depends to a large extend on the duration of the complaint or the frequency of its recurrence. In the next table we compare those who had only one symptomatic day, to respondents who had health complaints for 2-6 days or on seven days or more. Respondents with on symptomatic day within the three week period, usually considered their symptoms to be self-limiting and no reason for worry.

Table 5.1 Assessment of symptoms for respondents with 1, 2-6 or 7-21 symptomatic days (age: 25-64 yrs)*

Assessment symptom is:	1 symptomat.day 16% of resp.(n=687)	2-6 symptomat.days 47% of resp.(n=1982)	7-21 symptomat.days 37% of resp.(n=1569)
New or unknown	11%	8%	9%
Existing > 1 year	18%	25%	43%
Bothering or irritating	54%	66%	78%
Worrying	7%	10%	29%
Self limiting	62%	61%	36%
Known why existing	57%	57%	55%

*) Assessment of first symptom mentioned in the health diary. For respondents with one symptomatic day, the percentage with a certain assessment is mentioned (across all cases). For respondents with more than one symptomatic day, first the mean assessment per respondent is calculated over the number of symptomatic days, followed by a calculation of the mean of those means across all respondents. The latter figure is entered in the table.

The typical response was to do either nothing, take a rest and/or apply a home remedy or OTC medicine. Those who had symptoms on seven days or more within the three week period responded rather differently. They worried a lot more about their complaints, had a much higher probability of contacting their GP within those three weeks and/or to take prescribed medicine[5].

The first hypothesis assumes that individuals with an unhealthy lifestyle are less inclined to worry about their symptoms of illness than others. I also expected that smoking is more likely to cause dissonance and consequently expected smokers to worry the least about their symptoms of ill-health. In bivariate tabulations of the variables pertaining to lifestyle and the assessment in the health diary of daily symptoms, only smoking yielded results that are in line with our assumption. Male moderate smokers rated their health complaints almost as often to be 'self-limiting' as those who have never smoked did (ANOVA of smoking status: F=5.1; df=5; p=0.0001). Among women, light smokers stand out as having little worries about their every day health complaints. The ANOVA of smoking status was not significant however.

Table 5.2 Illness action on symptomatic days of respondents with 1, 2-6, 7-21 symptomatic days (age: 25-64 yrs)*

Illness action	1 symptomat.day 16% of resp.(n=687)	2-6 symptomat.days 47% of resp.(n=1982)		7-21 symptomat.days 37% of resp.(n=1570)	
Nothing	29%	31%		27%	
Talking	13%	13%		15%	
Reading	1%	1%		1%	
Exercise/relaxation	6%	6%		12%	
Rest	39%	34%		31%	
Cut down activities	9%	8%		13%	
Stay in bed	3%	3%		4%	
Take care diet/smoke less	8%	9%		12%	
Reduce alcohol consumption	8%	10%		12%	
Home remedy	16%	16%		12%	
Medicine (prescribed)	5%	8%		25%	
Medicine (OTC/at home)	17%	16%		14%	
Help family/friends	2%	1%		3%	
Consult GP	3%	3%	(8%)**	3%	(30%)**

*) Illness action for the first symptom mentioned in the health diary. For respondents with one symptomatic day, the percentage with a certain action is mentioned (across cases). For respondents with more than one symptomatic day, first the mean of the particular action is calculated over the number of symptomatic days for each case, followed by a calculation of the mean of those means across all cases. The latter figure is entered in the table.

**) Percentage of respondents who saw their GP at least once on symptomatic days within the diary period.

Figure 5.2 Assessment of symptoms as self-limiting or worrying among male respondents

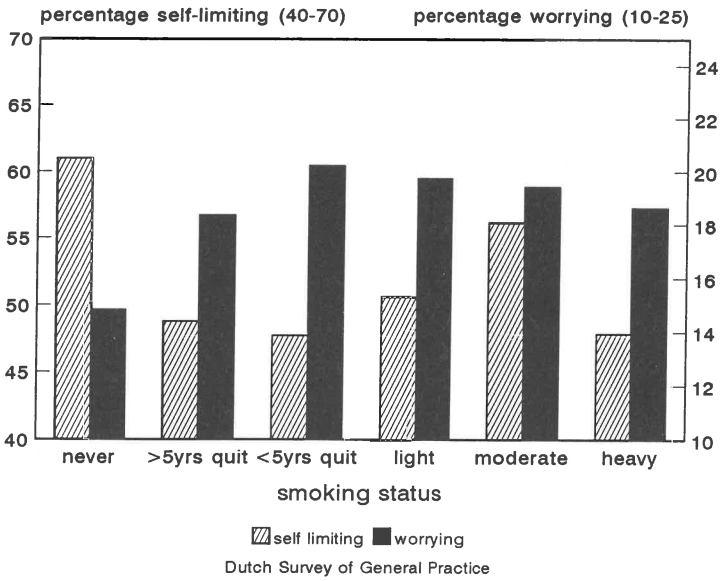
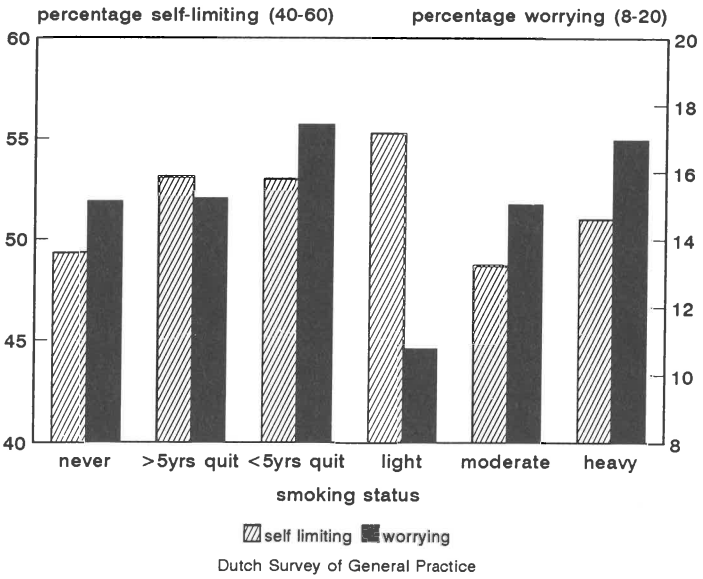


Figure 5.3 Assessment of symptoms as self-limiting or worrying among female respondents



With a multiple regression the effect of all predictors on the assessments of health complaints was tested. The equations relate the percentage of the symptomatic days that a certain assessment was made to the set of independent variables, with separate analysis for men and women. The results are summarized in table 5.3[6].

These analyses show that lifestyle plays a relatively minor role in the assessments of health complaints: the number of days that complaints last, the number of pre-existing chronic conditions and the level of psychological distress are much more important. Former smokers who quit within the last five years considered their complaints to be less self-limiting (male) or more worrying (female). Male moderate smokers and female light smokers seem different from other categories. They do however not differ significantly from the reference category: those who never smoked.

The second hypothesis relates lifestyle characteristics to care seeking behaviour. I expected that an unhealthy lifestyle comes with a reluctance to seek help from lay people in one's social environment, or from professionals like a General Practitioner. We also expected a smaller likelihood to consult self help guides like medical encyclopedias or magazines. Table 5.2 showed that written material is only very rarely consulted for advice (on 1% of the symptomatic days). Also talking to others about symptoms of ill health is not often mentioned in our diary data (13-15% of the symptomatic days). It was decided to combine these actions under the heading of 'lay advice' as opposed to professional help from the GP, because very small percentages are not suited as response variables in OLS regression (Cleary & Angel, 1984).

The first equations in table 5.4 shows how the percentage of symptomatic days that lay others or written material is consulted relates to assessments, health status (chronic conditions and psychological distress) and background characteristics like age, education, role obligations and living arrangement. The second equation shows how these independent variables are related to the likelihood of visiting the GP on one of the symptomatic days in the diary keeping period.

The multiple regression shows that people talk or read about their symptoms when they are new, consider them bothering or worrying. They are less likely to do so with symptoms of a longstanding illness (complaint existing > 1 year). The level of education and whether or not they live alone makes surprisingly little difference to this behaviour. Older women and women with higher levels of psychological distress, talk or read more about their symptoms than others. This analysis also shows that smokers talk or read signifi-

cantly less about their symptoms than non-smokers do. Among women, smokers who quit more than five years ago also talk or read less about the complaints which they experience. The (few) women who drink excessively talk or read more about their complaints whereas men who drink alcohol seem less inclined to do so. The illness action model has a poorer overall fit than the assessment model that was discussed before.

The likelihood of visiting a GP on symptomatic days is also largely determined by the assessments of symptoms. Respondents with self-limiting complaints and those who experience symptoms of previously existing conditions are less likely to visit their GP. New and bothering symptoms on the other hand are a reason for a consultation, especially when they last for several days. The interaction of age and living arrangement indicates that younger women who live alone are, controlling for other factors, less likely to consult a GP, while older women are more likely to do so. Psychological distress does not make much difference. For both men and women, the number of symptomatic days is the best predictor in this logistic regression[7].
Lifestyle issues do not add much to the probability of visiting a GP. Generally there is no significant contribution, with the exception that women with light overweight are more likely to visit their GP than women with a normal weight.

5.4 Conclusions and discussion

In this chapter we studied how elements of a health related lifestyle, with particular emphasis on smoking, might affect the perception and care seeking for day-to-day symptoms of ill health. On the basis of cognitive dissonance theory we assumed that an unhealthy lifestyle would lead to a reluctance to label physical sensations as symptoms of ill health. When symptoms are experienced they would induce only a limited level of worry and individuals with an unhealthy lifestyle would not be very likely to consult lay people in their social environment or their GP for advice and treatment, nor would they easily turn to books and magazines for advice. All these behaviours are assumed to help the individual in either avoiding or the reducing the cognitive dissonance that comes with their habit.

In the appraisal of daily symptoms of ill-health, male moderate smokers and female light smokers appear to be less troubled by their every day illness than the other respondents are. These effects were not significant in a multivariate analysis. After controlling for other factors, smokers do however

Table 5.3 Assessment of symptoms. Regression analyses (OLS) of the percentage of days with symptoms that are assessed as 'self-limiting' and/or 'worrying'*) men & women separately, age 25-64 years

	SELF LIMITING				WORRYING			
	♂ (N=1744) Reg.coeff.**(†)		♀ (N=2041) Reg.coeff.(†)		♂ (N=1744) Reg.coeff.(†)		♀ (N=2041) Reg.coeff.(†)	
Age (25-64)	.0888	(1.772)	-.0575	(1.928)	-.1402	(2.834)	.0482	(1.632)
Education	.0208	(0.862)	.0485	(2.075)	-.0157	(0.661)	-.0052	(0.227)
No exercise d	-.0119	(0.365)	.0413	(1.472)	-.0119	(0.478)	-.0211	(1.068)
Former smoker (> 5 yrs) d	-.0871	(1.799)	.0516	(1.272)	.0182	(0.490)	.0157	(0.551)
Former smoker (≤ 5 yrs) d	-.1238	(2.227)	-.0510	(1.142)	.0642	(1.505)	.0898	(2.853)
Light smoker (≤ 10 c/d) d	-.0554	(1.054)	.0261	(0.614)	.0126	(0.313)	-.0466	(1.561)
Moderate smoker (11-20 c/d) d	.0227	(0.468)	-.0491	(1.191)	.0180	(0.483)	-.0014	(0.047)
Heavy smoker (> 20 c/d) d	-.0752	(1.424)	.0135	(0.269)	.0001	(0.002)	.0201	(0.568)
Light/mod drinker d	-.0518	(0.979)	-.0076	(0.237)	.0175	(0.430)	-.0318	(1.397)
Heavy drinker d	-.0728	(1.009)	-.0265	(0.317)	.0709	(1.281)	.0021	(0.035)
Underweight (BMI < 20.0) d	-.0153	(0.196)	-.0672	(1.688)	.0095	(0.158)	-.0312	(1.112)
Light overweight (BMI 25.0-29.9) d	.0097	(0.297)	-.0046	(0.137)	.0029	(0.115)	.0009	(0.039)
Mod/heavy overweight (BMI ≥ 30) d	-.0919	(1.291)	-.0620	(1.058)	.0536	(0.981)	.0277	(0.672)
Alone d	.0576	(0.272)	.0818	(0.543)	-.0553	(0.340)	-.0113	(0.106)
Alone * age	-.0233	(0.280)	.0068	(0.094)	-.0211	(0.256)	-.0323	(0.453)
Fixed role d	.6121	(3.460)	.1964	(1.836)	-.3198	(2.355)	.0810	(1.076)
Fixed role * age	-.3180	(3.430)	-.1478	(1.843)	.2339	(2.555)	-.0449	(0.567)
Number chronic conditions (0-25)	-.1331	(5.206)	-.0605	(2.587)	.1297	(5.137)	.0583	(2.525)
Neuroticism (GHQ)	-.0481	(2.126)	-.0282	(1.307)	.1888	(8.445)	.1718	(8.052)
Number symptomatic days (1-21)	-.2976	(12.449)	-.3158	(14.164)	.3112	(13.189)	.3028	(13.743)
Constant	.8632	(4.817)	1.1024	(12.076)	.3305	(2.402)	-.0428	(0.666)
Total R^2	.18		.16		.21		.18	

* arcsine transformation of the percentage 'self-limiting/'worrying'

** Regression coefficient: 1. dummy variables (indicated with d): 'b' reference categories: smoking: never smoked; drinking: abstainer; weight: normal (BMI 20.0-24.9). 2. numerical variables: standardized coefficients: Beta. †: p <.05 if † >1.96; p <.01 if † >2.58; p <.001 if † >3.29 for two-sided tests

Table 5.4 Illness action. (1) Regression analyses (OLS) of the percentage of symptomatic days on which respondents talked with others about their symptoms of read in a book/magazine about it. (2) Logistic regression of the probability of contacting a GP on one or more symptomatic days within the diary-keeping period. Men & women; age 25-64 years

Independent variables	TALK OR READ ABOUT SYMPTOM[*] ♂ (N=1744) Reg.coeff.[**]	(†)	♀ (N=2041) Reg.coeff.	(†)	VISIT A GP IN THE DIARY PERIOD ♂ (N=1744) Reg.coeff.[***]	(Se)	♀ (N=2041) Reg.coeff.	(Se)
Age (25-64)	-.0031	(0.057)	.0674	(2.163)	.0083	(0.0153)	-.0134	(0.0087)
Education (1-7)	-.0025	(0.098)	-.0066	(0.273)	-.0525	(0.0464)	.0094	(0.0468)
No exercise d	-.0038	(0.165)	-.0052	(0.285)	-.0120	(0.1660)	.0399	(0.1478)
Former smoker (> 5 yrs) d	-.0196	(0.573)	-.0574	(2.192)	.2339	(0.2451)	-.1861	(0.2201)
Former smoker (≤ 5 yrs) d	.0096	(0.245)	.0187	(0.649)	.0970	(0.2826)	.3142	(0.2248)
Light smoker (≤ 10 c/d) d	-.0542	(1.457)	-.0156	(0.568)	.0044	(0.2701)	.1173	(0.2218)
Moderate smoker (11-20 c/d) d	-.0559	(1.631)	-.0649	(2.441)	-.1427	(0.2558)	-.1012	(0.2221)
Heavy smoker (> 20 c/d) d	-.0763	(2.043)	-.0765	(2.365)	.0585	(0.2707)	.3862	(0.2447)
Light/mod. drinker d	-.0640	(1.711)	.0045	(0.213)	.2473	(0.2637)	-.0846	(0.1626)
Heavy drinker d	-.0824	(1.615)	.1958	(3.635)	.2401	(0.3579)	-.9695	(0.5725)
Underweight (BMI < 20.0) d	.0260	(0.471)	-.0122	(0.477)	0.268	(0.3809)	.1760	(0.2121)
Light overweight (BMI 25.0-29.9) d	.0219	(0.950)	.0223	(1.027)	.0933	(0.1638)	.3505	(0.1666) *
Mod/heavy overweight (BMI ≥ 30) d	-.0068	(0.136)	.0625	(1.653)	-.0526	(0.3472)	.2229	(0.2891)
Alone d	-.0508	(0.340)	.0966	(0.994)	1.4531	(1.1833)	-2.0251	(0.8418) *
Alone * age	.0437	(0.489)	-0791	(1.055)	-.0539	(0.0308)	.0470	(0.0172) **
Fixed role d	-.0314	(0.249)	.0640	(0.927)	.8409	(0.8631)	.1352	(0.5339)
Fixed role * age	.0652	(0.652)	-.0858	(1.029)	-.0240	(0.0176)	-.0070	(0.0135)
Number chronic conditions (0-25)	.0324	(1.154)	-.0017	(0.070)	.0304	(0.0306)	.0628	(0.0282) *
Neuroticism (GHQ)	.0379	(1.528)	.0668	(2.924)	.0289	(0.0164)	.0092	(0.0145)
Symp. new/unknown (% days)	.0629	(2.623)	.1417	(6.449)	.7971	(0.2797) **	1.3763	(0.2808) ***
Symp. known (% days)	.0291	(1.224)	.0671	(3.072)	-.0944	(0.1733)	-.5638	(0.1681) ***
Symp. existing > 1 yr (% days)	-.7019	(2.499)	-.0683	(2.769)	-1.8305	(0.2348) ***	-1.7841	(0.2228) ***
Symp. bothering (% days)	.1429	(5.713)	.0845	(3.603)	.4933	(0.2319) *	.6702	(0.2004) ***
Symp. worrying (% days)	.1374	(4.949)	.1287	(5.263)	.3667	(0.2260)	.4179	(0.2267)
Symp. self limiting (% days)	.0028	(0.102)	.0306	(1.270)	-1.6170	(0.2104) ***	-1.6916	(0.2012) ***
Number symptomatic days (1-21)	-.0239	(0.860)	.0632	(2.489)	.1116	(0.0126) ***	.1101	(0.0124) ***
Constant	.1564	(1.188)	-.0074	(0.117)	-2.3638	(0.9035) **	-1.4759	(0.4876) **
Total R^2	.07		.10					

*) Arcsine transformation of the percentage of days 'talk or need about symptom'

**) Regression coefficient: 1. dummy variables (indicated with d): 'b' reference categories: smoking: never smoked; drinking: abstainer; weight: normal (BMI 20.0-24.9). 2. numerical variables: standardized coefficients: Beta. †: p <.05 if † >1.96; p<.01 if † >2.58; p<.001 if † >3.29 for two-sided tests

***) Logistic regression with indicator coding. Standard errors in parenthesis. *p <.05 ** p<.01 *** p<.001 (Wald Statistic)
For reasons of legibility are assessments not coded as percentages but as proportions in the actual regressions.

talk less to others or read less about their health complaints in books or magazines. If their is any case for the dissonance reduction strategies in our data, it is for smokers who also were significantly less likely to report their symptoms in the health diary when we compared the diary data with the health interviews. This finding is in accordance with our assumption that smoking would provide the best example of a unhealthy habit leading to cognitive dissonance. As is the observation that in particular former smokers who quit within the last five years are troubled by their health complaints. Our case would be more convincing when at the same time current smokers would worry considerable less about their complaints than non-smokers do.

Why is it that our hypotheses receive limited support?
First of all it is important to note that this paper is based on a secondary analysis, which always has its shortcomings. Our data did for instance not contain information about the awareness of respondents of the health risks of their behaviour and which symptoms they would attribute to their lifestyle. The presence of cognitive dissonance could therefore not be assessed directly. We also do not know what other strategies were employed to reduce dissonance. Another shortcoming is that the measurement of hazardous health behaviour in our data is not wholly adequate: our questionnaire did for instance not contain questions to measure dietary habits directly. It was noted before that drinking behaviour is difficult to assess with questionnaire data. In the end, smoking behaviour is the aspect of lifestyle best covered, which may be part of the explanation for the significant effects that were found for smoking but not for other behaviours.

Nevertheless, and this is our second reason, also with better data would the role of lifestyle in the appraisal of symptoms and illness action remain limited. Our analyses clearly demonstrated that the assessment of symptoms and the ensuing illness action are dominated by other factors. The number of chronic conditions, psychological distress and the number of symptomatic days are the strongest predictors of the appraisal of symptoms. In turn, the assessment of symptoms is the strongest predictor of illness action.

On the basis of these findings we might consider revising our model for the relationship between lifestyle and illness behaviour. In this paper we assumed that the dissonance reduction (and avoidance) strategies would affect three aspects of illness behaviour:
(1) interpreting (and reporting) bodily signs as symptoms of illness
(2) assessing the severity of the illness
(3) seeking care

Regarding the first aspect, we know from previous analyses that smokers

were much less likely to report symptoms in the diary than during the health interview. We attributed this finding to a high threshold for symptoms of illness among smokers. The present analyses showed that there are significant links between health status, assessments of symptoms and illness action. It is therefore likely that a health related lifestyle primarily affects the awareness of bodily signs and the process of labelling them as signs of illness. Once symptoms are considered as illness, the steps of illness behaviour are determined by other factors. Figure 5.4 shows the revised model.

When considering this model, our findings that smokers are less ready to discuss symptoms with others or read about them should be seen in another light. These actions are probably less aimed at obtaining advice on how to treat symptoms. It is more likely that symptoms are discussed with the aim of interpreting them, clarifying if they should be regarded as signs of illness or not (Sarafino, 1990) Helman concludes that 'the process of becoming ill involves, (...) both subjective experiences of physical or emotional changes, and, except in the very isolated the confirmation of these changes by other people. In order for this confirmation to take place there must be a *consensus* among all concerned about what constitutes both health and abnormal symptoms and signs' (Helman, 1990). Smokers are less likely to consider their bodily experiences as illness and consequently feel less need for a discussion of their symptoms or vice versa, by not discussing bodily sensations they do not establish a framework for labelling these as illness.

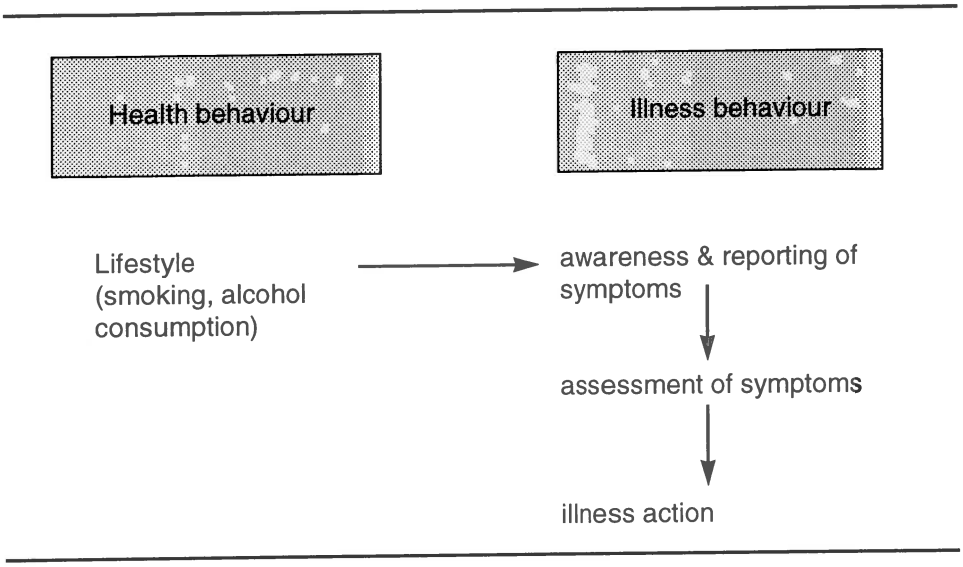
From this an others studies we know that unhealthy lifestyles increasingly cluster among the deprived members of society (Pierce, 1989; Rosén, 1990). In the post war era, before the health risks became widely known, smoking in the Netherlands was more prevalent among the higher educated than among those with only a few years of schooling (Gadourek, 1964). The tide has changed since then because the higher educated have been much more receptive to the messages of health promotion than those with lower education and have changed their behaviour accordingly.

An international study on health and lifestyles, carried out in 5 European countries found 3 clusters of health related lifestyles (Lüschen & Niemann, 1995). Two of them behave relatively healthy, but the third consists of *health nihilists* who have unhealthy food habits, engage below raverage in sports, and above average alcohol intake and heavy smoking. About one third of the

the sample belongs to this category. The most health conscious cluster is predominantly female (65%) of older age (average age: 47 years) and very alert to minor symptoms. The health nihilists are younger (average age: 41 years) and more than half is male (56%). They worry little about their health

or their physical appearance and attach less value to health than members of the other clusters.

Figure 5.4 Revised model of the relationship between health behaviour and illness behaviour



It seems that the efforts of health promotion has led to a divide among the population, in which many people have changed to a healthier lifestyle but not all. A substantial minority of *health nihilists* has closed itself off for health messages, both from outside but also from within, meaning the messages and signs that the body is giving. From the perspective of cognitive dissonance theory, one could argue that many of the higher educated have dealt with the discomfort of dissonance by giving up unhealthy habits. People with little education or living in deprived circumstances have reduced or avoided dissonance with other strategies, including indifference towards health promotion. They do not share the same repertoire of labelling bodily signs as illness, as is done among the health conscious. Fostering a healthy lifestyle among this group may indeed prove very difficult.

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APPENDIX. DESCRIPTION OF VARIABLES

A. Health Interview (N=7271; ages 25-64 years)

1 Health

1.1 Acute symptoms:

Number of acute symptoms experienced over the past 14 days.

Q: "This form mentions various complaints from which everybody may suffer once in a while. Please, indicate for each complaint if you suffered from that complaint in the past 14 days".

Checklist contains the following symptoms: dizziness, headache, fatigue, nervousness, insomnia, general weakness, feeling tense, being easily aroused, excessive perspiration, soar throat, ear pain, buzzing in the ear, hearing problems, nasal congestion, nose bleeding, coughing, palpitations, swollen ankles, nausea, chestpain, vomiting, diarrhoea, heartburn, stomach ache, cramps, constipation, gaining weight, eating problems, toothache, painful urination, incontinence, menstrual problems, complaints about neck or shoulder, complaints about the hip, back pain, complaints about limps, problems at work, family problems, problems with contraceptives. In addition 3 free categories were added.

1.2 Checklist with chronic conditions:

1. not very limiting or severe (weight=1):	hayfever, haemorrhoids, varicose veins, eczema nervousness, allergy, migraine
2. moderately limiting or severe (weight=2):	hypertension, ulcis cruris, chronic back pain, rheumatism, stomach and bowel problems, bile and liver diseases, diseases of thyroid gland, disorders of eye or ear, disorders of the joints prostate problems (♂ only), menstrual problems (♀ only).
3. limiting or more severe (weight=3):	bronchitis or asthma, heart problems, arterioscler osis, cancer, diseases of nervous system (e.g. epilepsy), diabetes, diseases of the kidney, lasting consequence of an accident, hereditary handicap.

1.3 Psychological distress

Goldberg's General Health Questionnaire. In this survey we used the 30-item version.

2 Lifestyle

Smoking: (1) quit smoking > 5 years ago, (2) quit smoking ≤ 5 years ago
(3) light smoker: ≤ 10 cigarettes daily*), moderate smoker: 11-20 cigarettes daily*),
(4) heavy smoker: > 20 cigarettes daily*).
*) or pipes, cigars

Drinking: (1) heavy drinking: ♂ ≥ 4 glasses daily or ≥ 5 glasses almost every day, ♀ ≥ 3 glasses every day or ≥ 4 glasses almost every day. (2) moderate or light drinking: drinking alcohol during the past 6 months but less then heavy.(3) abstainers: no alcohol during the past 6 months.

Exercise: Active sports participation (yes/no)
Weight: Body Mass Index (BMI). (1) underweight: BMI < 20.0; (2) normal weight: BMI 20.0 - 24.9; (3) light overweight: BMI 25.0 - 29.9; (4) moderate and heavy overweight: BMI ≥ 30.0)

3 Socio-demographic variables

Sex, age (25-64), living arrangement: alone/with others, highest completed level of education (1-7), role obligations: fixed=employed, enroled in full time education; not fixed=unemployed, housekeeping, (disability)pensioner)

B. Health Diaries (N=4239; respondents with ≥ 1 day with symptoms)

1. Health complaints (also referred to as symptoms) :

Q: "Did you experience health complaints today?" if yes then complete next question:

Q: "I experienced today the following complaints":..(put complaints that belong together in the same box; there is space for two complaints, if you suffer from more complaints, list the two most important ones).

2. Assessment of complaints:

Q: "With regard to this complaint(s):
(1) this complaint is new/unknown
(2) this complaint already lasts more than a year
(3) this complaint is irritating, troubling
(4) this complaint worries me
(5) this complaint is self limiting
(6) I know why I have this complaint

A 'yes' and a 'no' box followed each assessment
(complaint A and complaint B separately)

3 Illness action

Respondents were asked to list one or more items of the following list of actions that one could doe to alleviate health complaints, seperaterly for complaint(s) A or complaint(s) B.

Q: "With regard to this complaint(s), today I:
(1) did nothing
(2) talked to others about it *)
(3) read about it in a book or magazine *)
(4) took some rest (went to bed early)
(5) had more physical exercise or relaxation
(6) cut down on my daily activities
(7) stayed in bed 'sick'

(8) took care of my diet/smoked less or not at all
(9) consumed less alcohol or not at all
(10) applied a home remedy
(11) used prescribed medicine
(12) use OTC medicine or medicine that I already had at home
(13) received help from family/friends/neighbours
(14) went to see the GP today *)
(15) went to see another provider of care today
(16) did something else.
*) used as dependent variables in the analyses of this paper

Notes

1. Textbooks and scientific papers pay more attention to the reduction of dissonance than to its avoidance. We feel that the emphasis on reduction of dissonance is based on the large amounts of experimental research in which dissonance is induced among subjects. In real life however avoiding dissonance may be as important as the reduction of dissonance (see also Festinger, 1957 p. 29).

2. Those who use this argument may consider themselves to be in good company. Sigmund Freud, the inventor of 'defense mechanisms' used this argument when his friend Fliess urged him to give up smoking: I am not observing your ban on smoking, do you think it's such a glorious fate to live many long years in misery? '. Gay, 1989, p.77.

3. Similarly we also found that people with one or more chronic conditions were much more likely to report symptoms during the interview than in the diary. The same line of reasoning applies to chronic illness, that leads to a symptom experience that is integrated in day-to-day living.

4. In our analysis we do not distinguish ex-drinkers from other abstainers since only very few respondents (♂=31;♀=18) declared themselves to be ex-problem drinkers according to the definition mentioned above.

5. A temporal change of health habits (e.g. smoke less, consume less alcohol) is among the precoded responses on illness action. It is obvious than respondents who either smoke or drink tick that response more often than those who refrain from such behaviour. It was therefore assumed that no informative hypothesis could be derived for those particular answers.

6. These analyses were carried out with different transformations of the dependent variable. In this paper we show the results of the arcsine transformation.

7. There is a possible caveat in this analysis that is worth mentioning. Only on days with complaints could respondents indicate that they saw their GP. The likelihood of visiting a GP within the diary keeping period therefore increases with an increasing number of days with complaints, due to compounded probabilities. These increased chances of visiting a GP are independent of the personal assessments of the respondents, although it seems fair to assume that respondents are more likely to see a GP when their complaints last longer.

6 EXPECTATIONS OF MEDICAL CARE AND ILLNESS BEHAVIOUR FOR EVERYDAY ILLNESS[1]

Abstract

Does having high expectations of medical care for common symptoms mean that one is likely to look primarily at medical care for the alleviation of actual symptoms, foregoing the possibilities of self care? This question was the topic of a study based on the patient survey and the health diaries of the Dutch National Survey of General Practice. High expectations of medical care were found among the elderly, respondents with public health insurance, a low level of education and/or a perceived health 'less than good'. The analysis of illness behaviour was restricted to short illness episodes lasting between 1 and 3 days. The expectations of medical care were significantly associated with the actions undertaken during these episodes. Patients with high expectations of medical care distinguished themselves as being more likely to use prescribed medicine, take rest or quit one's daily activities. They were not likely to consult a GP more often. No substitution between professional care and self care or self medication was found.

6.1 Introduction

General Practitioners are frequently consulted by patients, who present common health complaints that are only to a small extent amendable with medical care [1]. These common illnesses are either self-limiting, not requiring any treatment at all, or could be effectively treated by the patient himself, without the necessity of interference by a medical professional. A substantial fraction of listed patients visit a GP relatively often with these common illnesses. It may be expected that these patients have high expectations of the possibilities that medical care has to offer for these conditions. Alternatively, it is also possible that these patients overestimate the necessity of presenting these complaints to a GP.

In an earlier study, Van de Lisdonk found that the expectations that patients have of medical care for everyday illness, was the strongest discriminating variable when a distinction is made between a high, low and intermediate level of medical consumption for less than severe conditions. Patients with high expectations of medical care have had a high amount of medical consumption over the previous three years. Van de Lisdonk's study also demonstrated that many patients have expectations of medical care that are

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[1] Published in Dutch as: Verwachtingen van medische zorg en ziektegedrag bij alledaagse aandoeningen. *Huisarts en Wetenschap,* 39, (2) 50-55,68 (1996).

in particular not shared by experienced GPs [2].

This paper reports on a study that expands on Van de Lisdonk's findings. It describes the relationship between expectations of medical care for everyday illness and (self reported) illness behaviour during short illness episodes. Instead of emphasizing medical consumption like consulting a General Practitioner, this paper intends to show the effect of these expectations on various forms of self care, like consulting lay people, the use of home remedies and OTC medicine and the adoption of the sick role. Assuming that a relationship exists between expectations of medical care and illness behaviour, it is self evident, that high expectations come with a high probability to consult a medical professional or use prescribed medicine. Less clear is, how expectations of medical care are related to self care practices. One the one hand it is plausible that high expectations of medical care indeed stand for a fixation on the healing possibilities of the medical profession, coupled with little faith in self care or in a wait-and-see-till-it-gets-better policy regarding common symptoms. On the other hand could high expectations of medical care be part of an active 'interventionist' attitude towards symptoms of ill health where coping strategies sometimes lead to seeing a GP, but at other times consists of consulting lay people or a medical encyclopedia and include applying both prescribed, OTC or folk medicine. In this regard it is unlikely, that high expectations come with a high probability to apply self care only, foregoing professional care. Finally, it is plausible that having only modest expectations of medical care means that one resorts to self care only or adopts a wait and see strategy when symptoms of illness occur.

The argument above may be summarized in the following research question:
Do high expectations of medical care for every day illness stand for a fixation on resorting to professional care when falling ill, foregoing the possibilities of self care? Or do high expectations of medical care stand for an active coping strategy, comprising both self care and professional care?

6.2 Methods

Survey

This paper is based on a secondary analysis of data gathered as part of the Dutch National Survey of General Practice conducted in 1987/1988 by the Netherlands Institute of Primary Health Care [3]. In this study 161 general practitioners in 103 practices throughout the Netherlands participated. These general practitioners recorded all contacts with their patients for a period of

three months. A sample of listed patients was approached for a health interview, in content similar to the Health Interview Survey carried out by Statistics Netherlands. A random sample of a little over 100 patients was drawn from each general practitioner's list, resulting in a net sample of 17,047 individuals. Around 77 percent of the sample participated in this study and valid data exist for 13,104 respondents. During the face-to-face interview, among the questions asked about the respondent's health status were the following:

- the number of acute health complaints in a 14 day period,
- self-assessed health (very good/good/not good, not poor/poor/very poor),
- the General Health Questionnaire (GHQ), a mental health screening instrument.

In addition, the respondents were asked about utilization of medical care and about factors that might influence its uptake. These factors include the nature and severity of the health complaints experienced, but also the type of insurance covering the costs of health care and various attitudinal aspects like the expectations one has of medical care, and the 'health locus of control' battery [4]. The health 'locus of control' is an attitude scale, consisting of 3 subscales indicating the extent to which one considers the self, chance or a physician responsible for one's health. The survey also included reporting background characteristics like age, gender and level of education.

The expectations of medical care for common symptoms were assessed with an attitude scale consisting of 12 statements selected from a list of 23 statements drawn up by Van de Lisdonk. Respondents were asked if they: entirely agree/ agree/ partly agree, partly disagree/disagree/entirely disagree with these statements. In an earlier analysis of the data that are used in this paper it was found that the score on the list represent an internally consistent attitude-scale (Chronbach's α: 0.91) with one common factor [5].

Health Diary

At the end of the interview, the respondents were asked to keep a health diary for a period of three weeks. The diary consisted of 21 page booklet with a one page questionnaire to be completed each day. Design and questionnaire were to large extent based on Van de Lisdonk's health diary study. The diary allowed for two (groups of) health complaints to be recorded each day, in separate boxes. Six questions, to be answered with a simple yes or no, tapped the assessments of these health complaints. The questions were formulated as statements like: 'this complaint is new/unknown to me', 'this complaint is bothering or irritating to me' or 'I am worried about this complaint'. The illness actions on the days with health complaints were assessed

with an additional yes/no questions listing 16 possibilities[2]. First, the respondents were asked if they did nothing about their health complaints. When this questions was not affirmed, respondents could indicate if they took more rest than usual because of the health complaint, if they gave up their daily activities, or remained in bed declaring themselves as 'ill'. They could also indicate adaptions in their lifestyle: reductions in alcohol consumption, smoking, watching their dietary habits, or carrying out extra exercises or relaxation. Statements listing the possibility of talking with someone about the health complaint or reading about it in a book or magazine were followed by questions about self medication including home remedies and OTC medicine and about prescribed medicine. Finally, respondents were asked if they consulted a general practitioner or any other (health)care provider on that symptomatic day.

The interviewers were instructed to contact the respondents twice during the diary keeping period and inquire how the respondents were getting along with their task. When collecting the diary, interviewers checked the entries in the diary for completeness. In this paper only those 11,038 diaries are used that contain complete 21 day records regarding the question about the experience of health complaints. Nearly 85 percent of the respondents to the health interview returned complete health diary records, or 92 percent of the survey respondents that agreed to take part in the health diary study. An analysis of the partial non-responds showed that the response rate was relatively low among the elderly, respondents with a subjective health 'less than good', and among respondents who showed little interest in the subjects discussed during the interview.

6.3 Analysis

Upon inspecting the diaries, it became evident that some respondents had difficulties with the lay-out of the structured questionnaire. For those respondents the illness action regarding a possible *second* health complaint was unclear. In this paper only the answers regarding the first health complaint are used. A second restriction is that the diaries of children up to 15 years of age are not used in the present analysis.

Following earlier research, consecutive days with health complaints are linked and treated as episodes [6]. These episodes of illness are delineated with at least on symptom-free day at beginning and end. Episodes of which the

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[2] Respondents could tick more than one answer.

duration cannot be established, because they were either present on the first or on the last day of the dairy keeping period, were not used in the present analysis.

First, the data from the interview survey and the health diary study were analysed bivariately. A factor analysis helped in exploring the underlying dimensions in the illness actions. The determinants of the illness actions were assessed with logistic regression, including several well known variables as predictors [7-9]. This analysis was carried out with multi-level logistic regression, because the illness episodes were not mutually independent: one individual could experience more than one episode in the three week period. Multi-level analysis allows to decompose variance in within episodes and between respondents variance [10].

6.4 Results

Survey

Table 6.1 shows to what extent respondents subscribe to the 12 statements that measure the expectations of medical care for common symptoms.

With a few exceptions, between one quarter and one third of the respondents agreed with these statements and considered presenting the listed symptoms to a general practitioner the best course of action. High expectations of medical care were found among the elderly, respondents with a public health insurance, and in particular among respondents who completed only a few years of education (see table 7.3 in chapter 7). There were only small differences between male en female respondents. The expectations of medical care were positively correlated to two of the health *locus of control* subscales. High expectations of medical care come with a tendency to hold physicians responsible for one's health and are to a lesser extent associated with an attitude where one's health depends on chance. With respect to self reported health, it was found that respondents who describe their health status as 'less than good' have high expectations of medical care. There were no significant associations between the expectations of medical care and the GHQ score nor with the number of reported acute symptoms.

Health diaries

Around 66 percent of the respondents of age 15 years and over (n=9035)

Table 6.1 Beliefs about the necessity and efficacy of medical care for common symptoms. Figures are percentages (N = approx. 10,000)

statements on belief in efficacy of medical care	(entirely) agree	partly agree/ partly disagree	(entirely) disagree
1. prescription from your GP provides a quicker cure for diarrhoea then the medication that you can buy yourself.	44	32	23
2. sedatives that a GP may prescribe, are the best solution when you feel nervous and agitated.	31	30	39
3. a painful neck and shoulder may indicate a condition that definitely needs treatment	40	31	30
4. flu is cured more quickly when you call on the help of your GP.	30	26	44
5. when you feel tired and listless is it best to take a tonic from your GP.	20	28	52
6. a soar throat should better be seen by the GP to make sure that nothing (serious) is missed.	39	28	33
7. when you have a stomachache would your GP be able to provide a better cure than you can do yourself.	62	23	14
8. in case of a headache is it best to have your GP examine you, because you could have a serious condition	27	32	41
9. a limp feeling in your arm would disappear quicker with treatment from your doctor than without it.	28	34	38
10. when you feel sick and have to throw up is it best to see your GP because you can never be sure what is the cause of it.	23	27	50
11. your GP can give you more effective medication to cure your cold than you can buy yourself.	27	24	48
12. a headache will disappear faster with treatment from your GP, then when you treat it yourself.	24	33	43

reported health complaints on one or more days. In figure 1 it is shown that most of the constructed illness episodes do no last longer than 3 days. For the analysis of the relationship between expectations and reported illness behaviour it was important to select those episodes that could be considered as everyday illness. The diaries did not offer any objective criteria for such a selection but it was found that the assessment of symptoms as 'self-limiting' or 'reason for worry' greatly depend on the duration of the episode. It was therefore decided to select episodes of 1 to 3 days for the present analysis. It may be assumed that most of these illness episodes belong to the category of everyday illness. Respondents with illness episodes lasting up to 3 days, on average experienced two new episodes in a three week period, that mostly lasted only a single day.

Patterns of behaviour during illness episodes.

The health diary listed 16 forms of illness actions and 11 of these actions are relevant for this paper. With the aid of a principal components factor-analysis, 4 related types of behaviour could be distinguished:

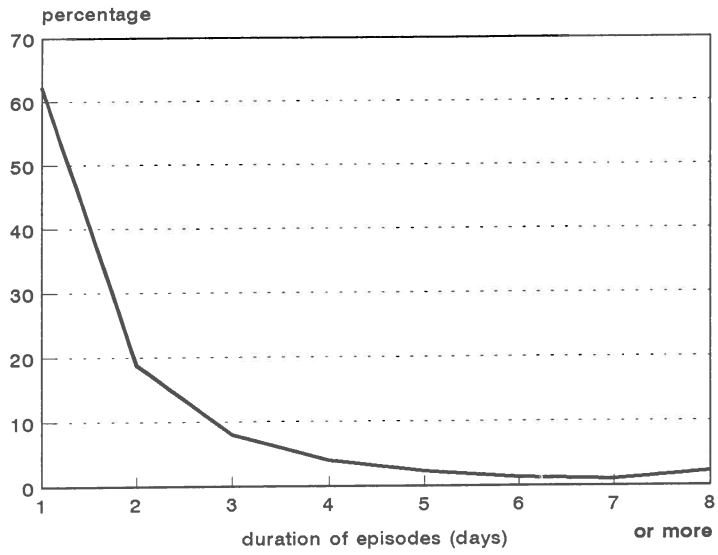
- the *first* factor combines different stages of taking some form of rest and adopting the *sick role*,
- the *second* factor represents various *self care* activities that aim at clarification of the health complaint (talk or read about it), reduce anxiety and achieve relaxation, but does not include (self) medication,
- the *third* factor consists of two activities representing *medical consumption*: seeing a general practitioner and using prescribed medicine,
- the *fourth* factor represents *self medication*: using home remedies and using medicine, not obtained with a prescription.

These four factors comprise 10 illness actions. One illness action listed as 'seeing another care provider' could not be classified under one these factors and is excluded from the following analyses. Table 6.2 shows how the short episodes of illness were rated by the respondents with low, intermediate and high expectations of illness. The table also shows the nature of the symptoms experienced and the assessments of these symptoms.
The respondents with high expectations distinguished themselves from the other groups. More often they experienced musculoskeletal symptoms and they rated their symptoms much less often as 'self-limiting'. They used prescribed medicine more often and were more likely to quit their daily activities during the illness episode. The differences in self care activities (with the exception of reading about the symptom, that is mentioned only

rarely) and self medication were slight[3]. Apparently there is no substitution between self care and professional care among the group with the highest expectations of medical care. A substitution that was plausible in the light of the research question.

The results presented in table 6.2 do not allow for any firm conclusions. It is not clear if the reported differences in illness behaviour are due to the expectations that the respondents have of medical care or due to their health status. Earlier it has been reported that the respondents with high expectations of medical care were in poorer self reported health. The effects of these two factors cannot be separated in this table, but should be accounted for. In addition, the finding that respondents on average experienced two illness episodes, requires a readjustment in the analysis. In order to do so, multilevel logistic regression was carried out with the illness actions as response variables. The expectations of medical care and other determinants of illness behaviour (self reported health, health care insurance, level of education, gender and age) served as predictor variables. In table 6.3 the results of these analyses are summarized.

Figure 6.1 The duration of episodes of illness of respondents age 15 years and over



[3] Due to rounding the table does not show these differences. During the episodes of respondents with high expectations, reading about symptoms occurred on 1,4 % of the symptomatic days. During the episodes of the other respondents, reading occurred on 0,8% of the symptomatic days.

Table 6.2 The nature of symptoms, their assessment and reported illness behaviour during short episodes of illness (1-3 days) among respondents with different expectations of medical care. Figure displays percentages of days across episodes

	low	intermediate	high
symptom			
- respiratory	12	13	13
- headache/migraine	26	28	24
- musculoskeletal	17	21	28
- bowel/stomach	11	10	11
- fatigue/psychological	14	12	11
rest	21	17	14
assessment of symptom*)			
- bothering/irritating	69	68	66
- reason for worry	12	14	18
- self limiting	62	57	48
illness behaviour*)			
- nothing	34	33	26
1. adoption of the sick role			
- took more rest	31	31	36
- quit daily activities	5	7	11
- ill in bed	2	2	3
2. self care activities			
- talked with others about the symptom	14	15	14
- read about symptom in book or journal	1	1	1
- exercise/relaxation	6	7	9
3. medical consumption			
- used prescribed medicine	5	10	22
- saw a GP today	2	2	2
4. self-medication			
- used a home remedy	11	12	13
- used non-prescribed medicine	13	14	15
Number of episodes	2173	5447	993

*) with the exception of doing nothing, more than one activity could be indicated.

Table 6.3 Results of multi-level logistic regression of illness behaviour during short illness episodes. Response-variable: At least one time during the episode carrying out a certain action. Table displays Odds-Ratios of p <.05

	expecta-tions medical care (ref=low)	self-assessed health (ref= good)	health insurance (ref= public	level of education (ref= high)	gender (ref= female)	age (control var)
nothing	.75 (h)	.76 (ng)	-	-	-	-
	-	.42 (p)	-	-	-	-
adopting sick role						
- took more rest	1.30 (h)	1.30 (ng)	-	-	.81(♂)	sig.
	-	1.81 (p)	-	-	-	-
- quit daily activities	1.41 (h)	1.58 (ng)	.59 (pr)	1.49 (l)	-	-
	-	2.94 (p)	-	-	-	-
- ill in bed	-	3.58 (p)	-	-	-	sig.
self care activities						
- talked with others	-	-	-	.81 (l)	-	sig.
- read about symptom	-	-	-	-	-	-
- exercise/relaxation	-	1.60 (ng)	-	-	1.23 (♂)	sig.
medical consumption						
- prescribed medicine	1.72 (i)	.71 (vg)	-	-	-	sig.
	2.52 (h)	2.63 (ng)	-	-	-	-
	-	7.50 (p)	-	-	-	-
- consulting a GP	-	-	-	1.72 (l)	-	-
self medication						
- home remedy	-	.73 (ng)	-	-	-	sig.
- non-prescribed medicine	-	-	1.46 (pw)	-	-	-

Legend: expectations of medical care: (i)=intermediate, (h)=high. self-assessed health: (vg)=very good, (ng)=not good, not poor, (p) poor. health insurance: (pr)=private with deductibles, (pwr)= private without deductibles, education (l)=low

Only significant associations are mentioned. With the exception of 'age' the predictor variables are treated as nominal variables. In these analyses, a certain value of the predictor variable (e.g. a high level of education, low expectations of medical care) is considered a reference category with which the other values of these variables are compared with respect to the probability of carrying out a certain kind of illness action. These comparison may be described using differences in probabilities, derived from the percentages

mentioned in table 6.2. An example may illustrate the method used. During a short illness episode, respondents with low expectations of medical care have a 31 percent chance of 'taking a rest' (see table 6.2). Consequently, they have a 69 percent chance of not doing so. When the former probability is divided by the latter, the resulting fraction is called the *odds*, which amounts to 0.45 in this example. Now, someone with high expectations of medical care is likely to have a higher chance of 'taking a rest' and a lower chance of not doing so (36 percent and 64 percent respectively). Now, if one aims to show how much more likely it is that someone with high expectations will 'take a rest' as an illness action compared to someone with low expectations of medical care, the *odds-ratio* is used [11]. In this example, where low expectations are the reference category, the odds-ratio equals: 0.56/0.45 = 1.24. An odds-ratio of 1 means no association. Table 6.3 shows odds-ratio's for each significant predictor variable and each illness action. Judging from the value of the odds-ratios, it is clear that self reported health was the most important predictor variable of illness behaviour during brief episodes of illness. When the self reported health was considered poor, respondents were more likely to do something about one's health complaint, like adopting the sick role and/or using prescribed medicine. A self reported health described as 'not good, not poor' also came with a increased probability of adopting the sick role, but the difference with the reference category of 'good' self reported health is smaller. It probably seems a little odd that among this category, one is less likely to use a home remedy than among the reference category. An explanation may be substitution with prescribed medicine. Finally, someone who considered his or her one's own health as 'very good', was not very likely to use prescribed medicine. Apart from one's health status, the expectations of medical care often played a significant role. Someone with high expectations in this regard was more likely to use prescribed medicine or to adopt the sick role. The current analysis does not suggest a significant association with self medication or other self care activities. The contribution of other predictor variables was less important. Respondents with a private health care insurance, mostly found among those with a higher level of education, were less likely to quit their daily activities. Respondents with a low level of education were more likely to do so. The latter group of respondents was less likely to talk about its health complaints with others, but more likely to see a general practitioner during the illness episode. When considering the entire range of illness actions, activities like 'doing nothing', adopting the sick role and using prescribed medicine turned out to be stronger related to the predictor variables than self care activities, self medication and visiting a general practitioner during the illness episode.

6.5 Discussion

In the introduction to this chapter, it was asserted that the association of high expectations of medical care and a high level of medical consumption could mean two things: a fixation on receiving professional care or an indication that symptoms are dealt with in an active manner, that includes both medical care and self care. The results of the analyses presented here, suggest that the former interpretation is more valid. Having high expectations of medical care means being oriented towards obtaining professional care, foregoing the possibilities of self care. High expectations were most prevalent among the elderly and among patients with a lower level of education. Among this group, behavioural change is more difficult to achieve than among younger and higher educated patients. Two foreign experiments among families with young children, accomplished promising results with educational programmes about how to deal with symptoms of every day illness. A British experiment achieved a 15 percent reduction in the consultation rate for 6 common illnesses [12]. A Danish experiment led to a 30 percent reduction in the number of consultations with general practitioners [13]. Also in the Netherlands, work is done to foster self care and reduce unnecessary medical consumption. As part of the 'choices in health care' campaign, a series of 'how to' booklets was published, with a 'how to' guide on medicine use as its most recent issue [14]. A number of general practitioners in the region of Zaltbommel, started a campaign of distributing self care guidelines through the local media [15]. When the impression of positive results among the general practitioners is supported in the evaluation study, an important step towards fostering self care for common illnesses is made. The desirability of such an effort is again demonstrated in this paper.

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7 THE ROLE OF LAY ADVICE AND FAITH IN MEDICINE IN SEEKING PROFESSIONAL CARE FOR COMMON SYMPTOMS

Abstract

This chapter examines how faith in medicine interacts with lay advice on seeking medical care during short episodes of illness. It is expected that lay advice will either increase or decrease the probability of seeking medical care, depending on the nature of the patient's beliefs. Data come from a health diary study where 10,000 respondents recorded their daily health problems and illness behaviour during three weeks. The effect of lay advice on the first day of the episode, on care seeking during later days is estimated for respondents with low, intermediate and strong faith in medicine. It was found that lay advice generally increases the probability of subsequently seeking professional care, expect for those who have low faith in medicine. Among those respondents lay advice had only marginal effect.

7.1 Introduction

In spite of a growing literature on the increasing burden of chronic conditions in the ageing populations of western societies, we must not forget that a common feature of these societies is good health for the majority of the population (Olshansky, Rudberg, Carnes, Cassel and Brody 1991; OECD 1993). In the Netherlands, the focus of this study, life expectancy at birth is 74 years for men and 80 years for women; infant mortality is 6,5 per 1000 live births. The majority of the Dutch population also experiences good health from a subjective point of view. Survey research shows that 84 percent of the male and 79 percent of the female population report good or very good health (CBS 1995).

Verbrugge and Ascione assert that "as population longevity increases, health policy concern is shifting from length of life to quality of life. Life quality depends greatly on physical symptoms experienced day by day and on having satisfactory ways of care for symptoms" (Verbrugge & Ascione, 1987). While some of these day-to-day symptoms may be related to chronic conditions, most symptoms fall in the category of everyday illness: headaches, coughing, fever, heartburn, backpain, fatigue and the like.

Some common symptoms, most notably injuries, need immediate attention and leave little ambiguity about the required course of action (Calnan, 1983). But for the majority of these symptoms there is a great deal of uncertainty about interpretation: are the symptoms a sign of illness or are they relatively harmless? Is this a self-limiting condition or a sign of a more serious nature?

These questions are left to the individual who experiences the symptoms and those in his or her immediate social environment. We know that most illness experiences do not lead to consultation with a professional (Wadsworth, Butterfield, Blaney, 1971; Verbrugge & Ascione, 1987; Benzten, Christiansen, Pedersen, 1988). However, it is this pool of everyday complaints that spawns visits to physicians and other health care providers and we know little about how people decide which symptoms are harmless and which require consultation. This paper explores that process using data from a large study of general practitioners in the Netherlands.

In the Netherlands, seeking professional medical care means seeing a general practitioner first, who acts as gatekeeper to specialist care (Flemming 1993). While access to secondary care is limited in this country, there are very few formal barriers to consulting with a GP. General practitioners operate with a fixed list of about 2300 patients who usually live no more than a few miles away from the surgery. Only a handful of individuals are not on a GP list. In a densely populated and flat country like the Netherlands, there are no geographical barriers to the accessibility of health care. Ninety-nine percent of the population has either public or private health insurance and these schemes cover almost the entire costs of health care. Around 60 percent of the listed patients are insured through public sick funds, among them are most of the elderly, and all low wage earners and the unemployed. General practitioners receive capitation payment for these patients, and receive fee-for-service for privately insured. Most patients can see their GP on the same, or the next, day when they seek a consultation. Unlike secondary care, there are no waiting lists for appointments with a general practitioner. When referred to specialist care, 71 percent of the patients are seen within 4 weeks (Flemming, 1993). Because of easy access at minimum costs, 75 percent of the listed patients sees a GP at least once a year (Foets and Sixma 1990). Less than 5 percent of the listed patients have not seen their GP in the last five years [1]. In the past, when the first studies about the 'clinical iceberg' were published, there was concern about under-utilization and delay in seeking health care among disadvantaged groups (Wiliamson et al. 1964). Currently, over-utilization of medical care receives more attention [2]. Concern with over--use is not simply motivated by the necessity to curtail the expanding costs of health care. In an influential study from the Dutch health council, general practitioners and medical specialists expressed their concern about rising consumerism among their patients (Gezondheidsraad, 1991). In their opinion, consumerism means that patients demands, not medical necessity, determine the care that is delivered. Patients are less hesitant in presenting their complaints to professionals than in the past; they insist on a referral to secondary care, not only for actual complaints but also to exclude certain diseases. Patients have also become less hesitant about demanding a second opinion.

A recent survey among both patients and general practitioners confirmed these findings. Regarding care seeking for common symptoms, the patients that were interviewed 'over-estimate the share of symptoms for which treatment is desirable, seek treatment for symptoms that are self limiting and expect solace of appliances that do not have the desired effect.' (Van der Voort, Grundmeijer & Hendrick, 1995). Apart from the concerns of the medical profession, unnecessary consultations are also undesirable for a number of other reasons. It can be argued that these consultations:

1. foster the sense of dependency on professionals (Lupton, 1994).
2. incur unnecessary anxiety about the results of diagnostic tests and may lead to undesirable side effects of treatment (Fyro, Bodegard, 1987).
3. lead to unnecessary spending of public funds.

Patients, physicians and the system of health care delivery and financing have a lot to gain from reducing unnecessary consultations for common symptoms. Self care adds to the empowerment of patients and helps in keeping the costs of health care low without limiting its accessibility. Medical sociology can contribute to that aim by unravelling the process used by patients to decide which symptoms require consultation and which do not. This study of illness behaviour allows us to examine this process. It establishes how opinions about the necessity and efficacy of professional care for common symptoms affect the decisions to seek care. As part of a large study on the functioning of general practice in the Netherlands (see also: Bensing, Van den Brink-Muinen, De Bakker, 1993; Groenewegen & Hutten, 1995) a survey among 13,000 patients in 103 practices was carried out. These patients were asked among other things, about the kind of action they thought to be necessary for a number of common symptoms. The occurrence of day-to-day symptoms and illness behaviour concerning these symptoms was assessed with a health diary, which was kept for three weeks by 85 percent of the respondents to the survey. (The dairy is similar to the diary used by Verbrugge, details are given in chapter 9).

In an earlier paper, published in the journal of the Dutch college of General Practitioners and reprinted in this book as chapter 6, I showed that belief in the necessity and the efficacy of seeking care for common symptoms, significantly increased the probability of taking up the sick role, including withdrawal from daily activities and the use of prescribed medicine. (Kooiker, 1996). It was puzzling however that these beliefs did not increase the probability of seeking professional care during the illness episode. From a theoretical point of view, the assumed relationship between beliefs (the perceived benefits from care seeking) and sick role behaviour ties in with specifications of the Health Belief Model (Jantz & Becker, 1984; Kirscht, 1988). What is missing however, is the 'cue to action', as the Health Belief Model puts it. One of the

consistent findings of medical sociology is that the decision to consult a physician is rarely made by the individual alone (Suchman, 1972; Sanders, 1982). Twaddle asserts that symptoms are *always* negotiated with others (Twaddle, 1981). Individuals who experience symptoms typically discuss these with the members of their own household and sometimes with friends or other family (Furer & Persoon, 1987). While both men and women seek lay advice it is unusual for men to seek or receive advice from other men (Elliot--Binns, 1986). The consultation with others may constitute the 'cue to action' that is missing from the previous analysis. What is the most likely outcome of lay advice with respect to care seeking? In Freidson's original description of the lay referral system, cultural aspects play a major role in determining the outcome (Freidson, 1975). Low utilization of professional services is expected among members of ethnic or parochial groups that have strong kinship networks and are culturally incongruent with the culture of medical professions. Individuals who have a loosely structured social network or a cultural background that is congruent to the professional culture are much more likely to seek professional help. Studies exploring the effect of the lay referral system on seeking professional care do not unanimously support this view. While some studies confirm that large kinship networks result in under-utilization of professional care and that social networks mainly consisting of friends increase the probability of seeking professional care. (McKinlay, 1973; Salloway and Dillon, 1973), at least one study led to opposite results. According to Scambler, Scambler and Craig (1981), kinship networks increased the probability of seeing a general practitioner while discussion of symptoms mainly with friends decreased the probability of consulting. Still others turn the idea of the lay referral system upside down, arguing that a lay referral network does not precede the experience of health complaints but is the result of discussing the symptoms with significant others (see Radley, 1994).

Studying illness behaviour in the context of a lay referral system would require that the dynamics of symptom awareness of the individual and the interactions with members of his or her social network be monitored over an extended period of time. One needs to know who confers with whom and the content and outcome of the advice. This study is based on individual health diaries that allow some form of dynamic analysis. The health diaries ask respondents about 16 different forms of illness behaviour, including seeking lay advice. In this paper I explore the effect of asking lay advice on seeking professional care (from a general practitioner) in combination with the beliefs about the necessity and efficacy of seeking professional care. In a review article on lay influences on the utilization of health services Gottlieb concludes that 'family members friends and acquaintances in the immediate social environment of the help seeker can either expedite or delay utilization of both remedial and preventive health care' (Gottlieb, 1976). In this paper I explore

how lay advice is related to the beliefs about perceived benefits of getting treatment. I expect that lay advice reinforces the pre-existing beliefs about the efficacy and necessity of obtaining medical care. While little is known about care seeking for common symptoms, a Dutch study of chronic patients and the people that constitute their social network found that network members generally share similar attitudes towards care seeking (Mootz, 1990). Sharing similar attitudes had a significant effect on the amount of treatment that was sought. The highest number of contacts with physicians occurred among patients with network members that share the same positive attitude towards medical consumption. The lowest number of contacts with physicians was found among patients who share a negative attitude towards medical consumption with the members of their social network. In social networks where opinions differed, the patients had an intermediate level of medical consumption. When it is true that most potential lay advisers share similar attitudes towards care seeking with the person who suffers from a health problem, and when the effect of these attitudes not only applies to care seeking for chronic health problems but equally to common symptoms, it may be expected that lay advice reinforces already existing attitudes. Hence, the following hypothesis.

Lay advice will either increase or decrease the probability of consulting a general practitioner, depending on the patient's own pre-existing beliefs about the efficacy and necessity of seeking medical care.

Stated in research terminology, this hypothesis translates into an interaction effect between an individual's expectations of medical care and the outcome of lay advice. The probability of consulting a GP will increase after obtaining lay advice among those with strong beliefs in the efficacy and necessity of medical care. Lay advice will lower this probability for individuals that did not expect much of medical care to begin with. Among those that do not obtain lay advice, the association between faith in medicine and actually seeking care is much weaker, as demonstrated by earlier studies.

7.2 Material and methods

The data that I use in this study were gathered within the framework of the Dutch National Survey of General Practice; a nationwide study conducted in 1987/1988 among 161 General Practitioners in 103 practices using a non proportional stratified sampling scheme with urbanization, region and distance to the hospital as stratifying variables. A random sample of a just over 100 patients of each General Practitioner was approached for a health interview

and asked to keep a structured health diary about the daily occurrence of health complaints and illness behaviour for the following three weeks. The patients were approached with a letter from the GP at their home address [3]. The response rate was 77 percent for the questionnaire and of those respondents 85% completed the health diary for the entire 3 weeks (see table 7.1 and Foets, Van der Velden, De Bakker, 1992). The data from the health interview survey provide background characteristics of the respondent, measure his or her reported health status and opinions about health and health care.

Beliefs about the efficacy and necessity of medical care for common symptoms are measured with a series of 12 statements about care seeking for common illness, adopted from an earlier health diary study carried out in a General Practice setting (Lisdonk, 1985). Respondents are asked to what extent he or she agrees with statements like: "a prescription from your GP provides a quicker cure for diarrhoea then the medication that you can buy yourself" or "a painful neck and shoulder may indicate a condition that definitely needs treatment" (see table 7.2). The statements tap the belief that a GP should be visited for diagnostic or curative reasons [4]. Respondents were also asked to complete the 3 Health Locus of Control subscales (Wallston & Wallston 1982). Measures of health status include: (1) subjective health or the respondent's personal assessment of his or her own health (excellent, good, fair, poor, very poor), (2) the number of acute symptoms measured with a symptom checklist, (3) the number of chronic conditions also measured with a checklist, (4) mental health as assessed with Goldberg's General Health Questionnaire.

The health diaries consist of a 21 page booklet with a simple one page questionnaire to be completed each day. Respondents 15 years old and over were asked to fill in the diaries themselves, while the diaries of younger children were kept by their parents or guardians. The diaries of these children, or any other data obtained with proxy interviews, are not used in the present analyses. Respondents were asked to provide a daily rating of their health, mood and activities and whether or not any health complaints occurred that day. Those who had complaints were asked to describe the nature of their complaints (with a maximum of two) in their own words. These complaints were coded in 97 categories along the lines of the ICPC chapters (Lamberts & Woods, 1987). For the present analysis, the two digit system contained too many categories that were reported by only very few respondents. Symptoms were therefore grouped in six large categories: (1) respiratory, (2) headache, migraine etc., (3) musculoskeletal, (4) stomach/bowel, (5) fatigue/psychological, and (6) all remaining symptoms.

The questions about health complaints were followed by a series of precoded questions on the assessment of these complaints as: (1) new/unknown, (2) existing for over 1 year, (3) irritating/bothersome, (4) worrying, (5) self-limiting, (6) cause known (based on Jones et al. (1981). These assessments combine the perceived health threat of symptoms as stated in the Health Belief Model and other variables like interference with daily activities, shown to be important determinants of care seeking in previous studies (Mechanic, 1978). In addition, respondents were asked to mention the illness action prompted by the health complaint on that day. Sixteen different actions could be listed, ranging from doing nothing, talking to others about the symptoms -- considered as lay referral for the present analysis -- remaining in bed, applying home remedies or prescribed medicine to consulting a GP or another health care professional [5]. All questions on assessments and illness behaviour are simple 'yes or no' questions. Information on symptom assessment and illness action is only available on symptomatic days.

This hypothesis implies a sequence of events: lay advice precedes the consultation of a general practitioners during the diary keeping period. This sequence is studied best during episodes of illness. Earlier health diary studies defined episodes of illness as periods of un-interrupted days with health complaints, delineated by a day without symptoms at both beginning and end of the episode (Roghmann and Hagherty, 1972; Banks et al., 1975; Bentzen, Christiansen and Pedersen, 1988). In this study I am more concerned about what happens at the beginning of the episode than about its end or exact duration. The sequential nature of the hypothesis requires that the (possibility of) lay advice precedes the (possibility of) consulting a general practitioner. The exact timing of the consultation of a GP after lay advice is less important. Episodes that were present on the first day of the diary keeping period and might have started earlier, are therefore excluded, but episodes that include the last day of the diary study and might continue after the diary keeping period are retained in this analysis. This procedure excluded respondents that reported symptoms on every day in the diary keeping period. The particular kind of episodes that are used this study are defined as 'new' episodes of illness [6].

The data from the diary were combined with the interview data and aggregated, which turned the episode into the unit of observation. The selection of cases, from the initial questionnaire data to the file of episodes, is summarized with table 7.1.
The model for this statistical analysis is built in four steps. In the first step, the effect of 'faith in medicine' is considered; the second step explores the effect of lay advice on the probability of seeking professional care. The third step specifies an interaction of lay advice and 'faith in medicine' and examines the

effect of lay advice for respondents with either low, intermediate or strong 'faith in medicine'. Finally, other predictors of care seeking are entered: the duration, the nature and the assessment of symptoms. This stepwise procedure shows how the fit of the model is improved after including the interaction effect. The last step is important because it shows the extent to which the assumed relationships are present when variables that are known as strong predictors for the decision to seek professional care are included. This statistical analysis uses a single dichotomous dependent variable, that could be modelled with logistic regression. But this method would require mutually independent observations, an untenable assumption because 58% of the respondents' experiences include more than one episode. In order to accommodate the dependence among observations, multi-level analysis is used, allowing variance to be decomposed into 'within groups '(episodes) and 'between groups' (respondents) (Goldstein, 1987).

7.3 Findings

Among this sample of 10,000 listed patients of age 15 years and over, there is widespread belief that a general practitioner should be consulted for common symptoms. Around one third of the respondents agree that seeing a GP may speed up recovery or is advisable to rule out serious conditions. The addition of the scores on these 12 statements provide an attitude scale measuring the beliefs about the necessity and efficacy of medical care for common symptoms or 'faith in medicine' (see table 7.2) [7].

Table 7.1 Selection of cases and episodes

No.	Selection	Number of cases	Percentage	
1.	Sample of respondents	17047		
2.	Respondents who completed the questionnaire	13014	77%	of 1.
3.	Respondents who also completed the diary 21 days	11038	85%	of 2.
4.	Respondents of age 15 years and over[1]	9035	82%	of 3.
5.	Respondents of age 15 years and over with one or more symptomatic days	5982	66%	of 4.
6.	Respondents of age 15 years and over with new episodes of illness	5184	87%	of 5.
7.	Respondents of age 15 years and over with symptoms on each day (21 days)	484	5%	of 5.
8.	Number of new episodes of respondents of age 15 years and over	10947		
9.	Number of new episodes that include the last day of the diary keeping period	1107	10%	of 8.

[1] Without proxy interviews

Table 7.2 Beliefs about the necessity and efficacy of medical caare for common symptoms. Figures are percentages (N=approx. 10,000)

statements on belief in efficacy of medical care	(entirely) agree	partly agree/ partly disagree	(entirely) disagree
1. prescription from your GP provides a quicker cure for diarrhoea then the medication that you can buy yourself.	44.4	32.3	23.3
2. sedatives that a GP may prescribe, are the best solution when you feel nervous and agitated	31.3	29.5	39.2
3. a painful neck and shoulder may indicate a condition that definitely needs treatment	39.5	31.0	29.6
4. flu is cured more quickly when you call on the help of your GP.	30.4	25.5	44.4
5. when you feel tired and listless is it best to take a tonic from you GP	20.1	28.2	51.8
6. a soar throat should better be seen by the GP, to make sure that nothing (serious) is missed.	39.0	28.3	32.8
7. when you have a stomachache would your GP be able to provide a better cure than you can do yourself.	62.4	23.3	14.3
8. in case of a headache is it best to have your GP examine you, because you could have a serious condition.	26.5	32.2	41.3
9. a limp feeling in your arm would disappear quicker with treatment from your doctor than without it.	28.3	33.6	38.0
10. when you feel sick and have to throw up is it best to see your GP because you can never be sure what is the cause of it.	23.3	27.1	49.5
11. your GP can give you more effective medicine to cure your cold than you can buy yourself.	27.3	24.2	48.4
12. a headache will disappear faster with treatment from your GP, then when you treat it yourself.	23.9	33.0	43.1

The score on 'faith in medicine' for the treatment of common symptoms is higher among the elderly and among those with a limited amount of education, as the following table demonstrates (see table 7.3).

Respondents with a university education are more sceptical about the necessity of treatment. The gender differences are small. The 'faith in medicine scale' is relatively strongly correlated with another instrument that assesses the opinions about where the responsibility for one's health lies: the Health Locus of Control scale. Respondents who believe that common symptoms are

Table 7.3 Relationships of beliefs about the efficacy and necessity of medical care for common symptoms to socio-demografic characteristics of the respondents. High scores equal stronger beliefs, obtained by addings scores on the 5-point scale listed in table 7.2 (range: 12-60; N=approx. 10,000)

Socio-demografic characteristic	Average Score	F-value	Probability
Gender			
Male	35,89	38,93	0,000
Female	34,81		
Age			
15-24 years	33,13	344,1	0,000
25-44 years	33,36		
45-64 years	38,06		
65 years and over	39,73		
Highest level of completed education			
primary school	38,66	189,9	0,000
lower vocational training	36,36		
Junior High school	33,71		
Intermediate vocational training	33,04		
Senior High School	31,57		
Higher vocational training	30,63		
University	30,11		
Entire Sample	35,34		

treated best by seeing a general practitioner also tend to hold physicians responsible for their health (r = 0.59) Having strong faith in medicine is negatively correlated with self reported health status (r=-0.16), but not with the number of acute symptoms or poorer mental health as indicated with the GHQ-score.

Around two-thirds of the respondents experienced one or more days with symptoms of illness in the three week period. In this study new episodes of illness are preceded by a day free of symptoms and can start on the second day or later in the diary keeping period. Both the number and the duration of new episodes are (highly) skewed variables: 42% of the respondents experienced only one episode in a period of three weeks. While experiencing two (28%) or three episodes (15%) is quite common, only 6% experienced more than 4 episodes. Most episodes last one day (59%) or two days (19%). Only 22 percent of the episodes last three days or more. Table 7.4 shows some characteristics of new episodes of illness.

Table 7.4 Characteristics of new episodes of illness as recorded in health diaries that were kept for 21 days by 5184 respondents of age 15 years and over. Figures display percentages

	1-2		3-7		8-20	
health perception respondent[1]						
- good health	83		78		72	
- no chronic illness	39		34		30	
symptoms[2]						
- respiratory	11		27		31	
- headache/migraine	29		14		8	
- musculoskeletal	20		24		34	
- bowel/stomach	11		9		5	
- fatigue/psychological	13		14		13	
rest.	18		12		8	
assessment of symptoms						
- new/unknown	8		11		10	
- longstanding (>1 year)	31		29		38	
- bothering/irritating	67		75		75	
- worry	14		19		26	
- self-limiting	57		52		35	
- reason symptoms known	58		52		51	
medication						
- home remedy	12		15		13	
- otc medicine	14		15		14	
- prescr. medicine	10		16		33	
care seeking[3]						
- lay advice	14	(15)	15	(29)	17	(45)
- General Practitioner	2	(3)	4	(13)	5	(38)
- other	1	(1)	2	(5)	3	(14)
N of cases (episodes)	8543		1966		438	
Percentage	78		18		4	

[1] Respondents were asked to rate their health on a 5-point schale ranging from very good to very poor during the preceding interview. Example from the table: 83% of the episodes that lasted one or two days were experienced by respondents who rated their health as 'good' or 'very good'. They were also asked to mark the presence of chronic conditions on a checklist.

[2] On each day of the diary was the respondent asked to mention nature of symptoms, the assessment of the symptoms and the illness action like medication and care seeking. Example from the table: during episodes that lasted one or two days, was 'headache/migraine' on 29% of those days the primary symptom.

[3] The number in parenthesis is the percentage of episodes during which a certain action (i.e. lay advice) occurred at least once. For example: During 38% of the episodes that lasted 8-20 days, a GP was consulted by the respondent. Only on 5% of the days of these episode, was a GP consulted.

Respondents with short episodes typically suffer from a headache for one or two days, or from a cold or flu with symptoms lasting up to a week. These short spells of illness are usually considered bothering but self-limiting with no reason for worry. When medication is applied, self help with home remedies or OTC medicine seems sufficient, only rarely are professionals consulted or is prescribed medicine used. Increasing duration is a sign that symptoms are becoming more serious. Respondents worry more about these symptoms and consider them less often as self-limiting. Regarding the nature of these symptoms we find that short spells of headache give way to longer episodes of respiratory and musculoskeletal complaints. There is a striking increase in the use of prescribed medicine when episodes last longer.

We may conclude from this table, that new episodes of illness are indeed very common, and do not interfere much with people's daily routines.

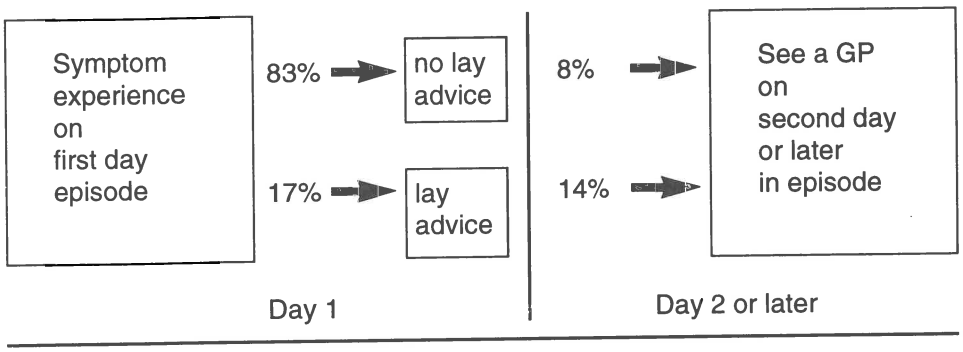
We can now move on to examine the effect of belief in the efficacy of medical care and lay advice on seeking GP care. The exploration of the effect of lay advice on care seeking requires a sequence where (the possibility of) lay advice precedes (the possibility of) seeing a GP during the episode. Consequently, episodes that last only one day and episodes that started with a GP consultation on the first day could not be used for this analysis. These additional selections are shown in table 7.5.

Table 7.5 Additional selection of episodes

No.	Selection	Number of cases	Percentage
1.	Number of new episodes of respondents of age 15 years and over	10947	(see:table 7.1)
2.	Number of new episodes lasting 2 days or more	4460	42% of 1.
3.	Number of new episodes of 2 days and more without GP consultation on first day	4339	97% of 2.

Since most episodes of illness are of short duration, the number of cases to be analyzed decreases rapidly as we move from day-to-day in the illness episode. Consequently, most emphasis is put on the effect that lay advice on the first day has on care seeking during one of the following days in the episode. Lay advice occurred on the first day in 17 % of these cases. The relationship between lay advice on that day and care seeking on one of the subsequent days in the episode is shown in the following graph.

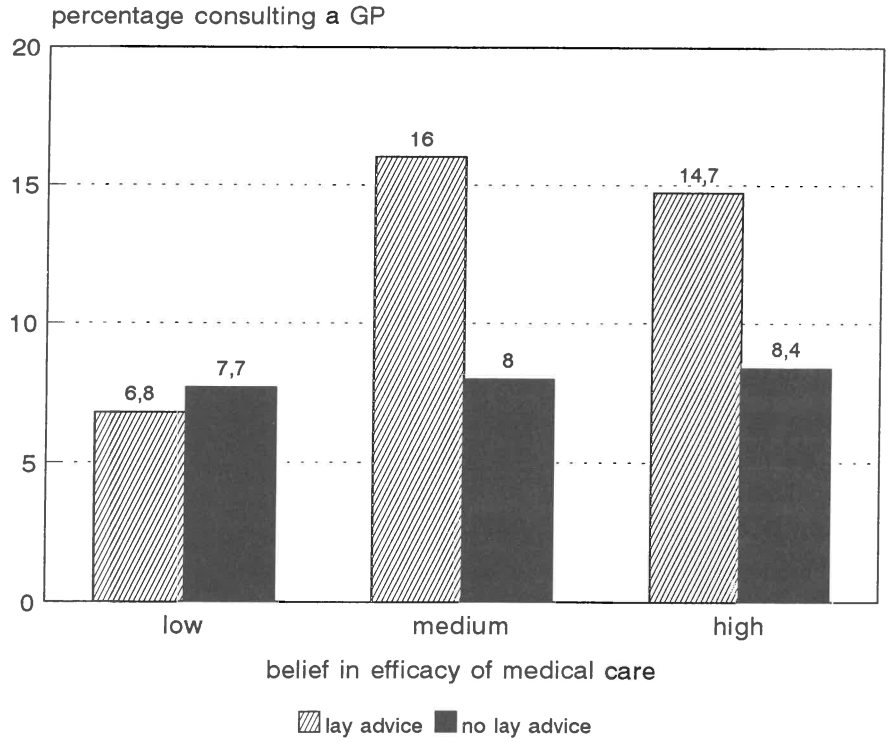
Figure 7.1 Lay advice and subsequent consulting of a GP during the illness episode



Lay advice on the first day greatly increases the likelihood that a GP is consulted on any of the remaining days of the illness episode [8]. In this paper, I assume that lay advice will increase the probability of a consultation among respondents with high expectations of the relief that a consultation will bring, but will lower the likelihood of a consultation for those who have low faith in medicine. A breakdown of the probability of consultation by both belief about the efficacy of medical care and lay advice on the first day of the episode is shown in figure 7.2.

Among respondents who do not expect that medical care will be of much help for common symptoms, lay advice has minimum effect. It seems to slightly lower the probability of consulting a GP on later days of the illness episode. Quite opposite is the effect among respondents who in most cases partly agreed with the statements about care seeking for common symptoms. Lay advice on the first day of the episode doubles the probability of seeing a GP on any of the next days of that episode. A similar, but not so large effect is

Figure 7.2 Probability of consulting a GP for groups with different beliefs about the efficacy of medical care, with or without lay advice on the first day



found among respondents who hold strong beliefs about the efficacy of medical care for common symptoms. When inspecting the entire graph, it is interesting to observe that the beliefs about medical care by themselves only slightly affect the probability of care seeking. But after talking to someone about the symptoms experienced on the first day, beliefs have a rather strong effect.

The pattern that the previous graphs display can be further analyzed with multi-level logistic regression. This technique allows to accommodate the fact that respondents may experience more than one new episode in a three week period. The stepwise analysis confirms the relationships displayed in the graph: (1) lay advice is a strong predictor of seeking professional care and (2) a significant interaction exists between the effect of lay advice and beliefs about the necessity of care seeking. These beliefs, as well as lay advice, are the 'cues to action' in the Health Belief Model. Other important elements of

this model include the perceived threat suggested by the symptoms and the perceived seriousness. In a final step, these assessments and other predictors of care seeking, including the nature of the symptom and the duration of the episode are entered, completing the model [9].
Assessment of symptoms is a strong predictor of illness actions; symptoms that exist for over a year or are considered self-limiting do not spur the individual to see the general practitioner during the illness episode. A visit to the GP's surgery is likely when one worries about one's symptoms, and/or when they are new, unknown or bothersome or irritating. The nature of the symptom(s) is less important with two exceptions: symptoms labelled as 'fatigue/-sleeplessness/nervousness' or psychiatric symptoms come with a higher probability of seeing a GP. It is important to note that the interaction of lay advice and beliefs about the efficacy of medical care remains virtually unchanged after including these predictors in the model [10].

7.4 Conclusion and discussion

This analysis confirms my initial hypothesis. The most important finding is that lay advice does not increase the probability of care seeking among those who do not expect much of medical care for common symptoms to begin with, while among those who have at least some expectations about the benefits of medical care, lay advice doubles the probability of seeking help. It is puzzling that this effect is not much different among respondents who have strong faith in medicine. Apparently having some belief in the efficacy of medical care (as opposed to believing that medical care is not necessary for common symptoms) provides the most important watershed for the decision to seek professional care.

Beliefs about the necessity and efficacy of medical care are associated with age, level of education and self assessed health. Strongest faith in medicine is found among the elderly, people in poor health and those who received only a limited amount of schooling. Respondents with a university degree are more sceptical than any other group about the necessity of medical care for common symptoms. They resemble the attitude of experienced professionals in this respect. From other studies it is known that education decreases the likelihood of consulting general practitioners and using prescribed medicine. Instead they use OTC medicine more often (CBS, 1995). Contrary to Freidson's predictions in the 1970s, congruence between lay- and professional culture in this country comes with low medical consumption, not high levels of utilization. There is a need for education in self-care among those who have strong faith in medicine. Educational programs, therefore,

Table 7.6 Estimated Odds Ratios with 95% confidence interval for stepwise multi-level logistic regression models for the probability of contacting a GP during illness episodes of two or more days of respondents of 15 years and over (n=3943; number of episodes)

Variable Name	Odd-ratio	Confi-dence	Inter-val	-2*LL	df.	diff.2*LL	probability
				1233.19		(initial LL)	
step 1							
high efficacy	0.97	0.71	1.40	1218.36	2	14.83	p < 0.001
low efficacy	0.80	0.61	1.05				
step 2							
high efficacy	1.03	0.73	1.45	1116.35	1	102.01	p < 0.001
low efficacy	0.82	0.62	1.08				
lay advice on first day	1.94	1.51	2.50				
step 3							
high efficacy	1.06	0.72	1.57	1075.77	2	40.58	p < 0.001
low efficacy	1.01	0.75	1.37				
lay advice on first day	2.34	1.74	3.16				
high eff. x lay advice	0.93	0.42	2.06				
low eff. x lay advice	0.36	0.17	0.75				
step 4							
high efficacy	1.01	0.64	1.57	-1110.9	8	2186.7	p < 0.001
low efficacy	1.01	0.72	1.41				
lay advice on first day	1.74	1.23	2.46				
high eff. x lay advice	0.89	0.35	2.24				
low eff. x lay advice	0.35	0.16	0.80				
symptom new	1.42	1.01	1.98				
symptom > 1 year	0.25	0.18	0.36				
symptom irritating	1.62	1.20	2.20				
symptom worrying	1.91	1.41	2.60				
symptom self-limiting	0.51	0.39	0.67				
symptom reason known	0.66	0.51	0.85				
symptom fatigue/psych.	1.82	1.33	2.48				
duration of symptom	1.27	1.23	1.30				

reference categories: no lay advice, medium efficacy, symptoms: not new, not > 1 year, not irritating, not worrying, not self-limiting, reason not known, not fatigue/psychiatric, all as assessed on first day of episode. Duration in days is numerical variable, table displays partial odds-ratio for duration.

should be aimed at those who have had a limited amount of schooling and the elderly. But providing these groups with the 'tools' to make better decisions about what to do with common symptoms may prove difficult. Experiments in the UK and Denmark that involved families with young children have

obtained promising results, but it remains to be seen how these can be translated to other groups. (Anderson, Morell, Avery, & Watkins, 1980; Hansen, 1990).

One limitation of this study is that lacks specific information on the content and setting of providing lay advice. The analysis presented here suggests that lay advice may have a great impact on the decision to seek professional care but one may be question if it is the content of the advice or the person who provides it that determines its outcome. It could also be argued that the act of seeking advice, not its content or source, is the decisive 'cue to action'. The data of this study show that lay advice is sought for symptoms that are new, bothersome or worrying, which resemble the reasons to seek professional care. From this perspective lay advice may be seen as a rehearsal of seeking professional help. It would be valuable to study if and when the content of the advice and social network characteristics provide additional explanatory power in the decision making process. This would likely require qualitative studies based on repeated interviews with different network members. While health diaries are an improvement to the standard social survey with the respect to the detail of information that may be provided, the dynamic possibilities that this type of data offers are rarely exploited (Rakowski et al., 1988; Stoller, Forster, Portugal, 1993). As is the case with social surveys, most health diary studies have the individual as unit of observation not the social network of that individual. Social network analysis offers a useful advance for this type of study (Pescosolido, 1992).

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Notes

1. It is not customary for patients to see a physician for a routine checkup. Physicians are primarily consulted when symptoms are present.

2. Most recently, public insurance coverage for dental care and physical therapy has been restricted, leading to new concerns about under-utilization among low income groups.

3. It should be noted that not only patients that recently visited the surgery were approached. The fixed list of patients was primarily used as a sampling frame.

4. When asked to complete the same list, General Practitioners with a considerable number of years of working experience were mostly sceptical about the possibilities of medical care for the listed conditions.

5. The questionnaire format of the diary was not clearly understood by all respondents. The assessments were precoded as 'yes or no' items, whereas the illness actions were coded with one single box that needed to be ticked if that particular action was carried out. Since the questions for the first and second symptom were placed side by side, some respondents got confused. The answers to the assessments were often missing (15 %) and sometimes the illness actions for the second symptom only made sense when they were considered as 'no' rather than 'yes'. In order to obtain answers that are as consistent as possible, the following was decided: only assessments and actions for the first symptom are used and the missing values for the assessment are recoded as 'no' except for those cases that contained only missing values on the 6 assessment questions; for those cases the assessments were coded as missing.

6. Respondents were asked to provide a description of the nature of the symptoms they experience on each symptomatic day. They were not asked to define episodes themselves or to label groups of days as a 'flu' or 'backpain' episode. The current definition of the illness episode is based on the dichotomy of experiencing symptomatic or symptom-free days, and it does not take changes in the nature of the health problem during the episode into account. Although accounting for the changes in the nature of the episode would be desirable, attaching labels to episodes is fraught with difficulties: are respondents who describe their complaints sequentially as coughing, runny nose, fever, and flu having a different illness each day? Obviously not, but many cases may not be as self evident. The large number of diaries (over 10,000) excluded a detailed inspection by hand.

7. This attitude-scale was derived from an earlier study by Van de Lisdonk (1985) that used a 23 likert-items scale. The degree of (dis)agreement was scored with a 5-point scale ranging from entirely agree to entirely disagree. Factor-analysis on the data of that study reduced the larger scale to a scale with 12 items, that discriminated very well between users and non-users of GP care for common minor problems. These 12 statements were used in the current study. The categories on the end of either side are concatenated with the adjacent categories. The answering pattern is evenly distributed around the neutral category of 'partly agree/partly disagree'. There is a strong correlation between the items, leading to good scaling properties in item analysis (Cronbach's a: 0.90; see: Foets & Sixma, 1991). Summing up the score for the entire scale produces a range from 12 (entire disagreement on all items) to 60 (entire agreement), with an average of 35.3 (SD=8.8; skewness = -0.224;

meaning that scores are nearly normally distributed around the average).

8. Both lay advise and seeking care may be determined by the perceived seriousness of the symptoms. Because of it people talk to someone about their symptoms and consult a GP. In order to control statistically for seriousness, the asssessment are included in the analysis presented in table 7.6.

9. At first, the nature of the symptom was subdivided in 6 categories, listed in table 3 and sex and age were inserted as control variables. Since these extra categories/variables did not yield significant effects they were deleted in the final model.

10. A regression analysis of the probability of 'talking to others about one's symptoms on the first day of the episode' showed that lay advice is sought for symptoms that are new, bothering and worrying. Longstanding symptoms on the other hand are no reason for a discussion. A day with cold or flu or a headache is less likely to lead to seeking lay advice than stomach or bowel symptoms, musculoskeletal symptoms or psychological symptoms. Low faith in medicine comes with a low probability of seeking lay advice.

8 GENERAL DISCUSSION

In the General Introduction I argued that in the light of health policy, three aspects of common symptoms require further study: (1) the measurement of symptom occurrence, (2) the association of symptom occurrence with determinants of ill health, including social circumstances and voluntary behaviour, and (3) the effect of day-to-day symptoms on illness behaviour and care seeking. Before discussing the implications of these topics, it is important to provide a brief recapitulation of the main findings.

8.1 Main findings of this study

Chapter 2 focused on symptom measurement and explored the effect of various instruments on the reporting of common symptoms. The symptom reports in this study were obtained in two ways: with health diaries that used open-ended questions and by means an health interview during which a symptom checklist was completed. Two questions regarding these instruments were addressed:

(1) are symptom checklists more sensitive to elevated levels of psychological distress, resulting in biased reports, than a query with open-ended questions?

(2) do certain groups of respondents underreport symptoms in the health diary when compared to the symptom reports obtained during the interview?

With regard to the number of reported symptoms, the combination of questionnaire and checklist led to a richer 'harvest' of symptoms than the combination of health diary and open-ended questions. With a multivariate analysis it was shown that the questionnaire picked up psychological symptoms more easily than the health diary. This bias is the result of the inclusion of a host of psychological symptoms like dizziness, nervositas, insomnia, general weakness, unbalanced nerves, prominently at the beginning of the list. A separate comparison restricted to musculoskeletal problems reported during the interview and in the health diaries did not show this sensitivity to psychological distress.

Comparison of both data sources also showed that for those with a low level of education, smokers, and those reporting chronic conditions, health diaries produce a lower symptom frequency than was expected on the basis of the

questionnaire. Time constraints of the respondent (like a demanding job or combining responsibilities at home with a job) did not have a significant effect on the report of physical or psychological symptoms. No gender effects were found.

Chapter 3 examined the relationship between smoking habits and specific symptoms, with and without statistical controls for other determinants of symptom experiences (e.g. social class) and reporting behaviour (e.g. education and taking an interest in health matters). This analysis expanded on the findings of the previous chapter concerning smoking habits and symptom reporting. The health interview data led to a clear dose/response relationship of smoking and an increased number of symptoms. Heavy smokers were more likely to report respiratory symptoms, musculoskeletal symptoms and fatigue or nervousness. However, these results could not be replicated with the health diaries, where heavy smokers were less likely than non-smokers to report fatigue or headaches (male respondents) or respiratory symptoms (female respondents). Both diary and questionnaire data were similar in showing a higher amount of symptoms among ex-smokers compared to non- smokers (never smokers). This difference between instruments did not diminish when controlling statistically for other determinants of symptom experiences and reporting behaviour.

The relationships of a cumulation of (adverse) social circumstances and riskful behaviour to self reported health was the topic of chapter 4. In addition to a simple counting of symptoms obtained with diary and questionnaire, the analysis included various other aspects of self reported health like the number of chronic conditions, self assessed health status, and the GHQ score[1]. At a bivariate level, various indicators of disadvantaged circumstances -- e.g., being unemployed or of manual occupational class, living alone or as single parent -- were associated with poorer self reported health, and with a higher number of unhealthy habits. Reasoning that a single aspect of disadvantage does not constitute deprivation, various aspects of social position were added into an index of deprivation or privilege. It was shown that a cumulation of disadvantage was consistently related to self reported ill health and a cumulation of privilege was a reliable predictor of good health. With the exception of drinking habits, the same applies to an unhealthy lifestyle. A monograph based on the British Health and Lifestyle Survey concluded that while the privileged members of society benefit from a healthy lifestyle, healthy habits (refraining from smoking, having regular physical exercise or a healthy diet) do not lead to a similar health improvement among the deprived. Although a thorough analysis would require longitudinal data (as will be discussed later), data from the Dutch National Survey of General Practice and data from a similar Danish study were used to test the hypothesis suggested by the

British study. In the Netherlands and Denmark, both deprived and privileged members of society show lifestyle related health differences can be found. These data suggest that a cumulation of adverse social and material circumstances do not outdo the effect of unhealthy behaviour. Even when circumstances and living conditions are not favourable, a healthy lifestyle brings relatively good health, and probably better health than that experienced by those with poor health habits who live in favourable circumstances.

Careful readers of chapters 2 and 3 might be puzzled, even disconcerted, by the great discrepancy between symptom reports obtained with a diary and those reported on a questionnaire. But further analysis of this discrepancy provides new and important knowledge about the way people with unhealthy habits deal with symptoms of illness. Building on the psychological theory of cognitive dissonance, it was assumed that an unhealthy lifestyle leads to a unattentive attitude towards bodily processes. This inattentive attitude affects illness behaviour: those with poor health habits have few worries about symptoms and are reluctant to seek care. These hypotheses received limited support in chapter 5. The only finding that corroborated the assumptions was that smokers, when compared to non- smokers, are much less inclined to talk about their symptoms. Talking about one's symptoms may be conceived as a form of care seeking or as a method to confirm that a bodily experience is to be understood as illness. Combining the results from the analyses reported in chapter three and chapter five one may conclude that elements of a health related lifestyle have an influence on illness behaviour, mainly through the awareness of symptoms. Once symptoms are recognized as signs of illness, there is little difference in care seeking between smokers, non-smokers etc. The assessments of symptoms are the main determinants of illness behaviour. The model presented in the introduction required some revision.

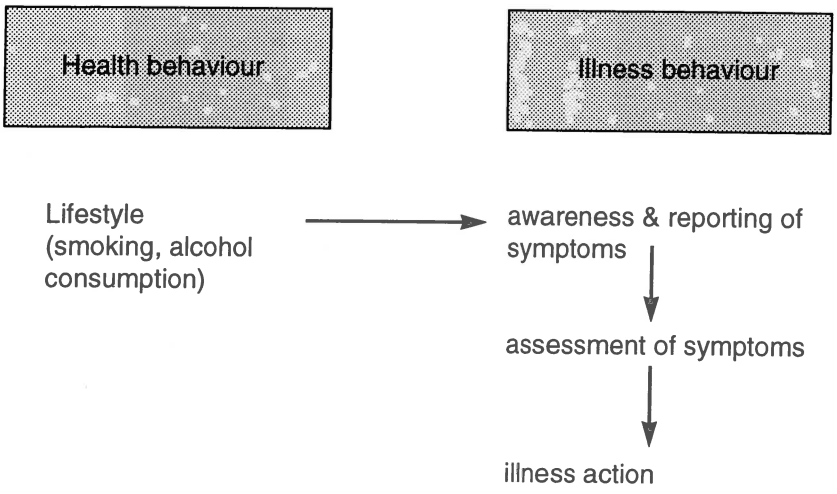
The two remaining chapters of this study dealt with the effect of faith in medicine on illness behaviour. Faith in medicine is understood as believing that it is best to present common symptoms to a physician. There are at least two reasons to seek help from a general practitioner. First, because one can never be sure that these symptoms are the signs of a serious condition, and second, because a physician may have exclusive access to healing possibilities for these symptoms. These beliefs are strongest among the elderly, those with only a few years of education, and individuals with self reported health 'less than good'. People with a college or university education are the most sceptical group.

Chapter 6 explored the effect of 'faith in medicine' on 4 types of illness behaviour during short illness episodes of 1 to 3 days: (1) rest and withdrawal from daily obligations, (2) self care including lay advice, (3) self medication, and (4) medical consumption: consulting a GP and using prescribed medicine.

The research question was: does 'faith in medicine' imply a one-sided focus

on the relief that professional care may bring, to the point of foregoing the possibility of self care or spontaneous recovery? Or is it more likely that a

Figure 8.1 Revised model of the relationship between health behaviour and illness behaviour



strong inclination to seek treatment for symptoms signifies an active approach to health problems, including both self care and professional care? This analysis showed that 'faith in medicine' comes with a greater likelihood of assuming the sick role and using prescribed medicine. It was not significantly associated with self care, self medication or consulting a GP during the short episodes of illness[2]. The conclusion is that 'faith in medicine' indeed means putting an emphasis on professional help in seeking relief for common symptoms. It was puzzling, however, that faith in medicine did not lead to an increased probability of consulting a GP. Part of the explanation for this finding is the shortness of the episodes studied. People are more likely to see a doctor during illness spells of longer duration and they are likely to rely on lay advice before seeking professional help.

Chapter 7 focused on the role of lay advice in conjunction with faith in medicine. It was expected that lay advice would amplify the effect of the opinions that someone holds about care seeking: increasing the probability of seeking professional care among those who have strong faith in medicine, reducing this probability among respondents with low expectations of medical care for common symptoms. This assumption was partly confirmed in an

analysis of illness behaviour during episodes lasting two days or more. Lay advice on the first day of an illness episode increased the probability of seeking professional care (GP) on a later day in the episode among respondents with intermediate and strong faith in medicine. Among respondents with low expectations of professional care lay advice on the first day did not increase the probability using professional care.

8.2 A discussion of the results

We are now prepared to consider the implications of this research for health policy and social studies of health and illness. Three items deserve particular attention: (1) measurement of common symptoms, (2) the determinants of every day illness, and (3) illness behaviour, with special attention given to the factors that prompt care seeking.

8.2.1 Measuring common symptoms

This study confirms the finding of several earlier studies: symptoms are inevitable part of daily existence (Wadsworth, Butterfield, Blaney, 1971; Van de Lisdonk, 1985; Verbrugge & Ascione, 1987). Irrespective of how one may conceptualize health, it cannot mean being entirely free of symptoms. But consensus on the ubiquity of noticeable symptoms does not imply agreement on the best way to measure the frequency of these symptoms. In fact, precise specification of symptoms frequency has proven difficult. In studies that use standardised questionnaires with symptom checklists, results affected by:

1. the number of symptoms listed,
2. the nature of the symptoms mentioned,
3. the sequence in which they are placed,
4. the time frame of retrospective questions.

These effects are discussed below.

1. number of symptoms listed

Detailed questions about specific symptoms produce higher occurrence rates than symptom lists mentioning a multitude of different symptoms or open-ended questions. An example illustrates this point. A popular health magazine writes that 83 percent of the women and 62 of the men in the Netherlands regularly experience headaches[3]. The health interview of the National Survey of General Practice employed a symptom checklist mentioning 42 symptoms, and 28 percent of the respondents reported to have experienced headaches in the past two weeks. The health diaries of this study asked about symptoms with open-ended questions and 23 percent of the respondents in age group 18-64 years reported headaches in a 14 day period. In the Nijmegen area

study that also used open-ended questions only around 12 percent reported headaches. Clearly method of measurement is affecting outcome.

2, 3. nature and sequence of symptoms
This research explores how survey instruments -- with varied lists of symptoms and varied ordering of symptoms -- affect the quality of the data gathered. Chapter 2 reported that increased levels of psychological distress increase the probability of reporting symptoms on a checklist but not in a diary with open-ended questions. This 'psychological distress' bias was attributed to the number of distress related symptoms mentioned prominently at the beginning of the list, a finding that raises some doubts about the validity of studying the occurrence of everyday illness with the aid of a symptom checklist.

The National Survey of General Practice uses a symptom checklist that borrows heavily from the VOEG (Questionnaire of Experienced Health). The VOEG, in turn, uses symptom descriptions developed in the Cornell Medical Index (CMI). Because the VOEG is the most often employed symptom list in the Netherlands it deserves special attention in this chapter. The VOEG was originally designed to measure work related distress (Dirken, 1969). A recent study advocates using the VOEG as an instrument to measure frequently occurring physical symptoms (Van Sonsbeek, 1990: 8). An objection against usage of the VOEG for that purpose is that the descriptions presented do not match common ideas of illness. Instead of simply asking if one recently suffered from a cold/flu, headache, fever, backpain, tiredness, or nervousness, the VOEG list poses questions in "official" prose derived from medical history taking. Some of these questions are clearly ambiguous. They could be understood as describing physical symptoms in their own right, but also as physical symptoms resulting from a psychological or psychiatric disorder.
Consider the following questions:
(5) do you feel extremely thirsty?
(6) do you have less appetite than you consider normal?
(10) do you often have a foul or sweet taste in your mouth?
(15) do you have to clear your throat very often?
(28) do you sweat a lot, even when the weather is not hot?
(34) do you often suffer from vague stomach complaints?
(36) do you have to urinate a lot during the day?
(39) do you sometimes experience a numb or tingling feeling in your limbs?

One review of standardised questionnaires for health measurement concluded that the VOEG list measures aspects of both psychological and physical health but remains uncertain which is which (Furer, Koening- Zahn, Tax, 1995: 61). The review points out that the question raised by many research-

ers -- Does the VOEG measure neuroticism, a complaining tendency, psychological problems or physical health? -- still remains unanswered. The point to be made here is not that a suitable checklist should restrict itself to symptoms of physical health status only -- indeed, everyday illness does not restrict itself to physical health, it includes tiredness or nervousness, for example -- but that it should not contain ambiguous symptoms that are physical in nature but also serve as indicators of psychological (ill)health.

4. time frame of retrospective questions
Another source of bias is the time frame used in the questionnaire. In the National Survey respondents were asked about symptoms experienced in the previous two weeks. The 'VOEG' symptom list does not employ a time frame but asks about symptoms that are regularly experienced. A recent study about symptom perceptions concludes that: 'in particular symptom checklists with a broad or unspecified time frame do not assess actually experienced symptoms but rather a general pervasive disposition to complain somatically' (Gijsbers van Wijk, 1995: 208). Respondents are not able to reliably remember past (minor) symptom experiences dating back more than a few days. When asked about longer periods, the somatization tendency contaminates the result.

The effects documented in this research raise serious questions about the study of every day illness with the aid of the currently available symptom checklists like the VOEG. Should one abandon the symptom checklist altogether and study everyday illness with questionnaires that use open-ended questions? Or is it possible to improve symptom checklists? And if so, what options are available?

The following observations, based on the current study, are offered with the intent of improving the instruments used for future studies of common symptoms. First, before abandoning checklists, it is important to remember that open-ended questions also pose problems.

* When used in a retrospective questionnaire, poor memory may lead to underreporting of symptoms (especially those for which no action was taken).
* Symptom descriptions obtained with open-ended questions are not uniform, making coding difficult.
* Replication is difficult to achieve. The standardised symptom list offers good opportunities for replication, when the same symptoms are mentioned in the same sequence (as demonstrated in chapter 9).

Second, while it may be true that the inclination to complain is inseparable from the 'actual' symptom experience, the results obtained with symptom

checklists are not exclusively attributable to this complaining tendency. Advocates of the VOEG have a point here. Respondents do not indiscriminantly tick symptoms on the list. Moreover, there are ways of removing the psychological distress bias of symptom checklists, as the comparison of reported musculoskeletal symptoms with the interview and the health diary data demonstrated. One should remove ambiguous symptoms from the list; but more insight is needed in what symptoms are conceived as ambiguous, or better still, what constitutes 'illness' for the respondents to the survey. In the context of lay experiences, the current symptom lists are inadequate because they do not match the lay person's definition of illness. The kind of symptoms considered to be an 'illness' are not self evident. In his survey, Van Sonsbeek (1988) asked respondents to indicate whether or not certain symptoms should be considered as illness. A majority labelled conditions like asthma or hernia as a serious illness. Having fever, flu, severe headache or surmenage were labelled as somewhat ill; colds, haemorrhoids, eczema and varicose veins were not often considered to be illnesses. Respondents with high scores on the VOEG list were more likely than others to consider the listed symptoms as illness, confirming the somatization tendency mentioned earlier.

Because symptom checklists originated as medical history-taking they reflect the realm of 'disease' rather than 'illness'[4]. If one intends to study illness behaviour among lay people, it follows that symptom checklists should consist of illness descriptions derived from the lay population. The authors of the Nottingham Health Profile (Hunt et al., 1986) used this strategy, eliciting 2200 descriptive statements about ill health from interviews with 768 patients.
These statements were grouped and the wording was scrutinized for redundancy, ambiguity, clarity, ease of reading, etc. In the end 123 statements remained. In subsequent research the number of statements was reduced to 82. This suggests a new strategy for ceating symptom checklists: begin by asking respondents, from different social backgrounds, gender and age what they consider common illnesses (during a semi-structured interview and not by presenting a symptom list). These reports could be sorted and turned into a symptom list consisting of the common features mentioned by each of these groups.

In a study of common symptoms, health diaries have clear advantages over the combination of an interview and a standardised questionnaire. Diaries offer sufficient detail to monitor the illness process and the offer the possibility of linking symptoms to illness actions. A disadvantage is that compliance with the regimen of diary keeping requires a level of motivation not required for a person-to-person interview. In this study it was found that symptom reports are lower than expected among respondents with only a few years of education, an unhealthy lifestyle or who suffer from chronic conditions. It was also

discovered that respondents rated around 70 percent of symptoms as 'bothering'. Apparently, a symptom needs to surpass a certain threshold of interference with daily life in order to be recorded. This threshold may be higher among smokers and people with chronic conditions who have learned to live with a certain level of bodily disturbances they do not label as symptoms of illness. The underreporting of respondents with a limited amount of schooling may be attributed to taking less interest in health matters and hence having less motivation to keep the diary. When the objective of a study is merely to record symptoms among a representative sample, diaries seem a too demanding instrument.

8.2.2 Social and behavioural determinants of illness

Chapter 4 confirms the results of earlier studies that show a cumulation of social and material disadvantage brings not only poor health, but also poor health habits. My research extends this work by showing that lifestyle makes a difference among both deprived and privileged members of society: a cumulation of adverse social and material circumstances does not outdo the effect of healthy behaviour. Even when circumstances and living conditions are not favourable, a healthy lifestyle comes with relatively good health. This finding is interesting because it is in direct opposition to the conclusions of 'Health and Lifestyles' -- that privileged members of society get greater benefit from 'good' habits than do poor individuals -- but it is merely the beginning of a thorough study of the hypothesis. A true test of the hypothesis can only be made if we have 'objective' indicators of health, like registered morbidity and mortality, collected longitudinally. These data would allow us to assess if manual labourers benefit as much from quitting smoking as higher civil servants do, measured in terms of the risks of contracting smoking related diseases, and in terms of fitness and subjective well-being.

Health policy

Are there conclusions to be drawn from the present analysis for health policy? The results do not provide unequivocal advice on the best policy for improving the health of the population. While both favourable circumstances and good health practices lead to good self reported health and increase longevity, it is difficult to decide whether behavioural change or change of circumstances should receive most emphasis. This difficulty stems from problems in the implementation of health policy. Currently, health policy in the Netherlands aims at health promotion and prevention, with particular emphasis on smoking but also encouraging good dietary habits, exercise, and modest alcohol consumption (Tweede Kamer, 1995a). Several studies suggest that even when all appropriate support is provided, one should not be overly optimistic about individual behavioral change. One of the largest programmes of behavioural change ever undertaken, the Multiple Risk Factor Intervention

Trial (in the US), highlights the difficulty in bringing about individual change (Syme, 1994). In a study of 500,000 men, 12,000 men were placed in the top risk category for coronary heart disease because of their cigarette smoking, high blood pressure and high serum cholesterol levels. Half of these men were randomly assigned to special clinics for behavioural change. After six years, 42 percent of the smokers managed to quit smoking, and half of the men with hypertension had it under control, while only 6.7 percent changed their cholesterol levels. In his essay, The social environment and health, Syme comments that 'the message from this example is clear and wellknown: it is very difficult for people to change high risk behaviours even when they really want to and even when every effort is made to help them' (Syme, 1994: 80). Other evaluations of smoking cessation programmes are equally discouraging (Slama, 1994). In fact, a 42 percent cessation rate is a good result, given that often 50 percent of those who enrol in such a programme resume smoking within the first year after quitting.

Syme points out that these results are not surprising considering that nothing is being done to alter the societal forces that caused the problem in the first place. In other words, social pressure toward unhealthy lifestyles affect the less educated, the unemployed to a larger extent and encourage them to become 'health nihilists' (Lueschen & Nieman, 1995). It raises the question, whether health policy should aim at changing social circumstances and foster social integration rather than campaigning for change in individual behaviours. This study has shown that privileged circumstances (like having a job, living in a two parent family, in a owner-occupied home located in a suburban neighbourhood) come with a high probability of good health and good health practices. Link and Phelan (1996) introduce the concept of 'social conditions as fundamental causes of disease' and argue that "groups with more advantages with respect to knowledge, money, power, prestige and social connections will, whatever the current profile of risks and diseases, come out ahead with respect to health. To the extent that this is so, inequalities in health will exist as long as social inequalities do, and the greater the social inequality, the greater the health inequality. It follows that if we truly wish to reduce inequalities in health, we must address the social inequalities that so reliably produce them". Of course, achieving favourable conditions for those who are less well off may prove to be as difficult as behavioral change with respect to riskful habits.

Smoking and illness

One of the interesting findings of this study was the odd relationship between smoking and symptom experiences. The interview data support the claim that smoking increases the load of daily symptoms, but the health diaries do not. As suggested earlier, people who on the basis of a continuous symptom

experience (due to chronic condition or habits like smoking) are used to the 'background noise' of symptoms seem only to report symptoms in the diary that exceed the background level. Smokers do not only report fewer symptoms in the health diary, they are less likely to talk about their symptoms with others in their immediate environment.

Apparently smokers are not very attentive to the signals of their body. Should an anti-smoking campaign aim at raising the awareness of one's own body? Research evidence suggests that unhealthy behaviour is often changed, not because of abstract knowledge of the health risks involved, but because of the personal experience of health deterioration. Work related lifestyle training programmes, sold under the disguise of 'stress management' could be altered to include training in body awareness. This might improve the effectiveness of stress management courses in promoting healthier lifestyles (see Timmerman and Emmelkamp, 1995)[5].

8.2.3 Illness behaviour and care seeking for common symptoms

Care seeking and illness behaviour in relation to 'faith in medicine' is the final topic of this study. Regression analyses in chapter five shows that the response to symptoms of ill health is primarily driven by the assessments of symptoms as 'worrying', 'bothering', or 'self-limiting', which in turn depend to a large extent on the duration of the symptoms. A GP is likely to be visited when symptoms are new/unknown, irritating, or worrying. Symptoms that last over a year are much less likely to result in a visit to the GP. Apparently, in the face of long- lasting symptoms, people are able to craft strategies to cope with their ailment which do not include frequent consultations with a GP, a fact noted by Verbrugge & Ascione (1987). In what way do beliefs about the necessity and efficacy of care for common symptoms matter? Several studies have shown that these beliefs do make a difference. An earlier study, using the same attitude scale of 'faith in medicine' employed here, showed that these beliefs strongly discriminate between high and low medical consumption (Van de Lisdonk, 1985). In the present study it was found that respondents with high faith in medicine were more likely than others to take up the sick role, use prescribed medicine and, after obtaining lay advice, also more likely to consult a GP. A recent survey concluded that the general public 'over-estimates the part of symptoms for which treatment is desirable, seeks treatment for symptoms that are self limiting and expects solace of appliances that do not have the desired effect.' (Van der Voort, Grundmeijer Hendrick, 1995).
Taken together, these three studies point at the same trend of 'medicalisation' within society. With regard to common symptoms, medicalisation means a simultaneous inflation of the seriousness of harmless symptoms and overestimation of treatment possibilities. Chapter 7 argued that this type of medicalisation and consequent increase in unnecessary consultations are undesirable

because: 1. they foster the sense of dependency on professionals, 2. they incur unnecessary anxiety about the results of diagnostic tests and may lead to undesirable side effects of treatment, 3. they lead to unnecessary spending of public funds.

Patients, physicians, and the system of health care delivery and financing have much to gain from reducing unnecessary consultations for common symptoms. Self care adds to the empowerment of patients and keeps the costs of health care low without limiting accessibility. Is it possible to discourage unnecessary care seeking? A group of GPs in the Netherlands is currently engaged in a project to educate their patients about self care. The results of this project are not yet available. As mentioned in chapter 6, experiments in other countries have indeed produced promising results. It must be noted that these results were obtained among families with young children, while in the Netherlands the strongest faith in medicine is found among the elderly. Thanks to this research and other studies, the distribution of 'faith in medicine' within the population and its effect on illness behaviour are known. The origin of widespread faith in medicine, however, is still uncertain. The print and electronic media are often blamed for exposing the public to information on the hidden health risks of every day life (see Becker, 1993 for a discussion of the 'epidemic of apprehension'), and uncritically showing the newest 'high tech' treatment possibilities. Many physicians in this country find fault with the media in this regard (Gezondheidsraad, 1991). So far, however, a direct link between media exposure and care seeking has not been established in a convincing manner. The influence of the media is probably more indirect: TV programmes and magazine articles affect lay beliefs about illness, which are, in turn, shared within the lay referral system and retrieved and mobilized when the need arises. Future studies about concepts of health and illness in every day life should obtain descriptions of how information from different sources is blended into a set of beliefs affecting personal health and the best manner of coping with common symptoms. These descriptions could then be related to reports on the actual management of illness.

8.3 An outlook on further studies of every day illness

Many questions about common symptoms are hinted at in this study but not fully answered: How do people define symptoms as illness? What do these symptoms mean to them? How are the causes of illness understood? What is the role of lay, folk, and scientific knowledge in creating an understanding of causes? What is the role of significant others? At what point in the symptom

experience are they discussed, with whom and what result? Does lay advice increase or decrease the worry that symptoms induce? What kind of remedies are proposed by family members, friends or colleagues? What is the role of childhood experiences with symptoms in devising a strategy to cope with them? What opinions are held about the achievements of folk and alternative medicine, and how are those experiences shared within the social network? These questions reach beyond a narrow focus on health policy as adopted in this study and are typically addressed in qualitative studies (Radley, 1994).
Results of these small qualitative studies are hard to generalize because they are conducted among special groups within society (see for example, McKinlay, 1972). Cross sectional surveys allow empirical generalizations but are intrinsically static in their approach. New studies require a research instrument that is able to capture the dynamics of the symptom experience and is open to its social nature. In their essay on the 'future of medical sociology' Pescosolido and Kronenfeld put it like this: "utilization models must be dynamic and provide meaningful brackets around sequences of use. (..) models that can account for the fact that the experience of illness is embedded in its social life and rhythms, that is constrained by social structure, and that it is created in negotiation with others" (Pescosolido & Kronenfield, 1996: 18).

Cross-sectional standardised health interviews and health diaries do not provide the necessary analytical tools for the role suggested by Pescosolido & Kronenfield. In theory, health diaries can account for the dynamics of symptom experiences a characteristic that created high expectations for health diaries some years ago. In an essay on method, theory and substance in medical sociology, Mechanic discusses how people use 'naive' theories in defining an managing illness and how "meanings may develop and change as people acquire new information that modifies or disconfirms earlier appraisals (Mechanic, 1989). He goes on with a similar suggestion that "methods of inquiry (..) must capture the dynamic nature of these meaning systems and how they are influenced by socio-cultural factors and situational contexts." He proposes to combine the advantages of quantitative and qualitative studies and study illness behaviour with health diaries. In his opinion "health diaries may be uniquely suited to capture in a rigorous quantitative form many of the sequential processes that theories of help seeking suggest." Unfortunately health diary studies have been unable to fulfil these expectations. They have been able to show that symptoms do indeed occur frequently, that treatment strategies depend on the nature of the symptoms experienced and that most symptoms are managed without professional help. But exploiting the sequential nature of the health diary has proven to be extremely difficult. Practical examples that successfully monitor the development of symptoms and the behavioural responses through time are still not available in the literature.

The solution suggested by my work is to opt for a combined qualitative and quantitative approach. After a series of quantitative studies of symptom experiences based on either health interview surveys or health diaries, it is not likely that yet another survey or health diary, regardless of innovations in design, will lead to new insights and answers to the questions mentioned above. However, progress may be found in a qualitative approach. In a newly devised qualitative study, the respondents, including members of the social network, should be interviewed at a number of regular intervals. In this manner both the social (network based) and the dynamic nature of illness experiences could be monitored. Specific hypotheses derived from the qualitative material, could be tested with diary and survey data. The 'interaction of lay advice and faith in medicine' hypothesis of chapter 7 provides a model of such a test.

Notes

1. These other aspects of self reported health beyond common symptoms were included to test a specific hypothesis derived from the British report about 'Health and Lifestyles'.

2. In chapter 7 the probability of seeking lay advice on the first day of all new episodes of illness is analysed. A small but significant effect of 'faith in medicine' was found. Respondents with little faith in medicine were less likely to talk about their symptoms than others.

3. Results of the National Headache Study reported in 'Beter' nr. 1, 1996.

4. A symptom list like the VOEG was explicitly designed to exhibit the formality and neutrality that is associated with a physician's examination. Its aim was to measure work related distress. The author did not want to confront his respondents directly with psychological and stress related descriptions since he doubted the respondent's readiness to reply freely to those questions. Instead he disguised his intentions behind the front of medical neutrality (Dirken, 1969).

5. Currently, health care insurance companies offer 'Lifestyle training courses' to collectively insured employées. These course include bodily awareness techniques like 'bio-feedback'. This body awareness and regulation training may help building a relationship with the body, that also alerts to smoking related symptoms.

9 AN OVERVIEW OF THE HEALTH DIARY STUDY

9.1 The lay-out of the health diary

Health diaries have been used on several occasions to study the occurrence of symptoms and illness behaviour (Elliont-Bins, 1973; Freer, 1980; Verbrugge (1985); Bentzen, Christiansen, Pedersen, 1988; Rakowski et al., 1988; Stoller, Forster, Portugal, 1993). They are particularly well suited to obtain information on common symptoms of minor illness for which no professional help is sought (Verbrugge, 1980). The health diary of the *Dutch National Survey of General Practice* consists of a 21 page booklet with a simple one-page questionnaire to be completed each day and is very similar to earlier health diaries used by Verbrugge (1985) and the Dutch health study of Van de Lisdonk (1985) that was also carried out in a general practice setting. In this study, the respondents were asked to provide a daily rating of their health, mood and activities and whether or not any symptoms of ill health occurred that day. Those who had health complaints were asked to describe the nature of their complaints (with a maximum of two) in their own words. Then a series of precoded questions followed on the assessment of these complaints (new/existing, self limiting, worrying etc) and the illness action prompted by the complaints on that day. For both health complaints 16 different actions could be listed, ranging from doing nothing, read or talk about the complaint, to consulting a GP. The questions that are used in this study are listed below:

Questions in the health diary that are used in this study:

1. *Health complaints* (also referred to as symptoms) :

Question:
"Did you experience health complaints today?" if yes then complete next question:

Question:
"I experienced today the following complaints":..(put complaints that belong together in the same box; there is space for two complaints, if you suffer from more complaints, list the two most important ones).

2. *Assessment of complaints:*

Question: "With regard to this complaint(s):

(1) this complaint is new/unknown
(2) this complaint already lasts more than a year
(3) this complaint is irritating, troubling
(4) this complaint worries me
(5) this complaint is self limiting
(6) I know why I have this complaint

A 'yes' and a 'no' box followed each assessment
(complaint A and complaint B separately)

3. *Illness action*

Respondents were asked to list one or more items of the following list of actions that one could do to alleviate health complaints, separately for complaint(s) A or complaint(s) B.

Question:
"With regard to this complaint(s), today I:
(1) did nothing
(2) talked to others about it
(3) read about it in a book or magazine
(4) took some rest (went to bed early)
(5) had more physical exercise or relaxation
(6) cut down on my daily activities
(7) stayed in bed 'sick'
(8) took care of my diet/smoked less or not at all
(9) consumed less alcohol or not at all
(10) applied a home remedy
(11) used prescribed medicine
(12) use OTC medicine or medicine that I already had at home
(13) received help from family/friends/neighbours
(14) went to see the GP today
(15) went to see another provider of care today
(16) did something else

9.2 The response in the diary study

The patient survey of the *Dutch National Survey of General Practice* was carried out from the beginning of april 1987 until the end of march 1988 and

consisted of two parts. First, a sample of approximately 100 listed patients for each of the 161 participating General Practitioner was approached for a health interview. The gross sample consisted of 17,344 patients, which after screening of the GP's patient record was reduced to 17,047 eligible to be included in the net sample. Of the net sample 13,066 (76.7%) respondents took part in the interview. After examining the completed questionnaires, the data from 13,014 respondents could be used for statistical analysis.

The questionnaire that was used was very similar to the questionnaire that the Dutch Central Bureau of Statistics uses in its continuous Health Interview Survey. After completing the interview, the respondents were asked to participate in the health diary part of the study for the three following weeks. If they agreed a health diary was handed to them and a date was set for the collection of the diary. In order to facilitate the respondent's task of completing the diary every day and to motivate the respondent, the interviewer called the respondent twice during the three week period. Upon the collection of the diary, the interviewer checked if entries were made for every day of those three weeks. The health diary and the questionnaire are an integral part of the same study. Without the questionnaire data, very little is known about the background characteristics of the respondent. Table 9.1 shows how the record for both parts of study can be linked.
The table shows that for 12,053 respondents of the health interview (93%), also a record with a health diary is available. There are 80 health diaries that cannot be linked to the questionnaire data. These diaries are not used in the present study.

Table 9.1 Number of completed questionnaires and health diaries

Questionnaire completed?	Health diary completed? yes	Health diary completed? no	total number
yes	12053	961	13014
no	80	-	-
total	12133	961	-

Despite the assistance from the interviewer, not all the health diaries are completed every day. In this study is the recording of symptoms a crucial variable. The partial non-response was judged on the basis of answering the question whether or not health complaints occurred on a specific day. The following table shows that more than 90 percent of the respondents who started with the health diary study ended the study with a complete record

(equivalent to 85% of the total respondents to the questionnaire)

Table 9.2 Number of days that the health diary was kept

Number of days	Number respondents	Percentage
1 - 6 days	77	0.6
7 - 14 days	132	1.1
15 - 18 days	191	1.6
19 - 20 days	615	5.1
21 days	11038	91.6
Total	12053	100

It was decided to limit the analyses in this study to these complete records: it includes nearly all respondents and has the advantage that the occurrence/ exposure rate is comparable among respondents. It may be informative to compare the complete records with the records of the respondents who did not keep the health diary for the entire period. Since the questionnaire data are available for the entire set, background characteristics that are important for the topics of this study can be used in this comparison. The results are shown in table 9.3.

The table show that only with respect to *gender* and *health care insurance* no significant differences are found, for all other variables the chi-square tests are significant. What is the nature of these differences? With respect to *age* it is noteworthy that the response is in particular low among the elderly. Only 73 percent of the elderly completed the diary, which is much lower than the average of 85 percent. For this study, the diaries of respondents of age 15 years and over are most important. Among this group we find that those with the *lowest education* (primary school only) and those with the *highest education* (university) respond less well. Nearly 80 percent of these respondents completed the diary for the entire period, while 87 percent of the respondents with and intermediate vocational training (MBO) did so. The *social position* of the respondent refers to the activities he or she employs for his or her daily living. In accordance to the earlier observation with respect to age, the poorest cooperation was found among the elderly. The highest level of cooperation was achieved among those who do voluntary work or attend school/ are students. Around 89 percent of the respondents falling in these categories completed the diary for the entire period. It is nothworhty that respondents with paid employment reported a little better than average: 86 percent of them completed the diary. The *health status* variables are of particular importance in a study like this one. The level of cooperation declines among respondents with a poorer health. With respect to acute symptoms it was found that even among those who reported 10 acute symptoms or more in the previous 14 days, the decline is not dramatic: 80

Table 9.3 Breakdown of partial non-response in the health diary study by characteristics of the respondent

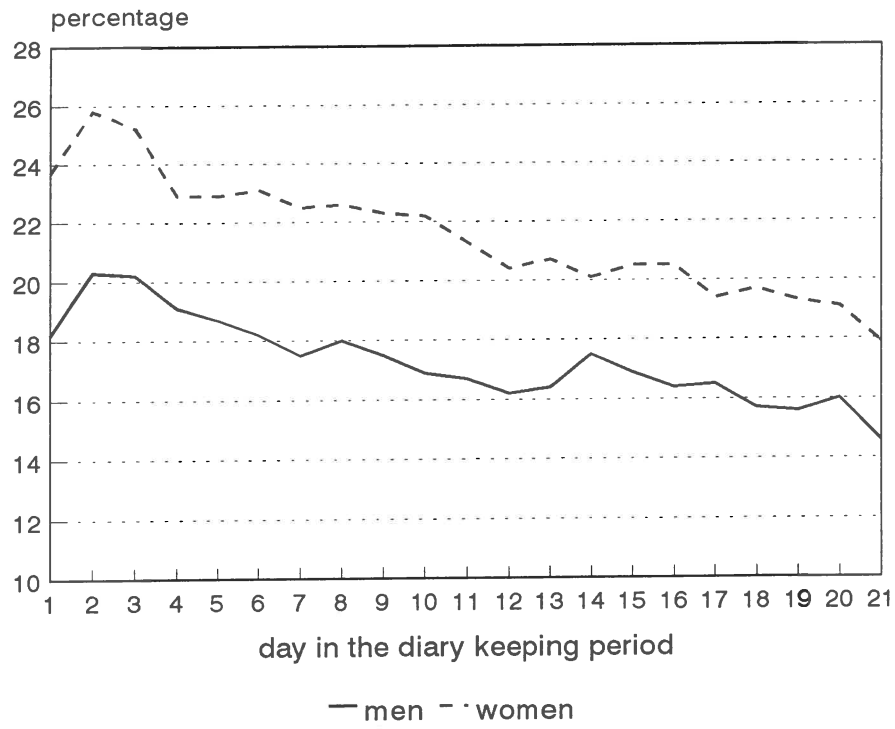
Respondent characteristics	All respondents		Respondents > = 15 years	
	Chi^2	P-value	Chi^2	P-value
gender	5.1	0.162	5.0	0.172
age	363.6	0.000	278.8	0.000
education	100.1	0.000	174.4	0.000
social position	245.6	0.000	181.6	0.000
social class	71.3	0.000	66.0	0.000
health insurance	6.5	0.091	4.1	0.251
symptoms questionnaire	64.9	0.000	53.6	0.000
chronic conditions	81.2	0.000	59.6	0.000
self-assessed health	120.4	0.000	100.8	0.000
recent visit to GP	24.4	0.018	18.7	0.095
smoking	8.8	0.031	5.1	0.164
alcohol consumption	13.3	0.004	74.6	0.000
interest in study	355.8	0.000	319.2	0.000

percent completed the dairy for 21 days. With an increasing number of chronic conditions the rate of cooperation drops. Among respondents who report the presence of 4 chronic conditions or more (out of a checklist of 25), still 77 percent completed the diary during the entire period. Respondents who considered their own health to be poor or very poor (only 2,3 percent of the respondents) also had difficulty in performing the task required: only 73 percent handed in a set of complete records. Behavioral aspects like *smoking* and *alcohol consumption* do not play a major role in the response pattern. At the end of the interview, the interest that the respondent had taken in the study was evaluated. A small percentage of 2 percent of the respondents took no interest in the topics discussed. As may be expected, the level of cooperation was very low among this group: only 52 percent handed in a complete record. The conclusion of this comparison may be that the best response was achieved among the 'average' non-elderly citizen who is in reasonable health.

When respondents start keeping the diary, it may alert them to symptoms that they would otherwise not have noticed. This *sensitization* may increase the number of symptoms reported (Verbrugge, 1980) Alternatively, respondents may grow weary of the task of diary keeping, which may result in a decreasing number of symptoms reported. The phenomenon of *fatigue* usually occurs toward the end of the study. In figure 9.1 the fraction of male and female respondents that report symptoms during the diary keeping period is shown. It confirms that both sensitization and fatigue are present, but both conditioning effects do not seem to lead to very extreme deviations from the general level of symptom reporting. They do however indicate that an exten-

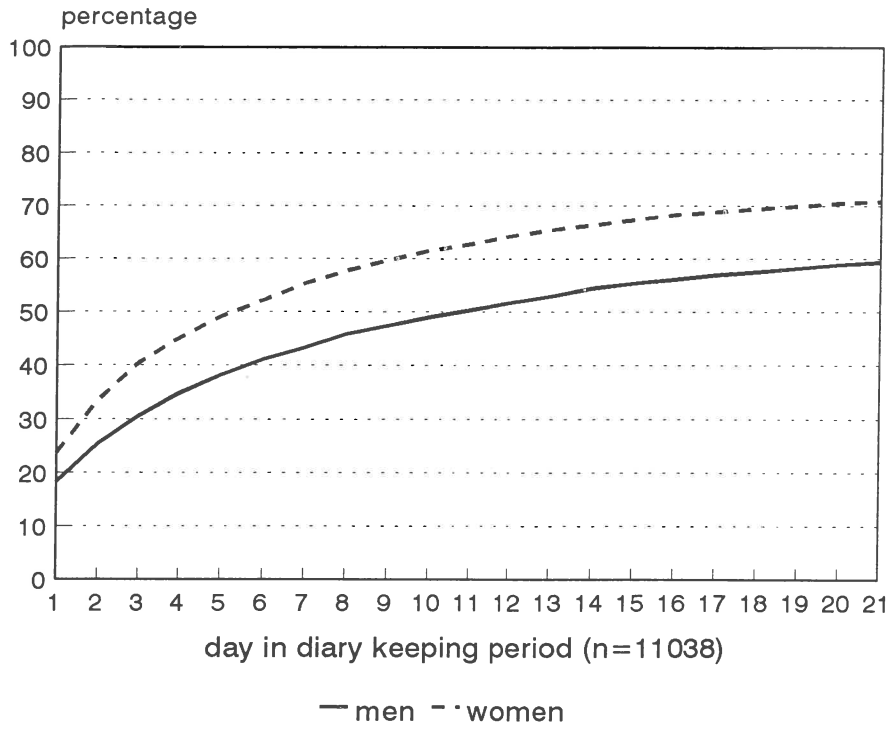
ded period of diary keeping could result in a serious drop in the response rate.

Figure 9.1 The percentage of male and female respondents reporting symptoms on each of the 21 days of the diary keeping period (n=11038)



A period of three weeks also seems sufficient, when the cumulative number of symptoms are considered. Figure 9.2 shows that after 21 days a saturation in the number of respondents who report at least one day with symptoms sets in. By then around 2/3 of the sample has reported symptoms. Extending the period would not lead to a considerable decline in the number of respondents, who have not had an illness experience during the diary keeping period.

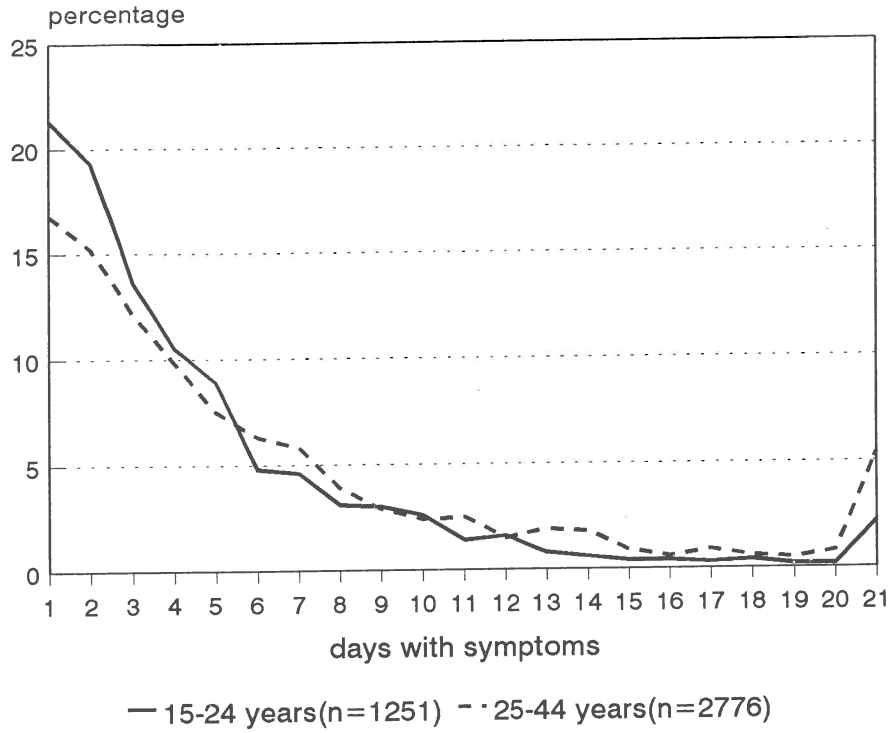
Figure 9.2 The cumulative percentage of male and female respondents reporting symptoms during the diary keeping period



9.3 The number and nature of symptoms

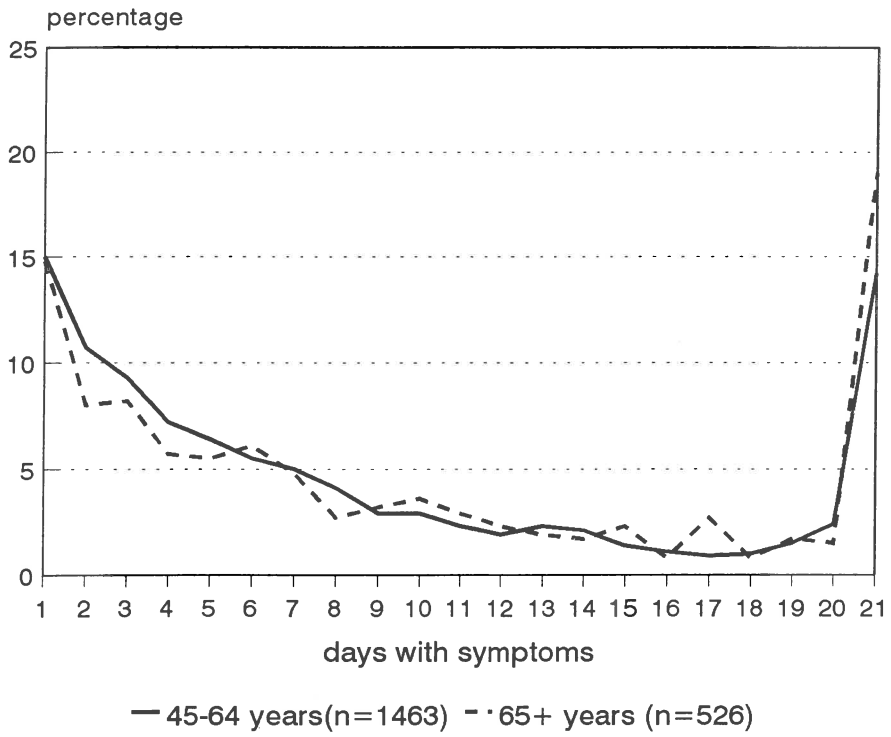
While most respondents report at least one day with symptoms, the number of symptoms experienced in a three week period remains small. Figure 9.3 and 9.4 show that the number of days with symptoms, increases with age. More women than men report symptoms, the difference between men and women in the number of days with symptoms remains small as is shown in figure 9.5 for the age group 25-64 years.

Figure 9.3 The number of symptomatic days for respondents who experience at least one day with symptoms during the diary keeping period. (ages 15-24 and 25-44 years)



The health complaints of the diary were coded in 97 categories along the lines of the ICPC chapters (Lamberts & Woods, 1987). This coding system was also used in the questionnaire part of our study to assess the respondent's reason for encounter with a General Practitioner. These two digit categories system still contained too many categories that were reported by only very few respondents. The larger categories were therefore again grouped in 20 groups, which were previously used in the Nijmegen Area Study which also used open-ended questions to assess the occurrence of common health complaints (Furer & Tax, 1987). In the latter study, respondents were asked with an open-ended question about their health complaints in the previous 14 days. Table 9.4 shows the symptom occurrence (at least

Figure 9.4 The number of symptomatic days for respondents who experience at least one day with symptoms during the diary keeping period. (ages 45-64 and 65 years and over)



one day with a certain symptom) in a 14 day period as recorded in the health diaries, followed by a comparison of the health diary study with the symptom reports from the Nijmegen Area study in table 9.5. The largest differences are found in the categories: fatigue, bowel complaints and headache. These symptoms are more often mentioned in the health diary study. The difference in reporting may be partly attributed to the instructions given in the diary study, that specifically urge the respondent to mention 'mental' symptoms as well. Part of the difference may derive from the difficulty of coding symptoms from open-ended questions.

The use of a symptom checklist is an advantage, when it come to a replication of earlier studies. In table 9.6 the interview data on health complaints of the Dutch National Survey of General Practice (obtained with a checklist) are compared to the checklist that the Central Bureau of Statistics used in a pilot

study, carried out in 1983 (Van Sonsbeek, 1990). Both checklists present 33 complaints in the same order with nearly identical descriptions. In the Survey of General Practice some complaints have a different wording or are a combined category, which provides much of the explanation of the different results. There is a remarkable similarity for those symptoms that are described in similar terms.

Figure 9.5 The number of symptomatic days for respondents who experience at least one day with symptoms during the diary keeping period. (men and women age 25-64 years)

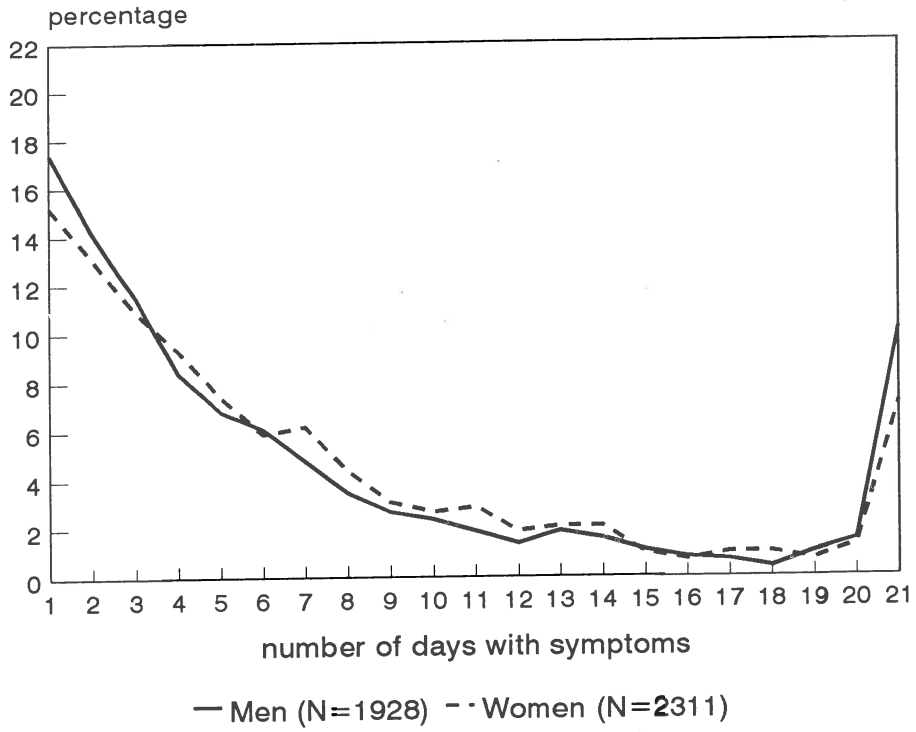


Table 9.4 The occurence of health complaints in a period of 14 days as recorded in health diaries. Percentages in three age categories *)

	♂			♀		
Complaint group	15-24 y	25-64 y	65 +	15-24 y	25-64 y	65 +
1. Common cold/flu	10.3	9.6	5.2	15.3	10.9	7.0
2. Headache/migraine	17.9	16.0	8.4	33.8	28.9	13.9
3. Musculo-skeletal (ex. 4)	11.6	12.2	10.7	10.8	16.1	19.4
4. Back	4.4	7.9	6.8	6.9	10.0	9.7
5. Stomach	2.8	3.8	3.6	9.4	5.4	4.4
6. Skin	1.5	1.4	3.0	2.6	2.4	1.6
7. Urinary/genital	0.0	0.9	0.4	6.6	6.0	2.2
8. Cardio-vascular	1.6	3.2	5.5	0.6	2.8	5.8
9. Digestive system (ex. 5,10)	0.5	0.1	0.5	0.5	0.4	0.2
0. Bowel/intestines	4.2	3.4	3.2	14.0	9.9	3.5
11. Skin (wounds etc.)	0.2	0.2	0.0	0.1	0.2	0.0
12. Psych-iatric	0.4	0.8	0.2	1.0	1.5	0.9
13. Tooth-ache	2.3	1.4	0.6	2.4	0.9	0.4
14. Fatigue, nervousness	8.7	12.2	7.9	19.5	22.4	18.0
15. Eye/ear	1.5	1.6	1.2	2.5	2.3	4.0
16. Respiratory (ex. 1)	8.8	6.8	7.3	11.1	9.1	7.6
17. Centr. Nerv. system	0.5	1.2	1.3	3.6	2.3	3.2
18. General	1.4	1.0	0.6	1.8	1.0	1.5
19. Blood	0.2	0.1	0.0	0.3	0.2	0.3
20. Rest	2.4	2.7	4.3	4.0	3.7	5.0
Number of respondents	937	2867	482	934	2802	655

*) Data from the Dutch National Survey of General Practice. Only complete records for the entire diary keeping period are used. (N=8677)
Respondents were asked to describe their health complaints, with a maximim of two, in their own words. The complaints are grouped in broad categories which were previously used in a health survey in the Nijmegen area to categorize open-ended questions (Furer & Tax, 1987).

Table 9.5 The occurence of health complaints in a period of 14 days as recorded in health diaries of the Dutch survey of General Practice and in the health interview in the Nijmegen Regio Study (ages: 18-64 years)

Complaint group	Survey General Practice *)	Nijmegen Regio Study
1. Common cold/flu	10.8	16.4
2. Headache/migraine	23.2	12.4
3. Musculo-skeletal (ex. 4)	13.3	9.6
4. Back	8.4	8.2
5. Stomach	5.0	3.0
6. Skin	2.0	3.0
7. Urinary/genital	3.5	2.8
8. Cardio-vascular	2.7	2.4
9. Digestive system (ex. 5,10)	0.3	2.4
10. Bowel/intestines	6.8	2.2
11. Skin (wounds etc.)	0.2	2.2
12. Psych-ological/-iatric	1.1	2.0
13. Tooth-ache	1.5	1.9
14. Fatigue	16.8	1.6
15. Eye/ear	1.9	1.3
16. Respiratory (ex. 1)	8.1	1.2
17. Centr. Nerv. system	1.8	1.1
18. General + Blood + Rest	4.4	2.2
Number of respondents	6881	3245

*) Data from the Dutch National Survey of General Practice (weighted). Only complete records for the entire diary keeping period are used. (N=8677)
Respondents were asked to describe their health complaints, with a maximim of two, in their own words. The complaints are grouped in broad categories which were previously used in a health survey in the Nijmgen area to categorize open-ended questions (Furer & Tax, 1987).

Table 9.6 The occurence of health complaints in a period of 14 days as recorded with the checklist of the health interview in the Dutch Survey of General Pactice (1987/1988) and with the checklist of the health interview in the pilot study of the Health Interview Survey of the Central Bureau of Statistics. (ages 16 years and over, data are weighted to resemble the Dutch population)

Symptom on the Checklist	Survey General Practice	Central Bureau of Statistics
1. Dizziness	11	11
2. Headache	32	27
3. Fever	5	3
4. Fatigue	32	32
5. Nervousness	21	25
6. Insomnia	18	17
7. Weakness	13	15
8. Easily aroused	16	20
9. Extreme perspiration	11	11
10. Soar throat	12	8
11. Ear pain	4	3
12. Buzzing in the ear	7	8
13. impaired hearing	10 [1]	8
14. nasal congestion	20	20
15. nose bleeding	2	2
16. cough	20	16
17. sultriness	9 [2]	4
18. palpitations	7	4
19. swollen ankles	5	6
20. nausea	6	5
21. chestpain	8 [3]	4
22. tightness of chest	-	5
23. vomiting	3	1
24. diarrhea	5	3
25. heartburn	7	5
26. stomach ache	6	3
27. cramps	7	6
28. constipation	8	5
29. eating disorders	2	2
30. painful urination	2	2
31. incontinence	3	2
32. menstrual problems	5	5
33. backpain	19	14
Number of respondents	10147	529

1. with the addition of hearing problems
2. with addition of 'breathing problems'
3. in combination with 'tightness of chest'

SAMENVATTING

Dit onderzoek houdt zich bezig met alledaagse gezondheidsklachten, die meestal onschuldig van aard zijn en waarvoor zelden professionele hulp wordt gezocht. Omdat klachten als hoofdpijn, verkoudheid, rugklachten en maag-darmklachten veel voorkomen vormen zij niettemin een belangrijk aspect van de kwaliteit van het dagelijks bestaan. In de literatuur wordt voor de subjectief ervaren klachten de term 'illness' gebruikt ter onderscheiding het professionele ziektebegrip 'disease'. Dit onderzoek bevat geen gedetailleerde beschrijving van het voorkomen van specifieke klachten en de beleving daarvan, maar richt zich op de betekenis van alledaagse klachten voor het volksgezondheidsbeleid. Tot nu toe heeft dat beleid weinig aandacht besteed aan deze veel voorkomende alledaagse klachten. Over het onderzoek is gerapporteerd in vijf engelstalige artikelen en een artikel in het Nederlands, die in dit proefschrift zijn opgenomen als afzonderlijke hoofdstukken.

In *hoofdstuk één* worden drie redenen genoemd waarom alledaagse klachten voor het volkgezondheidsbeleid van belang kunnen zijn. Als eerste reden kunnen sociaal-economische gezondheidsverschillen genoemd worden. Het is bekend dat personen met een ongunstige maatschappelijke positie meer kans hebben om ernstige ziekten op te lopen en om eerder te overlijden dan personen met een gunstige maatschappelijke positie. Over de samenhang tussen sociaal-economische status en het optreden van alledaagse gezondheidsklachten is veel minder bekend. Ook is er weinig bekend over de cumulatieve effecten die verschillende aspecten van iemands maatschappelijke positie op gezondheid hebben. De tweede reden is de aandacht van het beleid voor preventie en het bevorderen van een gezonde leefstijl. Het beleid in de volksgezondheid besteedt hier veel aandacht aan. Opnieuw geldt dat de effecten van riskante gewoonten op ziekte (in de zin van 'disease') en sterfte goed gedocumenteerd zijn, maar dat naar de samenhang tussen riskante gewoonten en het optreden van alledaagse klachten (opgevat als 'illness') weinig onderzoek gedaan is. Het is de moeite waard om na te gaan of riskante gewoonten als roken, niet alleen het risico op ernstige ziekten verhogen maar wellicht ook samenhangen met een hogere (of juist lagere) kans op alledaagse klachten. De derde reden heeft te maken met het beroep dat op de gezondheidszorg gedaan wordt. Het volksgezondheidsbeleid is erop gericht om onnodig gebruik van gezondheidszorg te voorkomen en terug te dringen. Voor alledaagse klachten heeft de patiënt relatief veel keuzevrijheid om wel of geen professionele zorg te raadplegen. Het is de ervaring van veel huisartsen dat patiënten hulp vragen voor alledaagse klachten waarvoor de

huisarts weinig te bieden heeft: hetzij omdat de klacht vanzelf over gaat, hetzij omdat de patiënt de klacht met zelfmedicatie kan bestrijden. Om het onnodig beroep op de gezondheidszorg terug te dringen is meer inzicht nodig in het besluitvormingsproces rond het zoeken van hulp voor alledaagse klachten.

Naast deze onderwerpen ontleend aan het beleid, besteedt het onderzoek aandacht aan de methode waarmee het voorkomen van alledaagse klachten het beste gemeten kan worden. Vanwege het subjectieve karakter van deze klachten is een enquête het meest gebruikte instrument. Reeds uitgevoerd enquête-onderzoek heeft aangetoond dat klachten als hoofdpijn, maag- en darmklachten en verkoudheid/griep in de bevolking veel voorkomen. Volgens schattingen zou 40% tot 80% van de bevolking in een periode van twee weken dergelijke klachten ervaren. Deze variatie in deze schattingen is terug te voeren op de methode waarmee naar het voorkomen van klachten gevraagd is. Enkele van deze methode-effecten zijn in dit proefschrift nader onderzocht.

Het onderzoek is gebaseerd op gegevens van de *Nationale Studie naar ziekten en verrichtingen in de huisartspraktijk* die plaatsvond in 1987 en 1988. Er is gebruik gemaakt van de gezondheids-enquête die mondeling is afgenomen bij een steekproef uit de ingeschreven patiënten van de 161 huisartsen die aan de Nationale Studie meededen (bruto steekproef = 17047). Voor 77 procent van deze steekproef (N=13014) zijn de enquête-gegevens compleet. De opzet van de enquête is vergelijkbaar met de gezondheidsenquête van het CBS. Belangrijke onderdelen van de enquête voor dit onderzoek zijn de meting van het voorkomen van acute klachten in de voorgaande twee weken met een lijst die 42 symptomen vermeldt, de vraag naar de subjectieve gezondheid, de lijst met chronische aandoeningen en de lijst die werd gebruikt om psychische gezondheid te meten. Daarnaast werd gevraagd naar het gebruik van gezondheidszorg-voorzieningen, riskante leefgewoonten en naar attitudes en meningen over gezondheid, ziekte en het contact met hulpverleners. Tot slot werd naar achtergrondkenmerken van de respondent gevraagd als sekse, leeftijd, burgerlijke staat, opleidingsniveau en beroep. Na afname van de enquête werd aan de respondenten gevraagd om gedurende drie weken een gezondheidsdagboek bij te houden. Dagelijks dienden hierin door de respondent de optredende gezondheidsklachten, de interpretatie van de klachten (is deze klacht nieuw/zorgwekkend/hinderlijk etc.) en de naar aanleiding van de klachten ondernomen activiteiten (16 activiteiten variërend van niets doen, tot ziek in bed blijven, de huisarts bezoeken etc.) te worden geregistreerd. Hiervoor was in het dagboek voor elke dag een gestructureerd vragenlijstje opgenomen. Bijna 85% van de respondenten van de enquête voldeed aan dit verzoek en maakte dagelijks notities (N = 11038). Enkele

basisgegevens over de dagboeken zijn te vinden in hoofdstuk 9.

In *hoofdstuk twee* wordt het meten van acute klachten aan de orde gesteld. De voor- en na-delen van het werken met een enquête of gezondheidsdagboek en met open vragen of symptoom-lijsten worden op een rijtje gezet. Vervolgens wordt een vergelijking gemaakt tussen de schattingen over het voorkomen van acute klachten op basis van de enquête waarin een lijst met symptomen werd voorgelegd en de gezondheidsdagboeken waarin met een open vraag naar het voorkomen van klachten gevraagd is.

In de literatuur is dikwijls verondersteld dat een lijst met symptomen niet zozeer de gezondheidstoestand als wel de 'klaaggeneigdheid' of 'neurotische labiliteit' van de respondent meet. De open-vraag methode zou hier wellicht minder onder gebukt gaan. Als dat zo is, zou onder respondenten met een hoge score op de vragenlijst voor psychische aandoeningen een veel grotere kans op het voorkomen van acute klachten moeten bestaan wanneer de symptoomlijst gebruikt wordt dan wanneer de open-vraag methode gebruikt wordt. Dat bleek inderdaad zo te zijn voor de totaalscore van acute klachten en voor psychische klachten maar niet voor klachten van het bewegingsapparaat. Als verklaring voor deze bevinding werd aangevoerd dat in de hier en elders gebruikte klachtenlijsten veel psychische en/of dubbelzinnig (zowel psychisch als somatisch op te vatten) omschreven symptomen genoemd worden, die een vertekenend effect kunnen hebben. De huidige klachtenlijsten reageren vooral op de aanwezigheid van psychische problemen. Wanneer een klachtenlijst minder dubbelzinnige symptomen bevat en evenwichtiger zou zijn samengesteld zou er waarschijnlijk minder vertekening optreden.

Het gebruik van gezondheidsdagboeken als onderzoeksmethode heeft het voordeel dat geen herinneringseffecten optreden en dat per dag een relatie kan worden gelegd tussen de aard van de klacht en het ziektegedrag. Daar tegenover staat dat het dagelijks bijhouden van het dagboek voor de respondent veel meer werk betekent dan eenmalig een enquêtrice te woord staan. Van sommige groepen respondenten mag verwacht worden dat zij ofwel minder gemotiveerd zijn of minder in staat zijn om het dagboek nauwgezet bij te houden. Het gevolg is een onderrapportage van acute klachten. Er is een onderrapportage verondersteld onder mannen, lager opgeleiden, respondenten met een hoge tijdsdruk, een ongezonde leefstijl of weinig belangstelling voor het onderwerp 'gezondheid'. Uit de vergelijking van de klachtenrapportage in dagboek en enquête bleek dat voor lager opgeleiden en rokers inderdaad het geval te zijn. Er bleek echter geen onderrapportage van mannen ten opzichte van vrouwen. Ook de belangstelling voor het onderwerp gezondheid had geen significant effect. De veronderstelling over het effect van tijdsdruk ging alleen op voor de rapportage van klachten van het bewegingsapparaat.

Tenslotte bleek dat respondenten met één of meer chronische aandoeningen minder klachten in het dagboek noteerden dan op grond van de rapportage van acute klachten in de enquête verwacht mocht worden. De onderrapportage bij specifieke groepen in de bevolking maakt dagboeken minder geschikt voor onderzoek waarin alle lagen van de bevolking op representatieve wijze vertegenwoordigd dienen te zijn. De lagere klachtenscore in de dagboeken ten opzichte van de enquête wijst erop dat men alleen klachten in het dagboek noteert als deze als duidelijk afwijkend van het normale worden ervaren. Vandaar ook dat de vraag of de klachten als hinderlijk of irritant worden ervaren voor 70% van de klachten bevestigend wordt beantwoord. Wanneer men op grond van een riskante gewoonte als roken of een chronische aandoening vertrouwd is met bepaalde vaak terugkerende klachten dan is men wellicht niet geneigd om deze apart in het dagboek te vermelden.

Hoofdstuk drie gaat nader in op de relatie tussen roken en de rapportage van acute klachten. Van roken is bekend dat het de kans op hart- en vaat-ziekten en longkanker (ziekte als 'disease') sterk verhoogd. Tot nu toe is er in onderzoek weinig aandacht besteed aan de relatie met subjectief ervaren acute klachten (ziekte als 'illness'). In de onderzoeken waarin deze relatie onderzocht is, is uitsluitend gebruik gemaakt van klachtenlijsten. In dit hoofdstuk is de relatie tussen rookgewoonten en de rapportage van acute klachten onderzocht, waarbij opnieuw gekeken is naar de verschillen tussen dagboek en enquête. Uit de gegevens van de enquête komt een duidelijke samenhang tussen roken en het voorkomen van acute klachten naar voren. Met de toename van het aantal geconsumeerde rookwaren neemt ook het aantal gerapporteerde klachten toe. Door zowel mannelijke als vrouwelijke zware rokers (meer dan 20 sigaretten per dag) zijn klachten als moeheid/nervositeit, klachten van de luchtwegen en klachten van het bewegingsapparaat veel vaker genoemd dan door niet-rokers (die nooit hebben gerookt). De gegevens uit de dagboeken bevestigen deze resultaten echter niet. Mannelijke zware rokers rapporteerden daarin juist minder moeheid en hoofdpijn en vrouwelijke zware rokers rapporteerden minder klachten van de luchtwegen dan niet rokers. Beide instrumenten stemden wel overeen in de bevinding dat ex-rokers meer klachten ervaren dan personen die nooit gerookt hebben. Deze verschillen tussen dagboek en enquête verdwenen niet na statistische controle voor andere variabelen die samenhangen met klachtenrapportage zoals sociale klasse en andere riskante gewoonten. Hoofdstuk vijf over de relatie tussen gezondheids- en ziektegedrag gaat dieper in op de verklaring voor het verschil in de rapportage van klachten.

Hoofdstuk vier is gewijd aan de onderlinge relaties tussen de riskante gewoonten, kenmerken van sociale positie als sociale klasse, opleidingsniveau en werksituatie en ervaren gezondheid. Uit reeds uitgevoerd onderzoek

is bekend dat een slechtere ervaren gezondheid samenhangt met zowel een ongunstige sociale positie als met een riskante leefstijl. Voor het volksgezondheidsbeleid is het van belang om te weten in welke mate het verbeteren van iemands maatschappelijke positie dan wel zijn of haar leefstijl, bijdraagt aan de bevordering van een goede gezondheid. In een recent Brits enquête-onderzoek wordt geconcludeerd dat vooral onder personen met een gunstige maatschappelijke positie, een minder riskante leefstijl bijdraagt aan een goede ervaren gezondheid. Personen met een zwakke maatschappelijke positie zouden daarentegen weinig baat hebben van een gezondere leefstijl. Als deze conclusie ook hier te lande opgaat zou dat betekenen dat de bevordering van de volksgezondheid, met name voor groepen met een zwakke maatschappelijke positie, meer gebaat is bij beleid dat zich op het verbeteren van de sociale positie richt dan op het ontmoedigen van riskante gewoonten. Om de veronderstelde relaties te onderzoeken zijn verschillende kenmerken van sociale positie zoals werken of niet werken, sociale klasse, sociale integratie, huishoudenssamenstelling en woningbezit, samengevoegd tot een deprivatie-index. Vervolgens is nagegaan of de samenhang van het aantal riskante gewoonten als roken, overmatig alcohol gebruik en weinig lichaamsbeweging met ervaren gezondheid, voor gedepriveerden minder sterk is dan voor personen met een bevoorrechte sociale positie. Hierbij zijn naast het aantal acute klachten uit dagboek en enquête ook andere aspecten van ervaren gezondheid in ogenschouw genomen. De veronderstellingen uit het Britse onderzoek kon met de gegevens uit de Nationale Studie niet bevestigd worden. Ook de toetsing hiervan met gegevens uit een vergelijkbaar Deens onderzoek leverde daarvoor geen ondersteuning. In de discussie over deze resultaten wordt aangevoerd dat een verklaring wellicht te vinden is in de mate van sociaal-economische ongelijkheid in Groot-Brittannië enerzijds en Nederland en Denemarken anderzijds.

In *hoofdstuk vijf* wordt een verklaring gezocht voor de onderrapportage van klachten in het gezondheidsdagboek door respondenten met een ongezonde leefstijl. Riskante gewoonten als roken en overmatig alcoholgebruik roepen in de huidige samenleving weerstand op. De meesten rokers en excessieve drinkers weten dat deze gewoonten ongezond zijn. Wat dat aangaat zijn de boodschappen van de (overheids)voorlichting niet aan hen voorbij gegaan. Desondanks is het vaak moeilijk om het eigen gedrag blijvend te veranderen. Deze spanning tussen weten en niet willen/kunnen roept cognitieve dissonantie op (een innerlijke tegenstrijdigheid) die men probeert te reduceren. Een van de manieren omdat te doen (en die nog weinig onderzocht is) is via het gedrag bij gezondheidsklachten. Een mogelijkheid daartoe is door minder te luisteren naar de signalen van het eigen lichaam, waardoor men lichamelijke symptomen die wellicht aan de ongezonde gewoonten toe te schrijven zijn, minder snel als gezondheidsklacht zal benoemen. Dat verklaart waarom

rokers, voor wie de cognitieve dissonantie het sterkst is, minder klachten in het gezondheidsdagboek noteren. Wanneer men eenmaal klachten ervaart, kan men via *ziektegedrag* dissonantie reduceren (of voorkomen) door de klachten als onschuldig te bestempelen. Hetzelfde kan men doen door terughoudend te zijn met het zoeken van informatie of hulp voor de ervaren klachten. Beide veronderstellingen omtrent het ziektegedrag zijn getoetst met gegevens uit de gezondheidsdagboeken. Er werd verondersteld dat ongezonde gewoonten ertoe leiden dat klachten vaker zouden worden bestempeld als 'geen reden tot zorg' en 'gaat vanzelf over'. Ook werd verondersteld dat er minder met anderen over de klachten zou worden gepraat of gelezen in boek of tijdschrift en minder snel de huisarts zou worden bezocht. Deze veronderstellingen werden slechts ten dele bevestigd. Een multivariate analyse van het ziektegedrag toonde alleen aan dat rokers weinig geneigd zijn om over hun klachten met anderen te praten of erover te lezen. Deze analyse liet ook zien dat riskante gewoonten weinig invloed op het ziektegedrag hebben. Het ziektegedrag wordt vooral bepaald door de interpretatie van de symptomen (ernstig of niet) die wederom vooral afhangt van het aantal dagen met klachten, de aanwezigheid van chronische aandoeningen en de psychische gesteldheid van de respondent. In de discussie-paragraaf wordt de suggestie gedaan dat de invloed van riskante gewoonten op ziektegedrag vooral via de waarneming en benoeming (labelling) van lichamelijke sensaties geschiedt. Wanneer een symptoom eenmaal van het etiket 'ziekte' voorzien is, is er weinig verschil meer in handelwijze.

De hoofdstukken zes en zeven gaan verder in op het ziektegedrag bij alledaagse klachten. In tegenstelling tot ernstige acute en chronische klachten bestaat er voor alledaagse klachten meer keuzevrijheid in de wijze waarop de klachten tegemoet worden getreden. Uit eerder onderzoek is bekend dat voor verreweg de meeste klachten geen professionele zorg van bijvoorbeeld de huisarts wordt ingeschakeld. Niettemin stellen huisartsen bij herhaling vast dat veel patiënten zich met alledaagse klachten melden waarvoor een consult eigenlijk onnodig is. Kennelijk wordt de noodzaak om met klachten naar de dokter te gaan vaak te hoog ingeschat. Het kan ook zijn dat men van de huisarts een behandeling verwacht, die meer biedt dan zelfzorg of wachten tot de klacht vanzelf verdwijnt.

In *hoofdstuk zes* is onderzocht hoe deze verwachtingen van medische zorg het ziektegedrag bij alledaagse klachten beïnvloeden. Aan de respondenten van de enquête werden 12 uitspraken over de handelwijze bij verschillende alledaagse klachten voorgelegd, waarmee de verwachtingen van medische zorg bij dit soort klachten goed te meten zijn. Uit de antwoorden bleek dat ongeveer 30% van de respondenten (te) hoge verwachtingen van medische zorg heeft. De hoogste verwachtingen zijn te vinden onder ouderen, laag

opgeleiden en ziekenfonds-verzekerden. Universitair geschoolden hebben meestal geen hoge verwachtingen van medische zorg als het om alledaagse klachten gaat.

Wat betekenen deze verwachtingen nu voor het daadwerkelijk gedrag bij alledaagse klachten? Staan de hoge verwachtingen voor een fixatie op professionele medische hulp, waarbij men voorbij gaat aan de mogelijkheden van zelfzorg of het vanzelf verdwijnen van de klacht? Of is het zo dat hoge verwachtingen voortkomen uit betrokkenheid bij de eigen gezondheid, waarbij ook alledaagse klachten actief met zowel zelfzorg als professionele zorg worden bestreden? Om het ziektegedrag te analyseren werden de gegevens uit de dagboeken over opeenvolgende dagen met klachten tot klacht-episodes samengevoegd. Alleen kortdurende episodes (1-3 dagen) werden bij de analyse betrokken. Het ziektegedrag werd gegroepeerd in 4 factoren: de rol van zieke op zich nemen, zelfzorg, zelfmedicatie en medische consumptie (gebruik voorgeschreven medicijnen, huisartsbezoek). Het hebben van hoge verwachtingen van medische zorg hing samen met een grotere kans om medicijnen te gebruiken en de rol van 'zieke' op zich te nemen tijdens de klacht episode. Er bleek geen significantie samenhang met het consulteren van de huisarts en met zelfzorg of zelfmedicatie. De resultaten wijzen erop dat de genoemde verwachtingen vooral als een fixatie op medische zorg geïnterpreteerd dienen te worden. Aan patiënten van de huisarts zou duidelijk gemaakt moeten worden dat veel klachten ofwel vanzelf verdwijnen, ofwel met eenvoudige zelfmedicatie verholpen kunnen worden.

In *hoofdstuk zeven* is nader onderzocht welke relatie er bestaat tussen verwachtingen van medische zorg en het bezoek aan de huisarts. De bevinding uit het vorige hoofdstuk dat hoge verwachtingen wel samenhangen met een hoger gebruik van voorgeschreven medicijnen tijdens de klachtepisode maar niet met huisartsbezoek, vraagt om een nadere verklaring. Er wordt geopperd dat aan het raadplegen van de huisarts, het raadplegen van 'leken' als huisgenoten en familieleden voorafgaat. Veelal zal het van het advies van deze leden van het sociale netwerk afhangen of men ook naar de huisarts gaat. Welke rol spelen de verwachtingen van medische zorg in deze? Wanneer zowel de persoon die de klachten ervaart, als de leden van het sociale netwerk, hoge verwachtingen hebben van medische zorg, dan is de kans groot dat de lekenraadpleging tot huisartsbezoek leidt. Wanneer in beide gevallen de verwachtingen laag zijn, dan zal waarschijnlijk van een huisartsbezoek worden afgezien. In dit onderzoek is niet bekend welke verwachtingen de leden van het sociale netwerk hebben. Op basis van eerder onderzoek mag verwacht worden dat in het sociale netwerk overeenkomstige opvattingen heersen over het raadplegen van medische voorzieningen. Er werd

daarom verwacht dat de bestaande opvattingen van het individu door het raadplegen van leken worden versterkt: onder personen met hoge verwachtingen zal na lekenraadpleging de kans op doktersbezoek toenemen terwijl deze onder personen met lage verwachtingen juist zal afnemen. Om deze veronderstelling te onderzoeken werd een nieuwe selectie in de klacht-episodes gemaakt. Alleen episodes van 2 dagen of meer werden in de analyse betrokken, terwijl episodes met een huisartsbezoek op de eerste dag buiten beschouwing werden gelaten. Vervolgens werd nagegaan welke samenhang er bestaat tussen de verwachtingen van medische zorg en het bezoek aan de huisarts op de tweede of een latere dag in de episode, voor respondenten die wel en voor respondenten die niet met anderen over de klacht hadden gepraat (hier opgevat als lekenadvies) op de eerste dag. Hieruit kwam naar voren dat onder de respondenten die lekenadvies hadden gekregen, het percentage dat daarna de huisarts bezocht, varieerde van 7 % voor respondenten met lage verwachtingen van medische zorg tot 16 % voor respondenten met gemiddelde verwachtingen en 15 % voor respondenten met hoge verwachtingen op dit punt. Onder de respondenten die geen lekenadvies hadden ingewonnen schommelde het huisartsbezoek rond de 8 % en deden de verwachtingen van de medische zorg er nauwelijks toe. Een multivariate analyse waarin ook andere determinanten van ziektegedrag werden opgenomen leidde tot dezelfde resultaten. Wanneer mensen dus (enigszins) hoge verwachtingen hebben omtrent de noodzaak om met alledaagse klachten naar de dokter te gaan of over hetgeen medische zorg vermag te bereiken bij alledaagse klachten, dan bestaat er een grote kans dat de bespreking van de klacht met huisgenoten, familieleden etc. stimulerend werkt op huisartsbezoek. Wanneer men daarentegen weinig verwachtingen heeft van medische zorg dan is het bespreken van de klachten met andere 'leken' nauwelijks van invloed op de beslissing om de huisarts te raadplegen.

De discussie van de resultaten in *hoofdstuk acht* heeft betrekking op drie onderwerpen: (1) het meten van het voorkomen alledaagse klachten, (2) de determinanten van alledaagse klachten en ervaren gezondheid, en (3) het ziektegedrag. Vanwege de aard en de volgorde van de gepresenteerde symptomen zijn de klachtenlijst die in dit onderzoek gebruikt is en de veelvuldig gebruikte 'Vragenlijst voor Onderzoek van de Ervaren Gezondheid' (VOEG) minder geschikt voor het meten van alledaagse gezondheidsklachten. De dubbelzinnige omschrijvingen van de symptomen en de oververtegenwoordiging van psychische klachten leiden ertoe dat deze instrumenten vooral reageren op de psychische gesteldheid van de respondent. De klachtenlijsten komen voort uit medisch onderzoek en sluiten niet aan bij de wijze waarop de leek alledaagse gezondheidsklachten ervaart. Bij het gebruik van open-vragen naar klachten speelt dit probleem niet maar de antwoorden verkregen met open vragen zijn moeilijker te coderen, er treedt waarschijnlijk onderrap-

portage op en replicatie van de resultaten is veel moeilijker dan bij klachtenlijsten. Het zou daarom de moeite waard zijn om een klachtenlijst te ontwerpen die het ziektebegrip van de leek als uitgangspunt heeft.

Gezondheidsdagboeken verlangen veel inzet van de respondent en zijn niet het aangewezen instrument voor een representatieve meting van gezondheidsklachten omdat onderrapportage optreedt onder laag opgeleiden, en personen met een ongezonde leefstijl. Met gezondheidsdagboeken kan in principe van dag tot dag worden na gegaan welke klachten er optreden, hoe deze worden beleefd en welke acties er ondernomen worden. Zowel in dit, als in ander onderzoek blijkt het echter moeilijk te zijn om de procesmatige aspecten van alledaagse gezondheidsproblemen op bevredigende wijze te analyseren.

Het gezondheidsbeleid komt aan bod in de discussie over de resultaten van hoofdstuk vier en vijf. De veronderstelling van het Britse onderzoek dat vooral de bevoorrechten in de samenleving van een gezonde leefstijl profiteren geldt niet voor Nederland, voor zover dat met indicatoren van ervaren gezondheid na te gaan is. Zowel onder bevoorrechten als gedepriveerden bestaan grote verschillen in gezondheid die op riskante gewoonten terug te voeren zijn. De bevinding dat rokers niet erg attent zijn op de signalen van hun lichaam pleit ervoor om het ontmoedigingsbeleid op dit punt op de bewustwording van lichamelijke processen te richten.

Een ondubbelzinnig advies over de bevordering van de volksgezondheid is niettemin moeilijk te geven. Met overheidsbeleid laat een gezonde leefstijl zich niet afdwingen. Daarvoor hebben de huidige interventies te weinig effect en is iemands leefstijl te veel afhankelijk van zijn of haar maatschappelijke positie. Een niet specifiek op riskante gewoonten gericht beleid dat de positie van de sociaal zwakkeren verbetert en de sociale integratie bevordert zou wellicht de voorkeur verdienen. Daar hebben niet alleen rokers wat aan. Maar ook hier speelt de vraag hoe succesvol een dergelijk beleid eigenlijk is.

Als het om de handelwijze bij alledaagse klachten gaat, heeft ongeveer 30% van de bevolking (te) hoge verwachtingen van medische zorg. Enerzijds denkt men bij onschuldige symptomen te vaak aan iets ernstigs, anderzijds verwacht men teveel baat van het bezoek aan de dokter of het gebruik van medicijnen. Het lijkt erop dat het praten over gezondheidsklachten de geneigdheid om de huisarts te consulteren alleen maar versterkt. Deze medicalisering van alledaagse gezondheidsproblemen is ongewenst. Er zijn op dit moment experimenten gaande om de zelfredzaamheid ten aanzien van alledaagse klachten te bevorderen. De resultaten hiervan moeten nog afgewacht worden.

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