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To be or not to be Sick Certified with Special Reference to Physician and Patient Related Factors

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Abstract

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Objectives The aim of this thesis was to assess the importance of general practitioners (GP) and patient related factors for the GPs' decision to sick certify or not to sick certify the patients.

Study population and methods The data were obtained from a cross-sectional questionnaire study of GP-patient consultations. 65 GPs responded to one questionnaire about themselves and one questionnaire about each of the altogether 642 consultations. The patients responded to a questionnaire about themselves and the consultation, altogether 521 consultations. Various combinations of the three questionnaires were used in the four papers on which this thesis is based.

Results Among GPs, long experience of family medicine and working part-time were significant determinants for issuing more sick leave certificates. Complaints perceived as clearly somatic by the physician decreased the chance of sick certifications, and complaints resulting in severe limitation of occupational work capacity, as assessed by the patient as well as the physician, increased the chance of sick certification, as did appointments for locomotor complaints. Among work related factors, high 'authority over decisions' and high 'social support' were associated with reduced sickness certification probability. Worrying about illness or injury risks from work increased sickness certification. GPs and their patients took a fairly similar view to statements on health related and insurance system related matters. GPs' opinions seem to have a greater impact than patients' on the GPs' decision to sickness certify a patient or not.

Conclusions A number of patient and GP related factors were associated with the probability of getting sick certified. The patient's own judgement of impaired work ability was important for sickness certification, but a shared judgement and decision between the GP and the patient appears probable in most cases.

Keywords: sick leave, absenteeism, primary care, family medicine, consultation, professional competence, work capacity, work strain, work demands, authority over decisions, social support, attitude.

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„Die Eule der Minerva beginnt erst mit der
einbrechenden Dämmerung ihren Flug”

(Minervas ugglä flyger först i skymningen)

From: Hegel GWF. *Grundlinien der Philosophie des
Rechts*, 1821

List of Papers

This thesis is based on the following papers, which are referred to in the text by their Roman numerals.

- I Norrmén G, Svärdsudd K, Andersson D. Impact of physician-related factors on sickness certification in primary health care. *Scand J Prim Health Care* 2006;24(2):104-109.
- II Norrmén G, Svärdsudd K, Andersson DKG. How primary health care physicians make sick listing decisions: the impact of medical factors and functioning. *BMC Fam Practice* 2008;9(1):3.
- III Norrmén G, Svärdsudd K, Andersson DKG. The association of patient's family, leisure time and work situation to sickness certification in primary care in Sweden. Accepted for publication in *Scand J Prim Health Care*.
- IV Norrmén G, Svärdsudd K, Andersson DKG. Influence on sickness certification of opinions and attitudes towards health related and insurance system related matters among general practitioners and their patients. Manuscript.

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Abbreviations

GP	General practitioner
PHCC	Primary Health Care Centre
CME	Continuing Medical Education
SBU	The Swedish Council on Technology Assessment in Health Care (Statens beredning för medicinsk utvärdering)

Prologue

In the year of 1994 I was asked by Dan Andersson, MD and PhD, who at that time was in charge of quality development projects in the R&D Department at the Primary Health Care in Örebro County, to assist in collecting data in order to get a basis for improvement of the education of general practitioners (GPs) in Örebro County on sickness certification. Together with the late Lena Burman, former social worker in a PHCC, and based on our long and comprehensive joint experience in family medicine, we constructed questionnaires intended to cover as many aspects as possible of the sickness certification process. During the process of writing a descriptive report on the responses to our questionnaires, I became curious about what was hidden behind the figures I was describing. With the assistance of my supervisors Dan Andersson and Professor Kurt Svärdsudd birth was given to the work resulting in this thesis.

Introduction

Social insurance from the view of general practice

The Swedish social security system comprises detailed rules and regulations on requirements for sickness absence and compensation for income loss due to health impairment¹. Present rules provide that after two weeks of sick pay from the employer, the Social Insurance Agency (Försäkringskassan) takes on responsibility. After the first week of absence, a certificate from a physician is normally needed in order to get the benefits. For 90 days, the beneficiary's work ability is compared to demands of her or his regular work. After this period the work ability is compared to other tasks with the employer until 180 days of sickness absence. Then the work ability is compared to demands of any work in the labour market.

The ordinary upper limit for sickness benefits is one year. After special application, benefits may be paid for more than a year, until 550 days, but with a lower compensation, and in exceptional cases, such as certain serious diseases, there is no upper limit for sickness benefits and no reduction in amount of compensation².

A change of rules for long-term sick leave was introduced in 2009 regarding the time limits at different stages. The law today is unchanged since the mid 1990s, but the application of the regulations has changed. Some years ago, few sickness benefit applications were declined. From the end of the 1990s, there was a great rise in sick leave rates with a maximum during 2002-2003, and thereafter a decline to levels similar to those before the rise.

The great problem with sickness certification rate was not the short spells, but long-term sick leave and disability pensions, which constituted the majority of costs for sickness benefits³. The communication between the Medical Service and the Social Insurance Agency was failing. Insurance cases were accumulating at the Insurance Offices, and while awaiting decisions from the insurance officials, GPs went on extending the sick leave certificates. Rehabilitation work, which was earlier undertaken by the Medical Service, was to be handled by the Social Insurance system with the aid of several subcontracted private rehabilitation institutes.

During the last few years, a more strict application of the social security regulations has come, with a more restricted entry to the reimbursement system than before, to avoid deleterious long-term sickness absence⁴. Variations in the interpretation of social security regulations from time to time may

result in insecurity for both doctor and patient regarding the individual justice situation⁵.

Disease - work ability

According to law, benefits are provided for income loss due to reduced work capacity owing to disease/illness only, but not owing to social distress or unemployment¹. The law is exact in its wordings: *disease/illness* must be diagnosed and lead to *reduced work capacity*. This notion may seem plain to practitioners, but contains issues worth discussing. On the one hand, theorists and philosophers question the content of the disease concept⁶⁻⁷ even concerning medical insurance⁸. On the other hand, to follow the law, well-founded definitions of the concepts disease/illness and reduction of work capacity are needed.

There is a definition from 1944 in the ‘Study and proposal concerning legislation on public sickness insurance’⁹ which says ‘In determining the extent to which disease is or is not present, one must consider that which in common language and prevailing medical perception is viewed to be a disease’. Some five decades later the patient was included in the definition in another words of an Act. In the preparatory work for ‘Law on pharmaceuticals’¹⁰⁻¹¹ it is stated that ‘It is the individual physician who, in a dialogue with the patient decides whether the patient has a disease or some other type of health problem’.

Depending on type of health problem, physicians agree to varying degrees on what should be defined as disease. In a Norwegian study consensus was great on somatic conditions such as infectious diseases, but when assessing musculoskeletal problems, opinions on sickness certification diverged¹². In the same study depression and social problems were not considered to be causes for sickness certification. In a postal survey questionnaire to more than 40,000 individuals, more than a third of those with sickness absence more than 89 days rated their health as good¹³.

In the consultation, the physician has to estimate how much the patient’s functional ability is affected by the disease or illness. Apart from diagnosing the condition, this is the main obligation for the physician in a sickness certification appointment. The GP may be helped by the ICF (International Classification of Functioning, Disability and Health)¹⁴, which is a classification system of health and health-related domains by means of descriptions of body functions, structure, activity and participation. The ICF was endorsed by all World Health Organisation (WHO) member states in 2001. The assessment might be an easy one with a purely somatic condition as a fracture or an infection, but when more diffuse conditions such as pain complaints or psychiatric disorders are presented, the judgement may be more complicated.

The physician has the patient's presentation and assessment to rely on when estimating the plausibility of the patient's assessment¹⁵.

From functional ability, work capacity is to be assessed. There is a need to have thorough knowledge of somebody's work place to make a reliable work capacity assessment, which is seldom the case for most GPs. A legal definition of the concept 'reduced work capacity' does not exist, but the concept was thoroughly discussed in an official report in 2009¹⁶. A division of the concept in two parts was proposed: 'Medical requirements for work' and 'Ability to earn one's living', which might clarify the foundation for and facilitate the physician's decision when issuing a sick leave certificate.

A review report points to three main ways of interpreting the concept: physical, psychological and social and that the concept work ability has a relational meaning¹⁷. The physical dimension is the most straightforward to assess¹⁸. Krakau¹⁹ pointed to a considerable discrepancy between functional impairment and work capacity. According to research studies, the verifiability of work ability causes problems for the GPs²⁰⁻²¹, even more than does the diagnostic judgement²².

International and national variations

Increasing sickness absence rates occurred in several western countries in the 1990s. There is a large variability in rates of sickness certification²³. Fair comparisons between countries cannot be done, since regulations for social security and retirement are not identical. Furthermore, the labour market differs and women's part of the work force differs. During a number of years, Sweden, Norway and the Netherlands were countries with a high sickness absence rate. Since then the levels have declined in all three countries, the Netherlands first with a beginning in 2001, then Sweden and Norway at about the same time around 2003. The downward trend was broken for Norway in 2006²⁴.

There are a few research reports on international comparisons of sick leave. A Dutch literature review on national and international studies on sick leave between the years 1984-2004 gave a highly consistent view of the factors determining sick leave frequency and duration²⁵. When comparing return to work after chronic back pain in six countries (Denmark, German, Israel, the Netherlands, Sweden and the United States), a considerable variation between the countries was found. Sustainable return to work ranged from 22% (Germany) to 62% (the Netherlands) with Sweden in between with 39% after two years of follow up²⁶.

A study of use of growth hormone replacement therapy among adults in Sweden, The Netherlands and Germany showed no difference in use of sick leave between the countries despite some differences in treatment

strategies²⁷. In a comparison of Sweden and Denmark it was reported that Sweden had more sickness absence longer than a week. The explanation given to this circumstance was difference in legislation²⁸. A study on sick leave due to neck and shoulder pain in Iran showed a very low incidence, with the conclusion that sick leave as an outcome must be interpreted with caution in middle- and low-income countries²⁹.

There is a considerable difference between various regions of Sweden regarding sick leave. Sparsely populated areas show more sickness absence than big cities as does northern as compared to southern Sweden³⁰⁻³¹. There is a parallel between sick leave gradients and public opinions on own health and whether work environment causes sick leave³². Several explanatory factors to the differences have been proposed. Demographic factors³³, labour market factors³⁰ and attitudes are pointed to as possible explanations³⁴⁻³⁵. It should be noted that a Norwegian study showed a higher than average incidence of sickness certification in rural areas³⁶.

Seeking behaviour in general practice

There is a group of patients described as ‘frequent attenders’. They have more frequent long-term sickness absence than ‘normal attenders’. Apart from chronic disease, this group is characterised by adverse life events with a more than doubled risk for long-term sick leave for each additional adverse event³⁷. The life events *per se* were not more frequent in this group³⁸. According to Bergh, they constitute 3.3% of the population, make up 25% of appointments with GPs and account for 44% of sickness certificates. The general experience of not feeling well is important and the poorer the well-being, the greater the subsequent sick leave³⁹. Frost has pointed to care-seeking behaviour as one of several predictors for sick leave⁴⁰. According to Hellström⁴¹, sick leave may be an response of the individual to existential questions.

Work despite illness

Another side of the sickness absence field is sickness attendance or sickness presenteeism, *i.e.* when a person is at work despite health problems of such a degree that staying at home would have been preferable. It is described in certain occupational groups, such as in care, welfare and educational occupations⁴²⁻⁴⁴ and among temporary employees as an effect of job insecurity⁴⁵. The groups with high presenteeism also show high absenteeism^{42, 46}.

Johansson described a model of ‘illness flexibility’⁴⁷, which may at least partially explain the social gradient in sickness absence⁴⁸. Adjustment lati-

tude is a central concept in her model. It describes the opportunities people have to reduce or alter their work effort when *e.g.* feeling ill. There is a greater likelihood of retaining work ability with high adjustment latitude compared to low. Work ability is thus seen as both individually and contextually determined. Another important concept in the model is attendance requirements, which heavily relates to sickness attendance.

The condition when a person goes to work despite an ailment not being deleterious to her or his forthcoming health also comes within the field of coping with hardships. Linton has described that work absence for back pain may be controlled by psychological factors related to beliefs and coping strategies⁴⁹. Sense of coherence⁵⁰⁻⁵¹ is a concept related to coping strategies. In the longer run, work promoting factors are found in the field of work related factors and in the personal sphere, while factors preventing poor work ability are found in the field of job security⁵²⁻⁵³.

The consultation in family medicine

The encounter between the patient and the physician is the essence of practise in family medicine⁵⁴⁻⁵⁵. The quality of communication is essential for the outcome of the consultation⁵⁶⁻⁵⁸. With a deranged communication misunderstandings may occur including inadequate decisions⁵⁹⁻⁶¹. Textbooks of family medicine and research articles devote many pages to knowledge of and problems with consultations^{54-55, 62-66}. The consultations may be described in a continuum from patient oriented to physician oriented style⁶⁷⁻⁶⁸. Outcome from the consultation may be described in terms⁶⁹⁻⁷⁰ such as patient's or physician's satisfaction⁷⁰⁻⁷⁶, as medical effect on the patient's health^{56, 77-78}, or in quantitative terms such as pharmaceutical prescriptions⁷⁹⁻⁸³ or sick notes issued⁸⁴⁻⁸⁵. They are all effects of the consultation occasion and on what happened in the consultation room.

Research on consultation qualities has been published, including the effect of time⁸⁶⁻⁸⁷ and the effect of patient-centred consultation style^{63, 71-72, 88-91}. Both patients and physicians seem to prefer shared decision-making⁹²⁻⁹³. There is evidence that patients who experienced themselves informed were more satisfied⁹⁴ and that those who had been understood by their GP sought less medical care⁹⁵, but also that they were more frequently sick certified when they were well known by their GP⁹⁶. A literature review shows that patients want increased participation and information sharing⁹⁷, but there is also evidence that patients and physicians live in different conceptual worlds⁹⁸.

Decisions, from which measures are taken during the consultation, concern medical examinations and tests, decision on diagnosis, pharmaceutical prescriptions and referrals. Also, advice on exercise and life style changes

are included and advice on rest from work. One way of describing a consultation is by analysing measures taken. Sickness certification is a measure distinctly definable, which comprises a written document given to the patient, hopefully together with some advice and also a note in the medical record. According to a questionnaire study from 1997 to Swedish GPs, based on hypothetical cases and comparing diagnostic tests and procedures, laboratory tests, drugs prescribed and sick leave proposed, sick leave was the measure taken which was the most variable between GPs with a six fold difference between the 'cheapest' and the most 'expensive' GP⁹⁹.

Sickness certification commission

Physicians experience dilemmas in assessments involving sickness certification¹⁰⁰⁻¹⁰¹. There is evidence that GPs experience more problems with sickness certification than other physician categories, such as conflicts with the patient, assessment of work ability, length and degree of sickness absence and management of sickness certificates initiated by other physicians²⁰⁻²¹. Different physician roles, such as being the patient's advocate or being the society's official as a gatekeeper to the social security system may be contradictory^{84, 102-109}. The sickness certification task is perceived diversely by GPs. Many GPs have socio-political attitudes and perceive it either as a burden, or perceive it with contentment and high self-esteem. Certain GPs show a biomedical attitude to the task¹¹⁰. Barriers towards a good sickness certification practice, within and outside the health care system, are experienced by GPs¹¹¹. Having a local policy on sickness certification in the surgery is associated with a reduced risk of experiencing problems with sickness certification¹¹². A review of the literature on sickness certification practices of physicians shows that the research seldom deals with medical problems but rather within the realm of behavioural science¹¹³.

Research approaches

Research on sickness absence is made from different scientific views. According to a review by Alexanderson¹¹⁴, many studies are performed within medicine, but also within sociology, psychology, history, economics, philosophy, management and legal science. Medical studies often lack medical explanatory models and theoretical framework, and often fall within the domain of medical sociology. Alexanderson describes a model for various kinds of absence from work, granted and non-granted, health-related and not

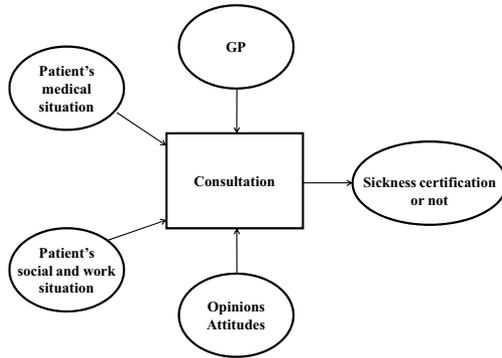


Figure 1. A model of the sickness certification consultation

health-related. When explaining sickness absence, various subsections are used, national, workplace and municipal or individual level. The national level comprises economic matters with labour market issues, structure and composition of the labour force, sickness insurance system and general attitudes in society. Workplace and local community levels deal with circumstances of paid work, work environment, absence culture at work and conditions in the local community. The individual level deals with characteristics of the individual, attitudes and coping strategies. Arrelöv¹¹⁵ showed in her thesis a model of the connections between various levels important for sick-listing practice with its determinants and influencing bodies. The research by Engblom¹⁰⁹ has a clear alignment with the individual level.

Model

A model of the sickness certification consultation is shown in Figure 1. The outcome from the consultation is whether a sick certificate is issued or not. The rectangular box, the ‘consultation’ may be influenced by various factors, such as the physician, the patient’s disease/illness, the patient’s social circumstances including work situation and the attitudes of patient and physician. My intention is to gain knowledge on what happens in the ‘consultation box’ by looking at it from these different perspectives and to get the information from as close to the decision as possible. The decision itself cannot be studied by the methods used in this study, but the consequences of the decision, in this case sickness certification or not, can.

Aim of the study

The aim of this thesis was to assess the importance of GP and patient related factors for the GP's decision to sick certify or not to sick certify the patient, based on data collected during real patient-GP consultations.

Specific aims

The specific aims were:

- to analyse the influence of physician-related factors on sickness certification.
- to analyse the co-variation of GPs' and patients' opinions regarding medical factors and functioning and their influence on sickness certification.
- to analyse the associations of social factors, such as patients' statements about their family, leisure time and work situation, to the GPs' decisions of whether or not to issue sickness certificates.
- to analyse the co-variation of patient's and physician's opinions and attitudes towards health related and insurance system related matters to sickness certification in primary health care.

Study population and methods

The study was performed as a cross-sectional questionnaire study of appointments between GPs and eligible patients in Örebro County in Mid-Sweden. Physicians in all 26 county council operated primary health care centres (PHCC) and all 11 private family medicine surgeries were invited to participate, by means of a letter followed by a personal visit by Dan Andersson or Gunilla Norrmén. Fourteen of the PHCCs and two of the private surgeries took part in the study.

The receptionists of the surgeries were instructed to check consecutive patients for eligibility, and if eligible, to ask for their consent to participate in the study until ten patients per GP were included. Eligibility was defined as consecutive patients, 18-64 years old, who were not already on sick leave or retired, who came to the practice for whatever reason and who were able to fill out a questionnaire in Swedish. They were also given written information on the study for consent. When a patient accepted to participate, the physician in charge of the consultation was given a message that an inquiry form with special code should be used in order to link patient's and physician's responses on each consultation. After having left the consultation room, the patient was given the inquiry form, which, after being filled-in, should be returned in a closed envelope to the researchers, either directly or by post. There were no individual identifications of patients or physicians other than the code. This procedure was chosen in order to avoid suspicion that responses to the questionnaire might influence the medical care.

The GPs filled in one questionnaire about themselves, and one questionnaire about each consultation. Seventy-three GPs agreed to participate. Six GPs delivered no questionnaires about their patients and an additional two returned no questionnaires about themselves. GP delivered data were available for 65 GPs and their 623 patients (642 if GP's self account was not considered) (Figure 2). Paper I was based on data given by the GPs on themselves and on the consultations and papers II – IV on data from patients' and GPs' responses on the consultation. Information from GPs on themselves was also used in Paper IV.

Information sought regarding the GP was age and sex, position in office, whether a qualified specialist, working part time or full time, number of years in family medicine, experience of other professions for six months or more, participation in CME, undergraduate training in social insurance medicine,

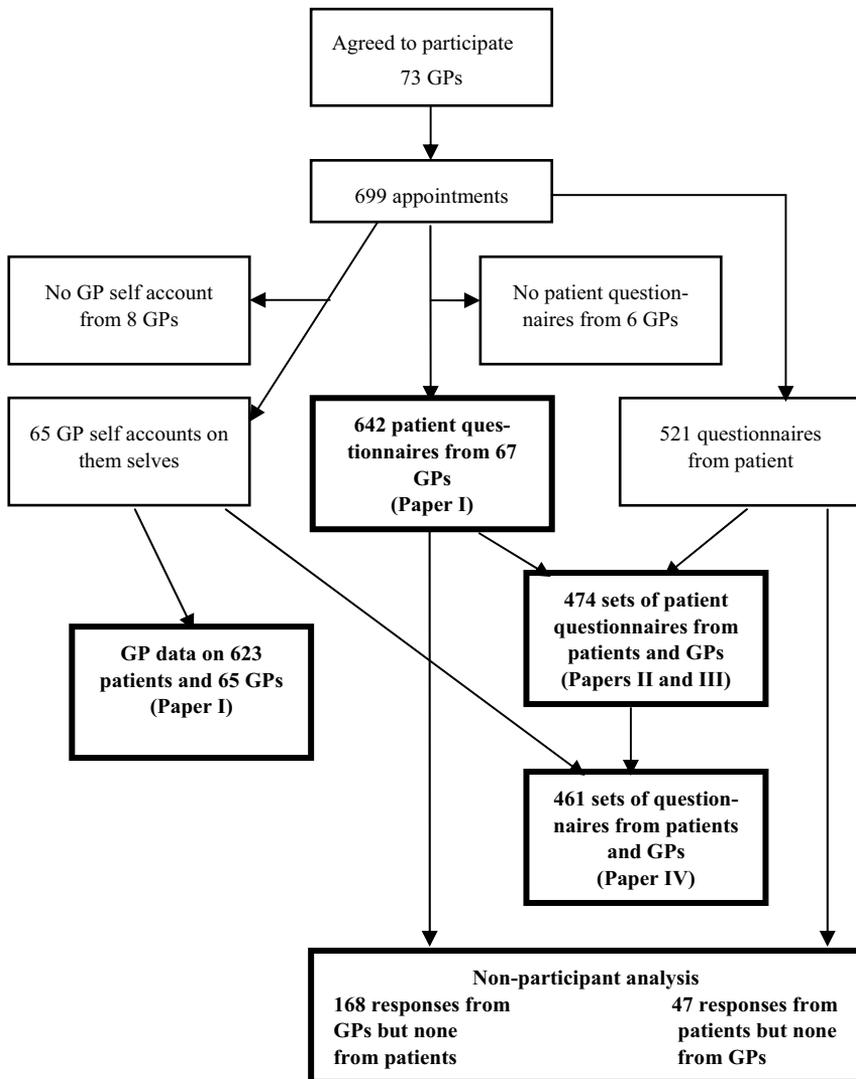


Figure 2. Flow chart of study populations

and contacts with colleagues or social insurance officials on patient related problems. The GP's questionnaire on the consultation included data on patient age, sex, diagnoses, thoughts on the disease and expected recovery and recommendations regarding sick leave. The sick certificate diagnoses were coded according to the International Classification of Disease, ninth revision¹¹⁶. Three diagnoses could be given. The first two were used in the analyses.

In the patient questionnaire, data sought were age, sex, mother tongue, education, family pattern, type of work and work situation, psychosocial aspects, such as stress and support, and the patient's attitude to her or his work, information on present and previous health situation, health beliefs and expectations and outcome of the present consultation. In all, 699 consultations were involved. GP responses on 642 consultations and patient responses on 521 consultations were returned. Combined GP - patient responses were available for 474 consultations, and responses to all three questionnaires were obtained for 461 consultations.

The GPs and the patients also were asked for opinions and attitudes about health, sickness and the welfare system. Responses were given by indicating extent of agreement to certain statements on a Likert visual analogue scale with the range 0 (=totally disagree) to 10 (=totally agree). The variables analysed had an identical wording for patients and GPs.

The questionnaires were constructed according to our long and comprehensive experience in family medicine in order to cover as many potentially significant determinants as possible for the sickness certification process. All questionnaires were tested in pilot studies for face validity. English versions of the questionnaires are shown in the Appendix.

Ethical considerations

Oral informed consent to the participation in the study was obtained from all participants. The physicians were presented the study plan by one of the researchers at a visit to their surgeries before deciding to participate. The patients were asked about their willingness to respond to a questionnaire with questions about sickness and actual consultation when arriving to the surgery, by the receptionist or the nurse, and they were also given written information. They received their inquiry form after leaving the GP's consulting room and were asked to fill it in either when still in the surgery or after coming home and return it to the researchers in a closed envelope. The Research Ethics Committee in Örebro approved the study.

Statistical considerations

The data were analysed using the JMP program package release 5.0 and the SAS software releases 6.12 and 9.1 (SAS Institute, Cary, NC, USA). The proportion of missing values in returned questionnaires was less than 5%. For correlation analyses, Spearman's nonparametric correlation coefficients were computed.

Paper I

Possible relationships between applicable characteristics and issuing a sick certificate were tested with multivariate logistic regression with backward elimination of non-significant variables, which also provided odds ratios (OR), and their 95% confidence intervals (CI). All analyses were performed on the total study population, and separately for the two largest diagnostic groups (infectious and musculoskeletal diseases).

The logistic regression technique was used to construct the regression surface in Figure 3. To estimate the degree to which the determinants could 'explain' the variation in sick-leave certifications, the correlation coefficient squared (r^2) was used. Since this is heavily influenced by random variation, the area under the curve of a receiver operator characteristic (ROC) diagram was used as an additional measure. The 'degree of explanation' (ROC) was calculated as: $(\text{area fraction} - 0.5) \times 2 \times 100$. All tests were two-tailed. P-values less than 5% were accepted as indicating statistical significance.

Paper II

The responses from the patient questionnaires were divided into two groups of questions, Group A, illustrating the patient's health situation, and Group B, describing functional incapacities. The two groups of responses were first analysed separately. Statistically significant variables from the two groups were then analysed together with the significant variables from the GP questionnaire. The logistic regression technique was used to construct the regression surface in Figure 4. The power of the study to identify a difference of 55% (70.7% - 14.6%) in physician assessed reduction of work capacity between those sick certified and those not sick certified was 80% with $p < 0.005$ and a study population of 155 subjects, and more than 99% with the actual study population of 474 subjects. Similar power levels were obtained using the observed difference in patient assessed work capacity.

All tests were two-tailed. During the first two screening stages p-values < 0.05 were accepted as indicating statistical significance. However, in the final analysis model p-values < 0.005 and 99.5% confidence intervals were used to account for multiple testing.

Paper III

In Paper III, a 'leisure time score' with the range 0-10 was constructed as the sum of positive responses to questions on leisure time activities. Scores on 'demands', 'decision latitude' (divided into 'intellectual discretion' and 'authority over decisions') and 'social support' were constructed in accordance with the Karasek-Theorell model¹¹⁷⁻¹¹⁸.

The analyses were performed in two steps. To find candidate determinants for the final analysis model, a set of screening bivariate analyses (Spearman correlation) of possible relations to outcome (issuing of a sickness certificate) of GP or patient responses (determinants) was performed. In the final model (multivariate logistic regression) the outcome was entered as dependent variable and all significant determinants from the screening analyses entered as independent variables, providing odds ratios (OR), their confidence intervals (CI), and Wald's chi-square estimates. Wald's chi-square is the test parameter on which the p-value is based. As a consequence, Wald's chi-square may be used to rank the impact, or importance, of the independent variables.

To estimate the degree to which the determinants could 'explain' the variation in sick leave certifications, the receiver operator characteristic (ROC) diagram based measure was used¹¹⁹. All analyses were performed on the total study population, and separately for the two largest diagnostic groups (infectious and musculoskeletal diseases). All tests were two-tailed. In the screening analyses $p < 0.10$ and in the final model $p < 0.05$ was accepted as indicating statistical significance.

Paper IV

The consultations analysed in Paper IV were those 461 (Figure 2) where data were obtained from the GP's self account, from the GP on the actual consultation and from the patient. Also in this paper the analyses were performed in two steps. First, a set of bivariate analyses using Spearman non-parametric correlation was performed. Possible relationships between answers from GPs or patients (determinants) and outcome (issuing of a sick leave certificate) were tested, based on all diagnoses and separately for infectious or musculoskeletal diseases.

After this procedure a multivariate logistic regression model was set up including all significant variables from the bivariate analyses, providing odds ratios (OR), their confidence intervals (CI), Wald's chi-square estimates (measure of variable impact), and estimates of degree of explanation based on the receiver operator characteristics (ROC) method. Moreover, possible interactions between GP's and patient's responses to identical questions were tested but none was found.

All tests were two-tailed. $P < 0.10$ was used in the bivariate analyses to indicate statistical significance, and $p < 0.05$ and the corresponding 95% confidence intervals in the final analysis.

Results

Patient and GP characteristics

Characteristics of the physician population and patient population are given in Table 1. Mean physician age was 45 years, 57% were men and 83% were qualified specialists in family medicine. The majority worked full time, participated in CME, patient problem discussion groups and had regular contacts with social insurance officials. Among the 642 patients, the mean age was 40 years, and 39% were men. The appointments were most often due to infectious (35%) or musculoskeletal diseases (27%). Sickness certification was issued for 152 patients (24%).

Characteristics of the 116 patients who were sick certified and the 358 patients who were not as a result of the consultation are shown in Table 2. Of all patients, 173 had infectious diseases and 137 musculoskeletal diseases. Other diagnosis groups contained less than 40 patients each. The group of patients with a mental diagnosis numbered 24. An additional 15 had such a diagnosis as a second one. Approximately two thirds of the total patients were women and about one quarter of all were sick certified. The patients who were sick certified were slightly older, mean 42.7 years, than the patients who were not sick certified, mean 40.8 years. The vast majority were Swedish speaking, about 28% had a low educational level, and 75% were permanently employed or self-employed. The remaining were temporarily employed or unemployed. Seventy-one per cent of the patients were working full time. There were no significant differences between patients who were sick certified and not sick certified except that patients with musculoskeletal diseases were sick certified to a significantly greater extent than the whole patient group.

Physicians' and patients' characteristics in relation to whether the patient was sick certified or not, for the 461 appointments analysed in paper IV, are shown in Table 3. There were significant differences between those who became sick certified and those who did not regarding all variables from the physicians' reports, but from patients' reports only cause of appointment differed.

Table 1. *Characteristics of participating GPs and patients (paper I)*

	GPs/Patients			Sick certification	
	n	mean or %	SD	n	%
GPs	65				
Men	37	56.9			
Age, years		45.1	7.44		
Position					
Senior consultant	11	16.9			
General practitioner	43	66.2			
Undergraduate physician	4	6.1			
Locum	7	10.8			
Experience of family medicine, years		9.1	7.37		
Other work experience >6 months	39	60.0			
Working part time	12	18.5			
Participating in CME ¹ \geq monthly on average	52	80.0			
Undergraduate training in social insurance medicine	25	38.5			
Patient problem discussions \geq monthly at physicians' meetings	50	76.5			
social insurance staff meetings	10	15.4			
Regular contact with social insurance official					
weekly	8	12.3			
monthly	42	64.6			
Patients	642			152	23.6
Age, years		40.3	11.76		
Men	250	38.9		55	22.0
Women	392	61.1		97	24.7
Diagnostic groups					
Infectious diseases	223	34.7		49	22.0
Musculoskeletal diseases	176	27.4		63	35.8
Other diseases	243	37.9		40	16.5

¹ CME = Continuing medical education

Paper I

Variables related to sickness certifications

Older GPs and those with long experience of family medicine issued sick certificates for their patients more frequently than younger GPs and those with shorter experience (Table 4). GPs working part time issued sick certificates for their patients more frequently than those working full time. No correlation between physicians' sex and sickness certification was found. Physicians regularly participating in CME issued fewer sick certificates than others. If GPs had regular contact with social insurance officials, sick certificates were issued more often. When stratifying the variables "experienced physician" and "working time" into subgroups, a combined effect of these var-

Table 2. *Characteristics of patients being sick certified or not (paper II and III)*

	Patients sick certified		Patients not sick certified		p
	n	mean or %	n	mean or %	
Patients	116		358		
Age, years (SD)		42.7 (11.18)		40.8 (11.94)	ns
Women, %	76	65.5	229	64.0	ns
Swedish speaking, %	109	94.0	341	95.3	ns
Education level, %					ns
Low	41	35.3	93	26.0	
Medium	57	49.1	177	49.4	
High	18	15.5	84	23.5	
Employment status ¹					ns
Permanently employed	82	70.7	244	68.2	
Temporarily employed	18	15.5	49	13.7	
Unemployed	8	6.9	30	8.4	
Self-employed	7	6.0	21	5.9	
Student	3	2.6	18	5.0	
Home worker	1	0.9	1	0.3	
On parental leave	1	0.9	14	3.9	
Working full time, %	83	74.1	254	73.0	ns
Largest diagnosis groups					
Infectious disease ²	37	31.9	136	38.0	ns
Musculoskeletal disease ²	50	43.1	87	24.3	0.001

¹ More than one alternative may be given

² One person was reported for both infectious and musculoskeletal disease and is described by both in this table

ibles on the physicians' use of sickness certification was seen (Figure 3). The proportion of patients sick certified rose with increasing years of experience in family medicine both for part-time and full-time physicians but more so for those working part time.

Physicians who were older than average and had long experience of family medicine issued sick certificates for more patients, no matter whether the patient had an infectious disease or a musculoskeletal problem (Table 4). Physicians working part-time issued sick certificates for more patients with infectious diseases while physicians with regular CME or training in social insurance medicine issued fewer sick certificates, also regarding infectious diseases, than others.

Multivariate analysis of factors related to reporting a patient sick

In multivariate analyses, long experience of family medicine, but not age, remained significant determinants for issuing sick certificates for all patients and for patients with musculoskeletal diseases (Table 5). Working part time remained likewise significant for all patients but also for patients with infectious diseases. Having undergraduate training in social insurance medicine re-

Table 3. *Characteristics of GPs and patients sick certified or not among GPs and patients with a full set up of questionnaires (paper IV)*

	Patients sick certified		Patients not sick certified		p
	n	mean or %	n	mean or %	
Number of visits	110		351		
GPs					
Experience in family medicine, years (SD)	110	11.4 (8.34)	351	8.3 (6.70)	0.0001
Working part time, %	30	27.3	50	14.2	0.003
Contact with social insurance officials \geq monthly, %	97	88.2	259	73.8	0.004
My health is good (GP's own opinion) (SD)	109	8.8 (1.24)	349	8.5 (1.42)	0.043
Patients					
Appointments for infectious diseases ¹	37	33.6	135	38.5	0.362
musculoskeletal diseases ¹	49	44.5	86	24.5	<0.0001
other diseases	25	22.7	130	37.0	0.003
Age, years (SD)	110	43.2 (10.77)	351	40.8 (11.87)	0.054
Swedish speaking, %	104	94.5	334	96.0	0.532
Education level, %					0.020
Low	38	34.6	90	25.9	0.080 ²
Medium	54	49.1	174	50.1	0.848 ²
High	18	16.4	83	23.9	0.097 ²

¹ One person was reported for both infectious and musculoskeletal disease and is described by both in this table

² p-values when each education level is analysed separately

remained a statistically significant sickness certification determinant for patients with musculoskeletal diseases.

The degrees of explanation of all the significant variables combined in the multivariate models for patients with all, infectious and musculoskeletal diseases using r^2 were 5.3%, 8.0% and 4.3%, and when using the ROC method 31.3%, 36.1% and 21.7%, respectively.

Paper II

GPs questionnaire on the patient consultation

Table 6, left panel, shows the GPs' assessments of the origin of the patients' complaints and how the complaints limited the patients' work capacity or daily activities. Of sick certified patients, 71% were assessed as having complaints grave enough to limit them severely from occupational work, 53% from physical leisure time activities and 33% from everyday pursuits. The remaining 29 % of those who became sick certified were considered to have

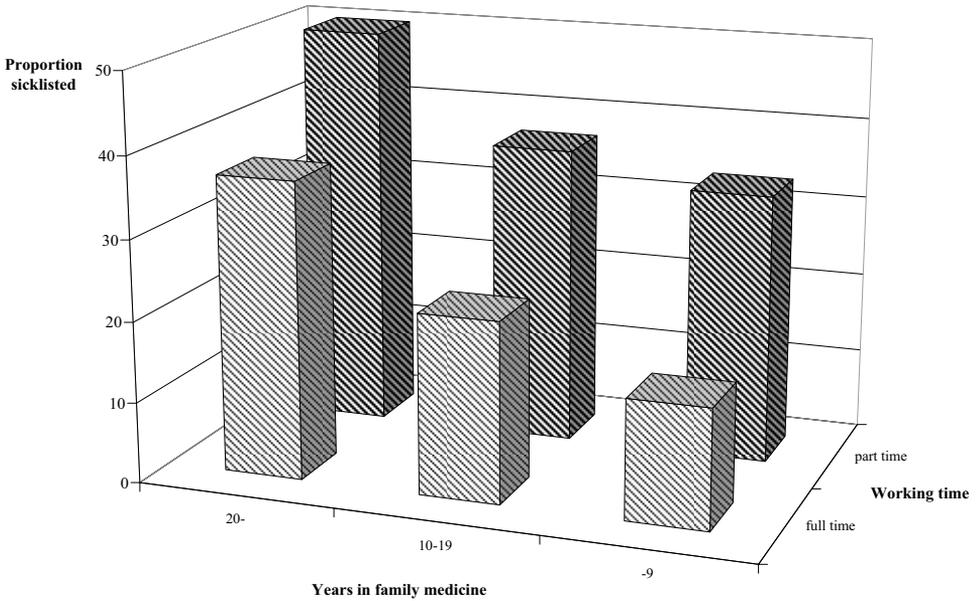


Figure 3. Proportion of patients sick certified for any cause, according to general practitioners' working time and length of experience of family medicine

moderate limitation of their work capacity. For those who were not sick certified, the percentage of severe limitation was 15, 21 and 5 respectively. For other types of activities, with fewer reported cases, the percentages of patients considered severely limited by the GP varied from six to 19 among the sick certified patients and one to six among those not sick certified.

In the bivariate analyses for all diseases statistically significant relations to less sickness certification was found for complaints assessed not to be entirely or primarily somatic, and to more sickness certification for all the limitation variables in Table 6 (data not shown). In multivariate analyses only the variables 'complaints not entirely or primarily somatic', 'severely limited from occupational work' or 'everyday pursuits' remained significantly related to sickness certification (Table 6, right panel). When the multivariate regression model was restricted to patients with infectious diseases, the variables 'complaints not entirely or primarily somatic', 'severely limited from occupational work' and 'take care of his/her children' remained significant, and when restricted to patients with musculoskeletal diseases, the same pattern as for infectious diseases could be seen, except for the variable 'take care of his/her children'.

Table 4. Bivariate logistic regression analyses of GPs' characteristics and issuing of sickness certificates for all, infectious, and musculoskeletal diseases (paper I)

	All diseases		Infectious diseases		Musculoskeletal diseases	
	OR ¹	95%CI ²	OR ¹	95%CI ²	OR ¹	95%CI ²
GPs						
Age (per one year of increase)	1.04	1.02-1.07	1.05	1.00-1.10	1.06	1.01-1.10
Experience in family medicine (per one year of increase)	1.05	1.03-1.08	1.05	1.00-1.09	1.07	1.02-1.12
Working part time (yes/no)	2.33	1.46-3.57	4.17	1.96-9.09	1.69	0.79-3.70
Sex (female/male)	1.13	0.77-1.66	1.33	0.69-2.53	1.49	0.77-2.87
Qualified specialist (yes/no)	1.81	1.03-3.20	1.71	0.71-4.10	1.58	0.62-4.01
Regular CME ³ , monthly or more on average (yes/no)	0.62	0.40-0.96	0.44	0.21-0.89	0.52	0.23-1.17
Undergraduate training in social insurance medicine (yes/no)	0.68	0.45-1.00	0.50	0.26-0.99	0.94	0.49-1.80
Regular contact with social insurance officials (yes/no)	1.80	1.10-2.94	1.34	0.62-2.90	1.94	0.85-4.43

¹ Odds ratio ² Confidence interval ³ CME = Continuing medical education

Table 5. Multivariate analyses of the effects of GPs' characteristics on issuing sickness certificates for all, infectious, and musculoskeletal diseases, with backward elimination of non-significant variables (paper I)

	All diseases		Infectious diseases		Musculoskeletal diseases	
	OR ¹	95%CI ²	OR ¹	95%CI ²	OR ¹	95%CI ²
GPs						
Experience in family medicine (per one year of increase)	1.06	1.02-1.10	1.01	0.95-1.09	1.14	1.06-1.22
Working part time (yes/no)	2.56	1.59-4.17	5.26	2.22-12.5	2.04	0.85-4.76
Undergraduate training in social insurance medicine (yes/no)	1.31	0.74-2.33	0.65	0.24-1.76	4.16	1.40-12.36

¹ Odds ratio ² Confidence interval

Table 6. *GPs' assessments of type of and limitations due to complaints due to sick certified and not sick certified patients, and multivariate analyses of the effects on sick certification for all, infectious and musculoskeletal diseases, with backward elimination of non-significant variables (paper II)*

	Frequencies				Multivariate analysis					
	Sick certified		Not sick certified		All diseases		Infectious diseases		Musculoskeletal diseases	
	n	%	n	%	OR ¹	95%CI ²	OR ¹	95%CI ²	OR ¹	95%CI ²
<i>GPs' assessments</i>										
Complaints were entirely or primarily somatic (missing 4)	97	83.6	329	92.9	0.24	0.10-0.58	0.04	0.004-0.45	0.16	0.03-0.91
The complaints severely limited the patient from:										
occupational work (missing 1)	82	70.7	52	14.6	14.15	8.61-23.24	7.81	3.51-17.36	19.11	7.69-47.46
physical leisure time activities (missing 22)	56	53.3	72	20.8	0.94	0.46-1.94	3.10	0.96-10.07	0.54	0.14-2.14
everyday pursuits (missing 20)	35	33.0	17	4.9	2.79	1.18-6.55	1.78	0.26-12.27	1.13	0.32-3.96
taking care of his/her children (missing 76) ³	17	19.1	10	3.2	0.96	0.25-3.73	7.48	1.24-44.94	0.43	0.06-2.81
sleeping at night (missing 21)	18	17.0	13	3.8	1.63	0.61-4.36	5.53	0.42-72.96	1.94	0.42-8.92
social leisure time activities (missing 24)	15	14.4	20	5.8	0.46	0.18-1.15	0.58	0.11-2.99	0.38	0.06-2.37
activities of daily living (missing 28)	6	5.7	4	1.2	0.58	0.13-2.54	na ⁴	-	7.57	0.36-157.70
intellectual activities (missing 20)	6	5.7	5	1.4	1.20	0.24-6.04	1.30	0.15-11.17	na ⁴	-

¹ Odds ratio

² Confidence interval

³ Nineteen of them were 'true missing', i.e. lived with children

⁴ Not applicable owing to non-significance in bivariate analysis

Table 7. Patients' assessments of health related factors, and type of limitations due to complaints for sick certified and not sick certified patients, and multivariate analyses of the effects on sickness certification for all, infectious and musculoskeletal diseases, with backward elimination of non-significant variables (paper II)

	Frequencies			Multivariate analysis					
	Sick certified		Not sick certified	All diseases		Infectious diseases		Musculoskeletal diseases	
	n	%	n	OR ¹	95%CI ²	OR ¹	95%CI ²	OR ¹	95%CI ²
Patients' assessments - group A									
My general health (missing 8):									
Mostly healthy and feel well	64	57.1	240	67.8	1.08	0.64-1.81	na ⁴	-	na ⁴
One or more diseases and seldom or never feel well	9	8.0	7	2.0	2.27	0.74-6.96	na ⁴	-	na ⁴
Sick certified during the last year (missing 3)	82	71.3	189	53.1	1.67	1.23-2.26	1.76	0.99-3.14	2.08
Exercise ≥ weekly to sweatiness or breathless (missing 27)	49	44.1	170	50.6	na ²	-	0.40	0.18-0.87	na ⁴
Appointment because of (missing 3):									
complaints/pain from back, neck, arms/hands or legs/feet	63	54.3	93	26.0	3.49	2.23-5.46	na ⁴	-	na ⁴
tiredness	17	14.7	24	6.7	2.50	1.25-5.03	2.78	0.94-8.24	na ⁴
anxiety, nervousness, depression, insomnia	11	9.5	15	4.2	2.01	0.83-4.88	na ⁴	-	na ⁴
Patients' assessments - group B									
My complaints/pain severely limited me from:									
occupational work (missing 10)	81	81.8	84	26.6	12.43	7.04-21.94	6.35	2.41-16.71	12.98
usual leisure time activities (missing 18)	69	61.6	141	41.0	0.56	0.29-1.10	0.98	0.23-4.16	na ⁴
doing daily home work (missing 3)	56	50.5	69	19.7	1.55	0.84-2.89	1.06	0.40-2.79	1.14
sleeping (missing 15)	37	33.0	62	17.9	1.06	0.43-2.61	na ⁴	-	2.55
seeing friends (missing 18)	33	30.3	72	20.8	0.55	0.20-1.53	1.02	0.30-3.43	na ⁴
taking care of my children (missing 88 ³)	14	23.7	25	11.8	0.46	0.15-1.37	na ⁴	-	na ⁴
taking good care of myself (missing 19)	13	11.8	17	4.9	1.30	0.35-4.87	na ⁴	-	na ⁴

¹ Odds ratio ² Confidence interval ³ Thirteen of them were 'true missing', i.e. lived with children ⁴ Not applicable owing to non-significance in bivariate analysis

Patient questionnaire

The associations between data in the patient questionnaire and being sick certified are shown in Table 7. Patients' responses are grouped according to whether areas addressed were about patients health or complaints (group A) or about limitations in occupational work, family life or leisure time inflicted due to the complaints (group B). In the bivariate analyses in group A for all diseases, differences were significant between patients who were sick certified and who were not sick certified in all variables except the exercise variable, (data not shown). In the multivariate regression model the variables 'sick certified during the last year', 'appointment because of complaints from back, neck, arms/hands or leg/feet', and 'appointment because of tiredness' remained significantly related to sick certification. In the multivariate analysis restricted to patients with infectious diseases, the exercise variable was the only remaining significant variable, and for patients with musculoskeletal diseases 'sick certification during the last year' remained significant.

In group B, all diseases, all variables were significantly associated with sickness certification in bivariate analyses (data not shown). In multivariate analyses, patient's report of severely limited work capacity significantly increased the risk of being sick certified for all patients as well as for patients with infectious or musculoskeletal diseases only.

Multivariate analyses, GP and patient questionnaires

When all the significant variables from the GPs' and the patients' questionnaires from the previous multivariate regression analyses were introduced in a final regression model for all diseases the variables 'complaints entirely or primarily somatic', 'complaints severely limited the patient/me from occupational work' according to GP and to patient, and 'appointment because of complaints from back, neck, arms/hands, leg/feet' remained significantly related to being sick certified (Table 8).

When analysing infectious diseases only the variable 'severely limited me from occupational work' according to the patient was significantly related to more frequent sickness certification. For patients with musculoskeletal diseases 'severely limited from occupational work' according to GPs' and patients' questionnaires were the remaining significant variables. Adjusting for patient age, sex, native language, education, and professional status did not change the significance of the final regression results.

Table 8. Final multivariate analyses of the effects of GPs' and patients' assessments of type of or limitations due to complaints on sickness certification for all, infectious and musculoskeletal diseases, with backward elimination of non-significant variables (paper II)

	All diseases n=409		Infectious diseases n=144		Musculoskeletal diseases n=103	
	OR ¹	99.5%CI ²	OR ¹	99.5%CI ²	OR ¹	99.5%CI ²
GPs' assessments:						
Complaints entirely or primarily somatic	0.16	0.04-0.61	0.03	0.001-1.72	0.096	0.003-3.41
Complaints severely limited the patient from occupational work	8.89	3.60-21.93	2.80	0.46-17.26	14.16	3.15-63.64
Patients' assessments:						
Appointment because of complaints/pain from back, neck, arms/hands, legs/feet	3.55	1.47-8.59	na ³	-	na ³	-
My complaints/pain severely limited me from occupational work	7.01	2.69-18.29	6.35	1.59-25.38	7.91	1.69-36.95

¹ Odds ratio

² Confidence interval

³ Not applicable owing to non-significance in bivariate analysis

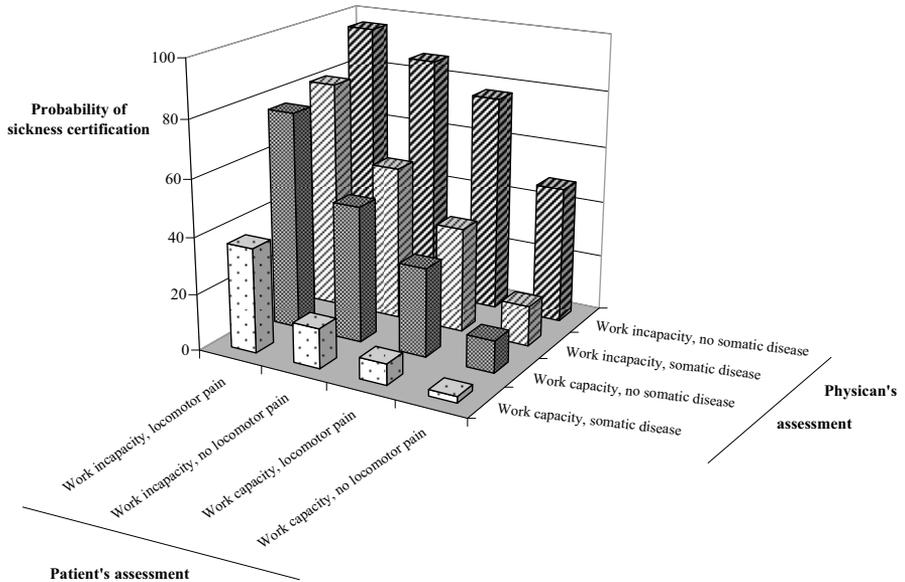


Figure 4. Combined effects on sick certification of patient's assessment of impairment to work, presence or absence of pain in the locomotor system on the one hand and physician's assessment of patient's impairment to work and whether the condition was primarily somatic or not on the other

In Figure 4 the effects of various combinations of the patients' perceived work capacity and locomotor pain on the one hand and the GPs' assessment of the patients' work capacity and whether the disease was somatic on the other is presented. Ninety-six per cent of patients who claimed work incapacity and locomotor pain and where the physician confirmed the work incapacity and assessed the condition as not primarily somatic were sick certified. In contrast, only 2% of the patients with perceived work capacity and no locomotor pain and where the physician confirmed the work capacity and assessed the condition as somatic were sick certified.

The degree of explanation of all the significant variables combined in the final multivariate models, for patients with all, infectious and musculoskeletal diseases using r^2 was 36.1%, 10.9%, and 41.6%, and when using the ROC-method 78.4%, 41.3% and 77.2%, respectively.

Table 9. *Leisure time activities and family situation among patients who were sick certified or not during the consultation (paper III)*

	Sick certified		Not sick certified		p
	n	%	n	%	
Leisure time activities					
Exercise heavily for at least 20 min ¹	49	44.1	170	50.6	0.24
Exercise at a quick pace for at least 20 min ¹	60	56.1	189	56.3	0.97
Active outdoors at a calm pace ¹	91	79.8	280	80.2	0.93
Spend time with my family/children ¹	101	91.8	312	91.5	0.92
Spend time with people outside my family ¹	85	75.8	285	81.0	0.25
Read, listen to/watch music/TV/video, etc ¹	110	95.7	344	97.2	0.42
Hobby activities at home ¹	51	44.7	184	52.6	0.15
Participate in group activities outside the home ²	35	31.3	123	35.0	0.46
Participate in clubs, church activities, etc ²	31	27.7	119	34.6	0.18
Cinema, theatre, dancing, watching football, etc ²	72	64.3	220	62.7	0.76
Total leisure time score (range 0-10)	116	4.96 ³	358	5.26 ³	0.24
Family situation					
Live alone	16	14.3	55	15.4	0.72
Live with parent/parents	0	0	14	3.9	<0.05
Partner, no children	41	36.6	100	28.1	0.09
Partner and children	49	43.8	174	48.9	0.34
Single parent	6	5.4	13	3.7	0.43

¹ Once a week or more often ² Once a month or more often ³ Mean value

Paper III

Patients' life situation

Leisure time activities, including the 'leisure time score', had no statistically significant influence on sickness certification probability (Table 9). Among patients with infectious diseases the item 'spending leisure time with others outside the family' was related to significantly less sickness certifications as did the item 'read, listen to music, watch TV/video, etcetera.' among those with musculoskeletal diseases (data for subgroups not shown). Regarding the family situation those living with parents had less sickness certification and those living with partner but with no children had more sickness certification.

Patients' work situation

Worry about work related injury or illness, not getting on well with work, high job demands, low intellectual discretion in the job, low authority over job decisions, and low job social support all increased the probability of a sickness certification (Table 10). Within the job demand dimension, the items physical or mental exhaustion were positively associated with sickness

Table 10. *Patients' responses to work related questions among those who were sick certified or not during the consultation (paper III)*

	Sick certified			Not sick certified			p
	n	Score ³	%	n	Score ³	%	
Worry about work related injury or illness ¹	61		57.0	127		38.0	<0.001
Get on well at my work							<0.01
Lowest quartile (= not very well)	41		36.3	74		21.4	
Highest quartile (= well /fairly well)	23		20.4	92		26.6	
Work score dimensions							
Demands (low=1; high=5)	108	2.80		338	2.61		<0.001
Work is done on time ²	95		88.0	297		88.1	0.96
Work often involves conflicting demands ²	17		16.2	39		12.0	0.27
Work results in physical exhaustion ²	43		39.8	83		24.8	<0.01
Work results in mental exhaustion ²	44		40.7	93		27.8	<0.05
Intellectual discretion (low=1; high=5)	108	3.42		339	3.62		0.001
Work is stimulating ²	64		60.4	240		71.2	<0.05
Work is important to society ²	63		60.0	211		62.8	0.61
Work requires skill or expertise ²	86		81.1	266		78.9	0.63
Work requires ingenuity ²	69		63.9	228		67.7	0.47
Learn new things at work ²	39		36.4	158		46.7	0.06
Monotonous work ²	68		63.0	169		50.3	<0.05
Authority over decisions (low=1; high=5)	108	3.16		339	3.45		<0.001
Can influence work pace ²	38		35.5	161		47.6	<0.05
Can decide what to do during the working day ²	38		35.5	157		46.7	<0.05
Can influence how work is carried out ²	56		52.8	236		70.2	<0.001
Can alternate between easy and difficult tasks ²	40		37.0	158		47.3	0.06
Social support (low=1; high=5)	108	3.89		338	4.19		<0.001
Can confer with co-workers on work tasks ²	78		72.9	281		83.4	<0.05
Supported by supervisor/manager on work tasks ²	55		51.4	234		70.2	<0.001
Being together with co-workers is important ²	79		74.5	278		83.7	<0.05
The atmosphere at my workplace is good ²	90		84.9	300		90.4	0.12
Working part time	29		25.9	94		27.0	0.82
Worried about changes in work situation ¹	71		65.7	207		61.8	0.46

¹ Always, mostly or sometimes ² Always or mostly ³ Mean value

certification. Within the intellectual discretion dimension the items ‘stimulating work’ and ‘learning new things at work’ were negatively and ‘monotonous work’ positively associated with sickness certification. Low levels of authority over decisions and social support except ‘good atmosphere at my workplace’ were positively associated with sickness certification.

In the subgroups with infectious diseases, some individual items were significantly related to a sickness certificate being issued, but none of the work score dimensions had such a relation (data not shown). In the subgroup with musculoskeletal diseases the situation was similar except that ‘worry about work related injury or illness’ was associated to more sickness certifications.

Multivariate analyses

When significant variables from the above described screening analyses were analysed with multivariate regression technique, scores indicating high social support and authority over decisions were significantly related to less sickness certifications for all diagnoses, while worry about work related injury or illness, and living with partner and having no children were significantly related to more sickness certification. For infectious diseases only a high demand score increased, and spending time with people outside the family decreased the sickness certification probability, and for musculoskeletal diseases worry about work related injury or illness significantly increased the risk of sickness certification (Table 11).

The degrees of explanation of all variables in the models for patients with all diseases, infectious, and musculoskeletal diseases were 67.6%, 68.9% and 60.5% when the ROC-method was used.

Paper IV

The degree of agreement between GPs’ and patients’ attitudes towards health and insurance system related statements is shown in Table 12. The statements ‘Long-term unemployment is harmful to your health’, ‘Long-term sick leave is harmful to your health’, ‘With a good job situation you wish sick leave to be as short as possible’, and ‘Home visits to check for sickness certification abuse is okay’ all had a high degree of assent with mean scores of more than six among GPs as well as patients, whereas the statements ‘Tired and depressed persons should be allowed to be on sick leave’, ‘Most employers have a positive attitude towards part time sick leave’, ‘Physicians have good knowledge of work in various occupations’, and ‘Most employers have a positive attitude towards employees with a disease or handicap’ all had

Table 11. Multivariate analyses of the effects of family, leisure time and work situation related variables on sickness certification for all, infectious and musculoskeletal diseases, with backward elimination of non-significant variables (paper III)

	All diseases n=409			Infectious diseases n=144			Musculoskeletal diseases n=103		
	OR ¹	95%CI ²	χ^2 ³	OR ¹	95%CI ²	χ^2 ³	OR ¹	95%CI ²	χ^2 ³
Social support score	0.60	0.44-0.83	9.64	0.69	0.39-1.20	1.74	0.94	0.54-1.64	0.05
Worry about work related injury or illness	1.91	1.20-3.02	7.50	1.66	0.69-4.01	1.28	2.37	1.14-4.94	5.34
Authority over decision score	0.68	0.51-0.91	6.62	0.70	0.46-1.22	1.58	0.81	0.50-1.32	0.74
Partner, no children	1.68	1.04-2.72	4.54	1.37	0.56-3.32	0.48	1.77	0.80-3.91	1.99
Demand score	1.37	0.86-2.18	1.70	2.55	1.14-5.72	5.20	1.55	0.74-3.24	1.37
Spending time with people outside the family	0.77	0.44-1.35	0.84	0.38	0.16-0.90	4.88	1.17	0.46-2.96	0.11

¹ Odds ratio

² Confidence interval

³ Wald's chi-square estimate

Table 12. *GPs' and patients' attitudes, measured on Likert visual analogue scales, range 0 (disagree) to 10 (agree), towards health related and insurance system related statements (paper IV)*

	GPs (n=65)		Patients (n=461)		p
	mean	SD	mean	SD	
Long-term unemployment is harmful to your health	8.75	1.29	8.63	2.03	0.829
Long-term sick leave is harmful to your health	8.18	1.65	7.41	2.73	0.848
With a good job situation you wish sick leave to be as short as possible	8.07	1.69	8.91	1.83	0.746
Home visits to check for sickness certification abuse is okay	6.42	2.63	8.06	2.72	0.695
Tired and depressed persons should be allowed to be on sick leave	4.56	3.12	3.91	3.16	0.616
Most employers have a positive attitude towards part time sick leave	3.85	2.45	4.61	2.74	0.650
Physicians have good knowledge of work in various occupations	3.28	2.16	3.71	2.47	0.248
Most employers have a positive attitude towards employees with a disease or handicap	2.42	1.64	5.51	3.02	0.806

lower assent with mean scores below five in both groups. The responses from GPs and patients were similar with no significant differences.

Table 13 shows GPs' and patients' attitude scores in relation to whether the patient was sick certified or not. For all diagnoses there were significant score differences between sick certified and not sick certified regarding GPs' responses to the statements 'Tired and depressed persons should be allowed to be on sick leave' ($p=0.0004$), 'Most employers have a positive attitude towards part time sick leave' ($p=0.061$), and 'Physicians have good knowledge of work in various occupations' ($p=0.002$), and regarding patients' responses to the statements 'Long-term sick leave is harmful to your health' ($p=0.086$), and 'Most employers are eager to keep employees with a disease or a handicap' ($p=0.018$).

For infectious diseases similar differences were found for GPs' responses to the statements 'Tired and depressed persons should be allowed to be on sick leave' ($p=0.048$) and 'Physicians have good knowledge of work in various occupations' ($p=0.009$), but none was found for patient responses. For musculoskeletal diseases GPs' response to 'Long-term unemployment is harmful to your health' ($p=0.099$) and 'Tired and depressed persons should be allowed to be on sick leave' ($p=0.054$) fulfilled the requirements for statistical significance.

Table 13. GPs' and patients' attitudes (mean values) measured on Likert visual analogue scales, range 0 (disagree) to 10 (agree) towards health related and insurance system related statements in relation to whether the patients were sick certified or not for all, infectious and musculoskeletal diseases (paper IV)

	All diseases			Infectious diseases			Musculoskeletal diseases		
	Sick certified patients	Not sick certified patients	p	Sick certified patients	Not sick certified patients	p	Sick certified patients	Not sick certified patients	p
GPs' attitudes									
Long-term unemployment is harmful to your health	8.82	8.73	0.363	8.57	8.79	0.540	8.86	8.53	0.099
Long-term sick leave is harmful to your health	8.29	8.14	0.734	8.35	8.19	0.791	8.15	8.02	0.885
With a good job situation you wish sick leave to be as short as possible	7.99	8.09	0.927	8.18	8.01	0.767	7.78	7.99	0.841
Home visits to check for sickness certification abuse is okay	6.42	6.42	0.967	6.14	6.04	0.848	6.56	6.52	0.871
Tired and depressed persons should be allowed to be on sick leave	5.51	4.26	0.0004	5.29	4.08	0.048	5.65	4.53	0.054
Most employers have a positive attitude towards part time sick leave	4.19	3.74	0.061	4.19	3.96	0.534	4.31	3.97	0.454
Physicians have good knowledge of work in various occupations	2.80	3.43	0.002	2.49	3.43	0.009	3.11	3.34	0.248
Most employers have a positive attitude towards employees with a disease or handicap	2.49	2.39	0.654	2.75	2.28	0.416	2.50	2.72	0.251
Patients' attitudes									
Long-term unemployment is harmful to your health	8.50	8.68	0.908	8.54	8.51	0.473	8.57	8.83	0.649
Long-term sick leave is harmful to your health	7.04	7.53	0.086	7.06	7.42	0.414	7.25	7.64	0.648
With a good job situation you wish sick leave to be as short as possible	8.93	8.91	0.728	8.92	8.87	0.870	8.90	8.91	0.877
Home visits to check for sickness certification abuse is okay	7.98	8.08	0.434	7.66	8.07	0.226	8.45	7.86	0.275
Tired and depressed persons should be allowed to be on sick leave	4.09	3.86	0.431	3.84	3.63	0.674	3.93	3.60	0.473
Most employers have a positive attitude towards part time sick leave	4.40	4.67	0.222	4.55	4.71	0.697	4.46	4.53	0.662
Physicians have good knowledge of work in various occupations	3.85	3.67	0.662	3.73	3.78	0.861	3.91	3.28	0.239
Most employers have a positive attitude towards employees with a disease or handicap	4.89	5.71	0.018	5.21	5.62	0.437	4.96	5.55	0.258

Table 14. Multivariate analyses of the effects of variables measuring GPs' and patients' attitudes towards health related and insurance system related statements on sickness certification for all, infectious and musculoskeletal diseases, with backward elimination of non-significant variables (paper IV)

	All diseases			Infectious diseases			Musculoskeletal diseases		
	OR ¹	95%CI ²	χ^2 ³	OR ¹	95%CI ²	χ^2 ³	OR ¹	95%CI ²	χ^2 ³
GPs' attitudes									
Physicians have good knowledge of work in various occupations	0.77	0.63-0.95	10.37	0.67	0.47-1.00	8.40	na ⁴	-	-
Home visits to check for sickness certification abuse is okay	1.17	1.02-1.36	8.14	na ⁴	-	-	1.51	1.04-2.19	8.15
Most employers have a positive attitude towards part time sick leave	1.18	1.01-1.72	7.44	na ⁴	-	-	na ⁴	-	-
Tired and depressed persons should be allowed to be on sick leave	1.10	0.98-1.24	4.78	na ⁴	-	-	1.32	1.06-1.65	10.19
Long-term unemployment is harmful to your health	na ⁴	-	-	na ⁴	-	-	2.28	1.09-4.76	8.34
Long-term sick leave is harmful to your health	na ⁴	-	-	na ⁴	-	-	0.59	0.36-0.98	7.17
Patients' attitudes									
Most employers have a positive attitude towards part time sick leave	0.85	0.77-0.95	13.59	na ⁴	-	-	0.83	0.67-1.03	5.11

¹ Odds ratio

² Confidence interval

³ Wald's chi-square estimate

⁴ Not applicable owing to non-significance in bivariate analysis

All variables from the bivariate analyses were included in the multivariate regression model (Table 14). For all diseases, patients were less often sick certified when GPs had the opinion that physicians have good knowledge of work in various occupations and when patients themselves had the opinion that most employers have a positive attitude towards employees with a disease or a handicap. Patients were more often sick certified when GPs thought it was a good thing that social insurance officers made home visits to ensure no cheating and when thinking that most employers have a positive attitude towards part time sick leave.

Patients with infectious diseases were less often sick certified when GPs had the opinion that physicians have good knowledge of work in various occupations. For patients with musculoskeletal diseases there were more sickness certificates issued when the GPs expressed attitudes like 'home visits to check for sickness certification abuse is okay', 'tired and depressed persons should be allowed to be on sick leave' and 'long-term unemployment is harmful to your health'. On the other hand, less sickness certifications were found when the GPs supported the opinion 'long-term sick leave is harmful to your health'.

The degrees of explanation of all the significant variables combined in the final multivariate models, for all diseases, infectious, and musculoskeletal diseases were 71%, 68% and 77% respectively when the ROC-method was used.

Combined results

When introducing the results from the four papers in a final multivariate analysis (Table 15), it was found that the patient's own experience of limitation towards occupational work was the strongest predictor for sick leave, with 12-fold increased sickness certification risk in the whole patient group, 18-fold risk for the patients diagnosed with musculoskeletal diseases and 8-fold for infectious diseases. Patients with complaints from the locomotor system had a three-fold increased risk for sickness certification in the total group.

Increased risk for the patient to get a sick certificate was also found when they met a GP working part time and when the GP had long experience in family medicine. For patients with musculoskeletal diseases, an increased sickness certification risk was seen when meeting a GP who considered unemployment harmful to one's health.

Factors significantly related to less sickness certifications were if the patients responded that they had a high authority over decisions in work or if

Table 15. Multivariate analyses on the effects of significant variables from papers I, II, III and IV on sickness certification for all, infectious and musculoskeletal diseases, with backward elimination of non-significant variables

	All diseases			Infectious diseases			Musculoskeletal diseases		
	OR ¹	95%CI ²	χ^2 ³	OR ¹	95%CI ²	χ^2 ³	OR ¹	95%CI ²	χ^2 ³
GP's work experience									
Long experience in family medicine	1.06	1.01-1.10	6.88						
Working part time	2.63	1.25-5.56	6.51						
GP's response on consultation									
Patient's complaints are entirely or primarily somatic	0.28	0.11-0.71	7.09						
Patient's work experience and social situation									
High authority over decisions in work	0.59	0.39-0.90	5.96						
I spend leisure time with people outside my family				0.33	0.12-0.89	4.82			
Patient's response on consultation									
Appointments because of complaints/pain from back, neck, arms/hands or legs/feet	3.29	1.77-6.11	14.23						
My complaints/pain severely limited me from occupational work	12.01	6.15-23.44	53.00	7.89	2.74-22.71	14.64	18.38	6.06-55.73	26.46
GP's attitude									
Long-term unemployment is harmful to your health							2.13	1.32-3.43	9.58

¹ Odds ratio

² Confidence interval

³ Wald's chi-square estimate

the GPs judged the patient's condition to be of somatic origin. Patients with infectious diseases with leisure time habits of spending time with people outside the family were sick certified one third as often as average.

Effects of non-response

In 168 consultations GP data but no patient data and in 47 consultations patient data but no GP data were obtained (Figure 2). These patients were somewhat younger than the participants, mean age 38.3 years versus 41.4 years, the proportion of women was lower, 55.4% versus 64.3%, but the proportion sick certified was the same as for participants, 24.7% versus 24.5%. However, since none of these factors influenced the outcome, the effect of non-response on the results seems to be negligible.

Discussion

Major findings

This study was based on real encounters and was supposed to mirror as closely as possible the moment when the GP assessed whether sickness certification should be issued or not. The results indicate that the outcome was affected by both GP's and patient's input. In many cases the patient 'knows' when sick leave is appropriate, and the GP knows the same. However, the influence of GPs' attitudes was larger than the ones of the patients. Not all occasions are as clear-cut as the simple somatic conditions when sickness certification may often be avoided. The non-somatic conditions causing more sickness certificates may be understood as an effect of the patient's suffering, which is discussed by theorists as important for the sick role^{6, 8}. Answer to the question whether sickness certification is inappropriate as an answer to this role interpretation or not cannot be given from this study. The finding that part time GPs and GPs with many years in family medicine are more prone to issue sickness certificates is an issue that ought to be more thoroughly studied. The study also emphasizes the importance of work; good work factors as protective and bad work factors as enhancing sickness probability.

Methodological considerations

The data were collected in 1996, just before a considerable rise of the sickness certification level occurred in Sweden. There is no reason to believe that this rise was caused by increased morbidity in the population, but rather by societal reasons such as business cycle fluctuations or changes in 'demand' for sick leave. The only health related item that is likely to be of some dignity is the shift from musculoskeletal to mental disorders¹²⁰⁻¹²¹, but this may be more a change in classification than a fundamental change in morbidity. Presently, the sickness certification levels have declined to the levels prevalent in the mid 1990s, *i.e.*, when the data for this study were collected. When considering the level of sickness absences, it is likely that there is no substantial difference in reasons for issuing sick notes between the time when our data were collected and today. A thirty-five-year old scientific

report on sickness certification discussed the same issues as commonly discussed in public discussions of today and the last few years¹²².

A limitation of the study is a too small sample size to allow analyses of other diagnostic subgroups than those reported here, for instance mental disorders. Appointments when no sick leave was ongoing, *i.e.* ‘first appointments’, were examined, which may have caused underestimation of mental disorders. Many mental disorders may be presented with musculoskeletal symptoms¹²³⁻¹²⁹ at the first appointment and later be revealed as psychiatric or psychosocial, which eventually may lead to a change in diagnosis.

The study data was collected from questionnaires. All consultations with either of the two outcomes, sickness certification or not, were examined and the responses from the physicians as well as the patients were investigated. The only alternative method to be used, interviews, was not suitable since it cannot contain such a great number of individuals that were needed. An interview study must inevitably have a qualitative design, which also gives information different from what was intended to gain.

No formal power analysis was performed during the planning of the study. The aim was to gain as large a study population as possible. Based on experience 600 patients was regarded as a sufficient study population size. A post hoc power analysis shows that even 400 patients would be sufficient for an 80% statistical power.

Since there was no individual identification, non-responders could not be studied exclusively. The reason for not using individual identification was to minimize the probability for the patient to believe that her/his responses to the questionnaire should be known by the GP or might influence the medical care given. This was also the reason for giving the questionnaire to the patient after leaving the consultation room.

The factors reported by the patients may or may not be known by the GP. Factors influencing the GP’s decision are not necessarily conscious or intellectual. Patient related factors not known by the GP might well influence the decision and the measure taken. The patients had not positioned themselves as unable or able to work at the time of the consultation. They might have come to the appointment with one thought in their minds, but the decision to issue a sickness certificate or not was the GP’s, and patients were not on sick leave until after the consultation. The responses on the questionnaire concerning the actual case of illness should therefore refer to the actual consultation. The physician’s questionnaire on the consultation was also filled in after the appointment, and thus was not expected to influence the measures taken. There was no instruction on when the physician should fill in the self-account questionnaire.

The strengths of this study include that data were collected from patients and GPs during real life consultations before the patients were positioned as

able or unable to work. In paper IV, the statements from the questionnaires analysed in this paper were phrased exactly or almost exactly as those used by Englund in a study on sick listing cases with duration of more than two weeks. The responses from our GPs and patients were strikingly similar to those reported in his thesis¹³⁰. The degree of explanation has been based on the ROC method, superior to the usually used r^2 method, which severely underestimates the true degree of explanation. The high levels in this study therefore indicate substantial impact of the determinants on the outcome.

Sick certified or not

The most important factor related to sickness certification or not when linking the results from the four papers together was the patient's own judgement of impaired work ability. This finding can be interpreted in two ways. Either 'It is the patient who decides when to be sick certified' or 'The patient knows when reduced work ability is hard to combine with occupational work'. Both interpretations ought to be considered.

During the period with high sick leave rates there was an intense media debate with many voices saying that physicians are in the hands of the patients when deciding on sick leave. In the review report from SBU¹³¹ on sickness absence from 2004, few studies reported on physicians' sick-listing practices¹³². There was limited scientific evidence that physicians perceive sick-listing duties to be difficult and problematic.

There was also limited scientific evidence that the quality of the sickness certificates was deficient¹³³⁻¹³⁴. No studies were found reflecting who had the greatest influence on the decision. When the authors of the SBU report discussed whether the patients and physicians agree on the need for sick leave, they referred to two studies, none of which indicated advantage for the patient. Englund's¹³⁵ study suggested similar opinions between patient and physicians, and Löfvander¹³⁶ showed that when two independent physicians evaluated the situation, decisions on the level of work inability differed between these physicians and many of the patients on full time sick leave. According to Brage's¹³⁷ study based on case histories, patients and physicians judged being 'ill' and having a 'disease' differently, and patients were mostly more willing to sick certify than the physicians. Edlund's¹³⁸ study, based on interviews, showed that physicians rely on their patients' opinion on sick leave, but they experience frustration on the sickness certification commission.

According to Fleten¹³⁹ and Heymans¹⁴⁰, there is evidence that patients own predictions and their beliefs and expectations are important predictors for the length of sick leave and the return to work process¹³⁹⁻¹⁴¹. Larsen¹⁴² found that patient's own initiative relates more to sick leave than GP's, but

there is also evidence that patients and physicians agree on work ability¹⁴³. Reiso argued that physicians are better than patients to predict the length of short time sick leave, but that the patients are better predictors for prolonged episodes^{141, 144}.

McKinlay¹⁴⁵ reports from an experiment with videotaped patient-physician encounters that patient attributes (age, race, gender, socioeconomic status) had no influence on clinical decisions. In contrast, characteristics of physicians (medical speciality, race and age) interactively influenced medical decision-making. Thirty-nine percent of GPs in a Norwegian study by Gulbrandsen¹⁴⁶ admitted that they formulated medical certificates to support the patients to achieve what they wanted. Most common causes for such acts were to urge on treatment or referral, but even concerning sick leave one out of seven admitted this acting. Nevertheless, GPs assert that they issue their certificates based on correct facts. Hussey's¹⁴⁷ study on Scottish GPs revealed critical views on the British sickness certification system and that they 'develop various operational strategies' for the implementation of the system.

Thus, from the literature, no distinct conclusion can be drawn on who is the main actor for decision on sick leave, rather that the decision is a shared one. This also corresponds to the finding in Paper II that the strongest indicator for sickness certification were patient's and GP's assessment of reduced work capacity. The effects of patients' perceived work capacity and the GPs' assessment of the patients' work capacity revealed that 96% of patients who claimed work incapacity and locomotor pain and where the physician confirmed the work incapacity and assessed the condition as not primarily somatic were sick listed. In contrast, only 2% of the patients with perceived work capacity and no locomotor pain and where the physician confirmed the work capacity and assessed the condition as somatic were sick certified.

The findings from the final correlation analysis of the combined results (Table 15) suggest that GP attitudes are more important for the decision on sickness certification than are the patient's, which corresponds well with the findings of McKinlay¹⁴⁵.

Reason for encounter

The most common reason for encounter is pain in the musculoskeletal system, often perceived as caused by work¹⁴⁸. Patients in our study who consulted for complaints from the musculoskeletal system were found to have a threefold increased risk for sickness certification. This applied to the whole group of patients, but no significant increase of sickness certification for those who got a diagnosis of musculoskeletal disease was found.

There is evidence that psychosocial problems are associated with musculoskeletal problems^{124, 149} and it is common that the patient presents the complaint as musculoskeletal¹²³. If the problem behind the pain has surfaced, the diagnosis used may not be related to the locomotor system. On the other hand, job dissatisfaction is shown to cause sickness absence due to low back pain¹⁵⁰.

There is disagreement between physicians and non-medical professionals on whether to consider musculoskeletal pain as an illness and also, within the medical profession, whether it should qualify for sickness certification or not¹². A variety of psychosocial stressors have been shown to predict sick leave in the group of patients with back pain¹²⁶. Among 'frequent attenders' musculoskeletal problems are common¹⁵¹. When pain was presented as the reason for encounter in a group of immigrants, the patient could have either a focus on a disorder or a focus on the pain sensation itself. The latter group had a better outcome concerning rehabilitation¹⁵². According to Britt¹⁵³, disagreement between patients and their physicians on reason for encounter and on diagnosis occurred in at least 30% of encounters. The agreement on reason for encounter was better than for diagnoses.

Family

No association was found between family situation and sickness certification except that cohabiting and having no children was associated to a higher risk for sick leave. When reflecting on how a two-person family lives, one might imagine a mutual attentiveness between the two partners that promotes the recognition of even minor symptoms. In larger families the attention is spread among more people, while a person living alone may have nobody to discuss symptoms with.

Social or emotional support from the nearest is shown to increase sickness absence¹⁵⁴⁻¹⁵⁵. In the SBU report no evidence on influence on sick leave from family pattern was shown except a limited scientific evidence for an effect of divorce¹⁵⁶. Conflicts between work and family are reported to increase sickness absence¹⁵⁷⁻¹⁵⁸ and so are long domestic work hours¹⁵⁹ and for women who bear the main responsibility for housework and family¹⁶⁰⁻¹⁶².

Leisure time

Leisure time activities in several fields were included in the questionnaires, including exercise, hobbies, cultural and intellectual activities, social activities within and outside the family. Very few were related to sickness certification. The only item showing connection to sickness certification was, in

the group of patients who got an infectious disease diagnose, spending leisure time with others outside the family. Those patients had a lower probability to become sick certified than others. One interpretation might be that subjects with a good social network appreciate the personal relations formed at their working-place so much that they go to work in spite of symptoms of illness. In the research literature there is strong evidence that exercise reduces sick leave for low back pain at a one year follow-up¹⁶³.

Work

There is a multitude of studies on work related factors and sickness certification. Socioeconomic gradients at work are important¹⁶⁴. Blue collar workers have five times higher sick leave than white collar workers¹⁶⁵. Marmot coined the term ‘Status syndrome’ for this circumstance when it deals with health effects. Physical factors have been scrutinized. Physical workload is connected to sickness absence^{40, 46, 125, 166-167}, and several separate movements and loads are shown to connect to sick leave^{150, 168-171}.

Karasek and Theorell initiated important research on workload some 30 years ago. A hectic and psychologically demanding job, low decision latitude and low intellectual discretion are all related to increased risk for coronary heart disease (CHD) symptoms and premature CHD and cardiovascular disease (CVD) death¹¹⁷. They developed a model on demand – control – support, which is widely used, and findings on sick leave in accordance with the model are shown in many research reports, from large-scale studies such as Whitehall II^{154-155, 164, 172-173}, Gazel¹⁷⁴⁻¹⁷⁵ and Belstress¹⁷⁶⁻¹⁷⁷ to smaller studies.

There may be physical effects of the work load such as increased blood pressure or sleep disturbance¹⁷⁸, or problems which relate to experience of ill health. Factors found to relate to increased sick leave are high job strain^{125, 176, 179-180} and demands^{168, 181} and low control^{172, 182-184}, little possibility for decision-making^{149, 171, 174}, low support at work^{125, 155, 172, 174-176, 185-187}, job dissatisfaction^{150, 188-189}, organizational failings^{170, 190} or a combination of several of these factors^{126, 173, 177, 191-195}.

Job security is meant to influence on sickness certification¹⁶⁸. Fixed term employees are reported to take sick leave less often than permanent employees which was explained as an effect of presenteeism and selection mechanism^{45, 196-197}. Lay persons emphasize the importance of the employer when it is a question of return to work¹⁹⁸. Confidence in the management has even been shown to correlate with less injuries at work¹⁹⁹.

Among factors within the social sphere in this study, work related factors were by far the most important field relating to sick leave. In bivariate analysis, high demands, low intellectual discretion, low authority over decisions

and low social support all were related to higher frequency of sickness certification and so were worry about work related injury or illness and not getting on well at work. In multivariate analyses, the factors ‘social support’, ‘authority over decisions’, demands’ and ‘worry about disease or injury’ retained its significance. When combining the results from all four papers, low authority over decisions remained significantly related to increased sickness certification. These findings are well compatible with existing theories and earlier studies on workload and also in the job security sphere.

Psychosocial factors

Psychiatric diagnoses form a small group in this dataset. Two main reasons seem apparent. The psychiatric diagnoses were not as common in the mid-1990s as they are today and there has been a change in diagnostic panorama among reasons for sick leave. Musculoskeletal diagnoses have become less frequent and psychiatric diagnoses more frequent¹²⁰⁻¹²¹. Stress-related diagnoses increased towards the end of the 1990s²⁰⁰. This means that partly new groups might have appeared. Also, there might have been a change in physicians’ labelling of symptoms. Along with the attention paid to stress related conditions, a shift in the use of diagnoses may have occurred.

Secondly, the consultations, which are investigated in this study, are ‘first appointments’, *i.e.* no sick leave is at hand. Symptoms of stress may be presented as somatic symptoms and the psychiatric expression may not be evident at that time. Sick leave due to somatic conditions may be prolonged when psychiatric problems coexist²⁰¹ and there may be a co-morbidity of somatic and psychiatric diagnoses in long-term sickness absence²⁰².

Many studies have revealed connections between psychosocial load and sickness absence^{124, 156, 203-208}. Gulbrandsen^{123, 128} showed evidence that less than half of psychosocial problems were disclosed to GPs by patients with somatic reasons for encounter. When the physician knows the patient well, social problems are more likely to influence the outcome of the consultation²⁰⁹. So, gradually, the psychiatric component appears and shows as an important part of ongoing sickness certifications.

Several research reports show a relationship between psychosocial problems and sick leave^{101, 124}. A study by Campbell⁸⁵ showed that GPs had more positive beliefs about patients with a psychological problem and were more likely to offer them a sick note. Unemployment and economic factors play an important role by promoting psychosocial problems. Unemployment may have a promoting effect to take short term sick leave²¹⁰.

One factor in the psychological field is the perception of who is responsible for the condition, the ‘locus of control’. Many people with musculoskeletal pain see themselves as responsible for the managing of their condition²¹¹,

but when laying the responsibility outside themselves, the sick leave rate is increased³⁴.

Among psychosocial factors the phenomenon of ‘fear avoidance’ is abundant as a problem in sickness absence. By ‘fear avoidance’ is meant avoidance, because of fear, of movements or activities that are believed to cause for example pain problems. Several studies have shown a connection to complaints and sick leave with fear avoidant thoughts, patients’ as well as physicians’,^{126, 212-217} and the concept is analysed in a ‘State of the Art’ article²¹⁸. The finding of increased sickness certification risk when worrying about sickness or injury from work is a sort of fear avoidance of the same kind as that described by Linton¹²⁶.

Somatic disease

Few research articles provide evidence of a connection between severity of the medical disease and sick leave. Most reports end up in a conclusion that psychosocial or socio-economic factors are the main ones. A review from 2009 showed that determinants for sick leave due to low back pain mostly were non-medical¹²⁹. Even clearly somatic conditions showed relations to psychosocial conditions, such as airway infections in nurses aids²¹⁹ or after a laparoscopic cholecystectomy, where the strongest predicting factor for delayed return to work was low job satisfaction²⁰⁸. Preoperative expectations of convalescence and pain were also contributory factors²²⁰. A clear signal to the patient by recommending a short sick leave could in itself reduce the convalescence by 50-60%²²¹.

There was strong evidence in our study that the GP’s assessment of the condition as of somatic origin decreased the sickness certification risk by more than 80%. One explanation of this finding may be that a clearly somatic cause of the patient’s problem made it easier for the GP to evaluate both the patient’s functional impairments and potential work capacity and hence, in some cases, to abstain from sick certifying the patient. When the physician sees a patient with locomotor system pain but no objective signs of disease it may be more difficult to evaluate whether or not the patient is fit for work. In such a case it is likely that the physicians will share their patients’ negative views of their working capacity and sick certify.

However, there are somatic conditions related to sick leave. In a Norwegian study a higher sick leave and unemployment level was reported among IBD (inflammatory bowel disease) patients²²², and from Finland increased sick leave rates for patients with fibromyalgia alone or even more when comorbidity with other rheumatologic or psychiatric conditions²²³ was found. Asthma patients who perceived control over their fatigue were less sick cer-

tified²²⁴. Obesity was also found to relate to sickness absence in several studies^{40, 171, 183, 225} as was smoking^{171, 183, 225} and alcohol habits^{46, 121, 164, 226-227}.

A biological factor not to be forgotten is age, which naturally influences sick leave rates^{125, 171}. Fatigue may accompany physical diseases or be part of psychiatric conditions. Relations between fatigue and short and long-term spells of absence have been shown²²⁸.

GP factors

There were two main GP related factors that were found to relate to sickness certification in our material, length of experience in family medicine and work hours. There are contradictory studies on physicians' age in relation to use of sickness certification^{135, 99, 229-231}. In the bivariate analysis, an increase in relation to GP's age was found, which was ruled out by the length of experience in family medicine when using a multivariate regression technique for the analysis. Peterson found, in a study on hypothetical cases, a weak correlation between physicians with long experience in family medicine and proposing more sick leave⁹⁹. A young, un-experienced physician may be more careful to use the sickness certification instrument, for good, *i.e.* use it with watchful accordance to regulations, or for evil, not daring to take the responsibility for the patient's sickness absence.

To choose part time work can have several reasons. While in a period of life with small children and having many responsibilities to the family it is comprehensible to reduce work hours. Being engaged in commitments other than family but outside occupational work may be another reason for choosing part time work. There may also be life conditions reducing power and endurance behind a choice of reduced work time. Whether these conditions make a better understanding and sympathy for patients' insufficiency and suffering cannot be concluded from this study, but might be possible. More women than men in this study worked part time, but when adjusting for the influence of sex, 'part time work' still correlated to increased use of sickness certification.

An assumption that a GP with many fields of interest outside the occupational work has a greater understanding for a patient who fails to endure work strain may be speculative, but may be true. It is not unlikely that physicians, consciously or unconsciously, use themselves as yardsticks, also in judging what level of feeling ill one has to endure before being sick certified. Since the group of part time GPs was small, only twelve persons, the finding of increased sickness certification use for this group should be interpreted with caution.

Sex

Englund²³² found that female physicians proposed sick leave more frequently when presented with a case vignette than did male physicians. Our finding of no difference between the sexes in the use of sick leave certification corresponds to that reported by Tellnes²³⁰ and Rutle²³¹, but not to that of Englund. It should be noted that Englund used case vignettes, which does not necessarily reflect the same acting as in real patient encounters. Nevertheless, his finding might well be true, and be a question of study size, as he studied 299 female physicians as compared with only 11 in the study by Tellnes, and 28 in ours.

Law²³³ found that female GPs were more patient centred than male and also that female patients received a more patient centred service from GPs of their own sex. In an audit report it was found that female GPs had more sick-listing cases in their surgeries than male GPs¹⁸⁶. According to Brage²²⁹, male physicians assessed men's work ability as more reduced than women's. Among laymen asked to assess the need for sick leave, women suggested sick leave significantly more often than men²³⁴.

Women are generally considered to have higher sickness absence rates than men. A review article confirms this for short time absence and points out that country, age and professional group are important factors²³⁵. Swedish statistics show, however, that even long time sickness absence is overrepresented among women²³⁶. According to Tellnes, age³⁶ and diagnosis²³⁷ are factors to consider when looking at sex differences. Hensing²³⁸ found more sickness episodes among women due to psychiatric diagnoses than among men, but men have more sick days. A Dutch study found women less vulnerable than men to certain physical postures and load²³⁹. Wallman found that women had more sickness certification than men, but this sex difference disappeared after adjustment for potential confounders²⁴⁰.

Work conditions influence sickness absence also when gender is considered. Women working in male dominated occupations have higher sickness absence than those working in female dominated occupations²⁴¹⁻²⁴³. High sick leave rate among women have been found to be associated with age²⁴⁴, perceived high stress and strain^{161-162, 245-246}, low control and influence at work^{161-162, 245, 247-248}, self reported lack of competence for work tasks^{162, 246}, workplace dissatisfaction¹⁶¹⁻¹⁶² and physical load^{162, 244, 246}, but also that good control over working time reduces the adverse effects on work stress²⁴⁹. Sickness absence due to work-to-family conflicts is also reported among women who bear the main responsibility for housework and family¹⁶⁰⁻¹⁶² but also among men with higher socioeconomic status¹⁶⁰. By using a simple questionnaire, those at risk for long time sickness absence might be identified²⁵⁰. Sandmark²⁵¹ found that women (assistant nurses) with low rate of sick leave reported that they had 'a desirable job despite low status', that they had supportive networks and they showed coping ability.

Effect of sick leave

Until recently, little research on effects of sick leave has been performed. In a literature review from 2009 only two randomized studies were found where sick leave with no sick leave or a different duration or degree of sick leave was compared²⁵². Borchgrevink²⁵³ compared treatment of whiplash injuries; neck collar and two weeks sick leave versus no neck collar and no sick leave, with a better outcome for the latter group. Martimo²⁵⁴ reported the design of a randomised study where part time sick leave was compared with total elimination of work load for patients with musculoskeletal pain. No results from the study are presented so far.

The late professor Gösta Tibblin used to talk about ‘the drug sick leave’ with effects and adverse effects. The Whitehall II study²⁵⁵ reported an increased mortality after follow up at average 13 years after medically certified sick leave for major diagnoses such as circulatory diseases, surgical operations, psychiatric diagnoses but not for musculoskeletal disease. Wallman²⁵⁶ reported a higher mortality rate among persons on disability retirement, which was not explained by the disability pension diagnosis or other underlying disease. But there is also a report that the increased mortality risk of disability pensioners does not depend on early retirement per se but on poor health before early retirement²⁵⁷.

Women, who had experienced long-term sick leave, experienced persistent poor physical health at a follow up, but those who had a psychiatric disorder improved their health²⁵⁸. Löfvander²⁵⁹ has drawn attention to the iatrogenic effects of sick leave on pain and pain behaviour. In a questionnaire study most respondents on long term sick leave reported negative consequences of sick leave, mainly on development of salary and career²⁶⁰. The attitude towards part time sick leave was more positive. Among patients with chronic arthritis, sick leave was found as an independent risk factor for job loss²⁶¹, and among users of pharmaceutical drugs, sick leave and disability pension were two of several overrepresented conditions²⁶².

Comparison between effects of sick leave versus unemployment is not very far-fetched. Connections have been shown between several psychosocial loads and unemployment and also on negative health effects correlated to unemployment²⁶³. The responders in this study, GPs and patients, scored harmfulness to health from sick leave and unemployment high (Table 13). Although patients were a little bit more reluctant to the harmfulness from sick leave, there was no statistically significant difference between patients’ and GPs’ attitudes, and no correlation to whether the patient was sick certified or not was found.

Implications for the future

From previous research and from our study it can be concluded that there are certain parts of the sickness certification task that ought to be emphasized. Since the most important factor for issuing a sickness certificate seems to be the patient's own evaluation of work ability, the GP has to be aware of how the assessment of work ability is undertaken. A professional, patient centred attitude, not to risk arbitrariness in the decisions is of utmost importance. Methods for professional analyses of functional ability should be developed and learned by the GPs.

Most decisions on sick leave are uncomplicated, and the cases may be labelled as 'good sickness certifications', but those that are not, consume an un-proportionally large share of the surgery time. The GPs must learn to recognise the difficult cases at an early time, not to participate in initiating harmful sick leaves, and also to relieve the problems for themselves with the sickness certification consultations. Cases within the psychosocial field create most sick leaves and are often presented as somatic complaints in the beginning. A delay in revealing the true reason for the complaints may become deleterious for the patient. Of course, the patient must be involved in the judgements, even though the decision and the responsibility are with the GP.

Patient's work related factors are often not well known by the GP, but may contribute to a great deal to the patient's impairment. Not only physical load from different respects, but also factors that influence on the patient's well being at and belonging to the work place should be born in mind and be included in the history-taking. Being able to influence on decisions was the most important lesson from this study.

Conclusions

A general conclusion is that sickness certification is an action with several contributory elements.

The perception of the actual complaint is crucial. The most important factor related to sickness certification or not was the patient's own judgement of impaired work ability. A shared judgement and decision between the GP and the patient seems probable in most cases. A reason for encounter within the locomotor system was a major reason for becoming sick certified, although not with a diagnosis of musculoskeletal disease. Presenting a condition perceived as primarily somatic by the GP was less likely to generate a sick certificate.

The patient's family and leisure time circumstances did not seem to be very important as predictors for an initial sick leave period, except that living with somebody and having no children, which increased, or appreciate social contacts outside the family, which decreased sickness certification probability. Work related factors, in the field of demand – control – support were important, in particular weak authority over decisions in work, which increased sickness certification.

The physician impacts in several ways. A GP with long experience in family medicine and working part time seems have the influence to increase sickness certification rate.

Patients and physicians had similar levels of consent to the statements presented to them. The physicians' opinions related more to the outcome than the patients' opinions.

Summary in Swedish (svensk sammanfattning)

Vanligt förekommande vid allmänmedicinska konsultationer är ställningstagande till sjukskrivning. Många läkare upplever sjukskrivningsbedömningar som problematiska. Från att ha varit ett formellt effektuerande av en administrativ åtgärd har bedömningen genom åren kommit att utvecklas till ett behandlingsinstrument med bedömning av nytta/skada av åtgärden samtidigt som värderingen i förhållande till regelverket har blivit alltmer komplicerad. Från 1997 ökade sjukskrivningstalen kraftigt för att efter ett maximum 2002-2003 åter ha minskat till lägre nivåer än tidigare. I den allmänna debatten har sjukskrivningsfrågor under flera år varit vanliga medan forskningen om sjukskrivningspraxis fram till de allra senaste åren har varit sparsam. Att inhämta kunskap om ett område som berör många, såväl patienter som läkare och är en viktig del i välfärdssystemet, är angeläget.

Avhandlingen analyserar faktorer som har betydelse för allmänläkares åtgärd att sjukskriva i samband med konsultation. De fyra delarbetena baseras på enkätmaterial för totalt 67 allmänläkare och 642 icke pågående sjukskrivna patienter i Örebro län. Läkaren besvarade en enkät om sig själv, sin bakgrund och yrkeserfarenhet och en enkät för vart och ett av upp till tio patientbesök. Patienten vid dessa besök besvarade ett enkätformulär om hälsa, arbete, familj och fritid. I både patient- och läkarenkät ingick attitydfrågor om hälsa, sjukdom och socialförsäkringsfrågor. Utfallet var sjukskrivning med intyg eller inte.

Första delarbetet beskriver läkarrelaterade faktorer inverkan på åtgärden sjukskrivning eller inte vid det aktuella besöket. Utfallet analyserades dels för alla diagnoser, dels de båda största undergrupperna, infektionssjukdomar och muskuloskeletala sjukdomar. Dessa representerar två olika typer av sjukdomar: korta, ofta snabbt övergående infektionssjukdomar samt muskuloskeletala besvär som kan vara starten på ett längre sjukdomslidande. För hela gruppen var det läkare med lång erfarenhet i allmänmedicin som befanns sjukskriva oftare liksom deltidsarbetande läkare. För gruppen med infektionssjukdomar befanns läkarens deltidsarbete vara predicerande för sjukskrivning och för muskuloskeletala sjukdomar var det lång yrkeserfarenhet hos läkaren som hade betydelse för intygsutfärdandet. Genomgången AT-undervisning i försäkringsmedicin kunde också relateras till mer sjukskrivning av dem med muskuloskeletal diagnos.

I andra delarbetet analyseras hur medicinska faktorer hos patienten relaterar till sjukskrivning eller ej. Sjukförmåner kan beviljas för nedsatt arbetsförmåga till följd av sjukdom. I litteraturen går det inte att finna belägg för att sjukdomens allvarlighetsgrad kan kopplas till omfattning av sjukskrivning, däremot finns stark koppling till psykosociala faktorer. Vi fann att läkarens bedömning av om sjukdomen bedömdes vara somatisk eller ej var viktig predicerande faktor, såtillvida att patienter med somatiska besvär sjukskrevs i mindre utsträckning än övriga. Patienter som sökte för besvär från rörelseapparaten blev i större utsträckning sjukskrivna men inte under muskuloskeletal diagnos. Starkaste prediktorn för sjukskrivning var att både patient och läkare bedömde att patientens arbetsförmåga var kraftigt nedsatt.

I tredje delarbetet analyseras hur sociala faktorer, som familje-, fritids- och arbetssituation, hos patienten relaterar till sjukskrivning. Omfattande dokumentation finns för psykosociala och arbetsrelaterade faktorer inflytande på sjukfrånvaro. Vi fann att arbetssituationen relaterade till sjukskrivning såtillvida att socialt stöd på arbetet och högt beslutsutrymme i arbetet var faktorer som skyddade mot sjukskrivning medan oro för att bli skadad eller sjuk av arbetet ökade sjukskrivningsrisken. Familje- och fritidsfaktorer hade liten inverkan på sjukskrivning. Mönstret för de diagnostiska undergrupperna såg annorlunda ut. För patienter med infektionssjukdomar fanns en ökad sjukskrivningsrisk vid höga krav på arbetet samt minskad om patienten umgås med andra än familj och barn. Patienter med muskuloskeletal sjukdomar med oro för skada eller sjukdom av arbetet hade ökad sjukskrivningsrisk.

I fjärde delarbetet analyseras inflytandet av läkares och patienters attityder och åsikter för sjukskrivning. Arbetet baseras på patienters och läkares svar på identiska attitydfrågor. De var påfallande överens i sina åsikter, såtillvida att man i hög grad ansåg att lång frånvaro från arbetet på grund av sjukdom eller arbetslöshet kunde skada hälsan. Bra arbetstrivsel ansågs ge önskan om så kort frånvaro som möjligt. Tilltron till arbetsgivares villighet att ha deltidssjukskrivna anställda eller personer med sjukdom eller handikapp var låg, liksom tilltron till läkares kunskap om olika yrken. I förhållande till om patienten blev sjukskriven eller inte influerade läkares attityder påtagligt mer än patienters. Om läkaren ansåg sig veta mycket om olika yrken sjukskrevs i mindre omfattning, däremot mer om läkaren var positiv till kontroll av sjukskrivna, ansåg att arbetsgivare var positiva till deltidssjukskrivning eller ansåg att trötta och nedstämde personer skulle få vara sjukskrivna. Patientåsikt att arbetsgivare ville ha sjuka eller handikappade kvar skyddade mot sjukskrivning.

Sammanfattning av de fyra delarbetena ger vid handen att starkaste prediktorn för sjukskrivning är patientens egen bedömning av nedsatt arbetsförmåga. Detta kan betyda att 'patienten bestämmer' eller att 'patienten kan själv bedöma när arbetsförmågan är så nedsatt att det är oförenligt med arbe-

te'. Vi såg en stor samstämmighet mellan läkare och patient i bedömningen av kraftigt nedsatt arbetsförmåga, varför sannolikheten att beslutet om sjukskrivning eller ej var ett delat beslut mellan patient och läkare. Att söka för besvär från rörelseapparaten ökade sannolikheten för sjukskrivning, men inte med diagnos i gruppen rörelseorganens sjukdomar. Många problem med exempelvis psykosocial orsak kan manifesteras sig i besvär från rörelseapparaten, vilket får till följd att diagnosen blir inom annan diagnosgrupp. Att träffa en läkare som arbetar deltid eller en läkare med många års erfarenhet i allmänmedicin ökade också sannolikheten för sjukskrivning. En ung, oerfaren läkare kan vara försiktigare med att använda sjukskrivningsinstrumentet än den mer erfarne. Faktorer som att vara i en livsfas med stort åtagande utanför arbetet, eller att ha livsomständigheter som sätter ner krafterna kan vara bakgrund till att välja deltidsarbete. Att läkaren då har större förståelse för patientens lidande och nedsatta krafter eller att läkaren använder sig själv som måttstock för vad som krävs för att arbeta kan också relatera till att den deltidsskrivande sjukskriver mer. Dock bestod gruppen av deltidsskrivande läkare endast av tolv personer, varför resultaten bör tolkas med försiktighet. Bland skyddsfaktorer mot sjukskrivning sågs arbetsrelaterade faktorer som att ha stort inflytande över beslut i arbetet. Detta stämmer väl med tidigare teorier och fynd om den psykosociala arbetsmiljön. För gruppen med infektionssjukdomar var det mindre sjukskrivningsrisk om man tillbringade sin fritid med människor utanför familjen. Läkarens bedömning att det rörde sig om en kroppslig sjukdom var också en faktor som minskade risken för sjukskrivning. En förklaring kan vara att en kroppslig sjukdom är lättare att identifiera vid ett förstagångs besök, och att när det inte finns objektiva fynd, läkaren delar patientens negativa syn på arbetskapacitet. När attityder jämfördes mellan läkare och patienter var det tydligt att läkares attityder hade större relation till sjukskrivning än patienternas.

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Physician's questionnaire, self account

10. How often do you participate in the following further training activities?

	every week	once a month	every six months	never
"GP's days" training sponsored by a pharmaceutical company	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
CME-group	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
other training	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

11. Do you have undergraduate training in social insurance medicine?

yes	<input type="checkbox"/>
no	<input type="checkbox"/>

12. In what form and how often do you participate in discussions on patient related problems

	every week	once a month	every six months	seldom/never
physician's meetings in the practice	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Balint group	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
CME-group	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
meeting with social worker	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
other discussion	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

13. I have contact with the social insurance office on average

every week	<input type="checkbox"/>
every month	<input type="checkbox"/>
every six months	<input type="checkbox"/>
never	<input type="checkbox"/>

14. My contacts with the social insurance office are

in writing	<input type="checkbox"/>
by telephone	<input type="checkbox"/>
mini-rehabilitation meeting	<input type="checkbox"/>
other rehabilitation meeting	<input type="checkbox"/>
physicians' meetings with social insurance officers	<input type="checkbox"/>
other contact	<input type="checkbox"/>

Consider the following statements. *(Mark your opinion by a cross on the scale)*
(SIO = Social Insurance Office)

15. At present, the function of the SIO is to assist the sick person in returning to work as quickly as possible.

Disagree | _____ | Agree

16. The SIO's participation in rehabilitation work is mainly formal.

Disagree | _____ | Agree

17. The SIO's participation is an asset in rehabilitation work.

Disagree | _____ | Agree

18. The physician has the greatest influence on rehabilitation work.

Disagree | _____ | Agree

19. The SIO has the greatest influence on rehabilitation work.

Disagree | _____ | Agree

20. The employer has the greatest influence on rehabilitation work.

Disagree | _____ | Agree

21. The patient has the greatest influence on rehabilitation work.

Disagree | _____ | Agree

22. Patient, physician, SIO and employer can find a shared goal for the rehabilitation work through discussions.

Disagree | _____ | Agree

23. SIO officers have good knowledge of work in various occupations.

Disagree | _____ | Agree

24. The SIO's regulations are an obstacle to rehabilitation work.

Disagree | _____ | Agree

25. The SIO's regulations are an asset in rehabilitation work.

Disagree | _____ | Agree

26. It is a good thing that social insurance officers make home visits to ensure that there is no cheating with sickness certification.
Disagree | _____ | Agree
27. The SIO's advising physicians see to the best interests of the patient.
Disagree | _____ | Agree
28. The SIO's advising physicians act on the basis of overly detailed regulations.
Disagree | _____ | Agree
29. Personal problems and worries may influence the pain a patient has from a shoulder complaint.
Disagree | _____ | Agree
30. Patients should be allowed to be on sick leave when they are tired and depressed.
Disagree | _____ | Agree
31. Many people report sick without being ill.
Disagree | _____ | Agree
32. Many people are on long-term sick leave without being ill.
Disagree | _____ | Agree
33. If a person gets on well at his/her job, he/she will want to be on sick leave for as short a time as possible.
Disagree | _____ | Agree
34. Sick leave benefits encourage unnecessary sick listing.
Disagree | _____ | Agree
35. If a patient asks to be sick listed, the physician has no choice but to sick list him/her.
Disagree | _____ | Agree
36. A physician's work situation affects his/her sick listing practices.
Disagree | _____ | Agree
37. Physicians have good knowledge of work in various occupations.
Disagree | _____ | Agree

38. The physician's decision on sick listing is sometimes in conflict with the patient's opinion.
Disagree | _____ | Agree
39. I sometimes sick list a patient even when it is not medically justified.
Disagree | _____ | Agree
40. I sometimes sick list a patient for social reasons.
Disagree | _____ | Agree
41. The social insurance system does not encourage job seeking.
Disagree | _____ | Agree
42. Today's social insurance system is good.
Disagree | _____ | Agree
43. Most employers are eager to have employees with a disease or a handicap at the workplace.
Disagree | _____ | Agree
44. Most employers have a positive attitude towards part time sick leave.
Disagree | _____ | Agree
45. Being unemployed for a long time is harmful to one's health.
Disagree | _____ | Agree
46. Being on sick leave for a long time is harmful to one's health.
Disagree | _____ | Agree
47. My general health is good.
Disagree | _____ | Agree
48. I get on well at my job.
Disagree | _____ | Agree
49. My knowledge of the Social Insurance System is insufficient.
Disagree | _____ | Agree

50. The number of patients on my list in 1995 was
(last known data)

51. At this surgery our staff of physicians is
- much too large
 - somewhat large
 - adequate
 - somewhat small
 - much too small

52. A this surgery
- patients have open access to the surgery
 - patients have open telephone access to the
physician every day
 - appointments are mostly planned directly by
the physician
 - appointments are mostly planned by the nurse
 - appointments are mostly planned in writing

Thank you for your participation!

Physician's questionnaire on appointment

Patient's questionnaire

Questions about your job

*If you have been unemployed for **more than one year**, go on to question 29.*

If you are working or are unemployed since less than one year, please answer the questions relative to your last job.

	always	mostly	some- times	seldom	never
9. Can you influence the pace at which you work?	<input type="checkbox"/>				
10. Can you decide <i>what</i> to do during the working day?	<input type="checkbox"/>				
11. Can you influence <i>how</i> you carry out your work?	<input type="checkbox"/>				
12. Do you find your job stimulating?	<input type="checkbox"/>				
13. Do you think your job is considered important in society?	<input type="checkbox"/>				
14. Can you confer with your co-workers on difficult matters?	<input type="checkbox"/>				
15. Can you get support from your supervisor/manager on difficult matters?	<input type="checkbox"/>				
16. Is being together with your co-workers important to you?	<input type="checkbox"/>				
17. Is there a good atmosphere at your workplace?	<input type="checkbox"/>				
18. Does your work demand a high level of skill or expertise?	<input type="checkbox"/>				
19. Does your job require you to take the initiative?	<input type="checkbox"/>				
20. Do you get your work done on time?	<input type="checkbox"/>				
21. Do you worry about being injured at or becoming ill from your work?	<input type="checkbox"/>				
22. Do you worry about changes in your work situation (dismissal, change of organisation, etc.)?	<input type="checkbox"/>				
23. Can you alternate between easy and difficult tasks?	<input type="checkbox"/>				
24. Do you have the possibility of learning new things through your job?	<input type="checkbox"/>				
25. Do you have to do the same thing over and over again?	<input type="checkbox"/>				
26. Does your work often involve conflicting demands?	<input type="checkbox"/>				

27. Does your job make you feel *physically* exhausted?
28. Does your job make you feel *mentally* exhausted?

On the scales below, try to estimate your agreement or disagreement with the various statements. The scales range from "disagree" to "agree". Mark your opinion by a cross on the line somewhere along the scale.

29. I get on well at my job.
Disagree _____ | Agree
30. Most employers are eager to have employees with a disease or a handicap at the workplace.
Disagree _____ | Agree
31. If a person gets on well at his/her job, he/she wants to be on sick leave as short a time as possible.
Disagree _____ | Agree
32. Physicians have good knowledge of work in various occupations.
Disagree _____ | Agree
33. Being unemployed for a long time is harmful to one's health.
Disagree _____ | Agree
34. Most employers have a positive attitude towards part time sick leave.
Disagree _____ | Agree

Questions about your health:

35. How often were you on sick leave (with or without a doctor's certificate) during the last year before the consultation?
- | | |
|-------------------|--------------------------|
| not at all | <input type="checkbox"/> |
| 1-3 times | <input type="checkbox"/> |
| 4-6 times | <input type="checkbox"/> |
| more than 6 times | <input type="checkbox"/> |

36. What was your total time on sick leave the year before the consultation?
- one week or less
 - more than one week but less than one month
 - one month or more, but less than three months
 - three months or more
37. How do you assess your general health status?
- I am mostly healthy and feel well
 - I have one or more diseases, but I feel well most of the time
 - I have no known diseases, but I feel fairly unwell
 - I have one or more diseases and I seldom or never feel well

How do you think diseases and health problems should be handled?

Mark a cross on the line for every statement regarding how you feel it corresponds to your opinion

38. When you have a cold, it is important to stay at home in order not to contaminate your workmates.
Disagree _____ | Agree
39. You should be allowed to be on sick leave when you are tired and depressed.
Disagree _____ | Agree
40. It is a good thing that social insurance officers make home visits to ensure that there is no cheating with sickness certification.
Disagree _____ | Agree
41. Being on sick leave for a long time is harmful to one's health..
Disagree _____ | Agree
42. If you do not have a fever you do not need to be on sick leave for a common cold.
Disagree _____ | Agree
43. You recover more quickly from illness if you rest and take it easy.
Disagree _____ | Agree

44. Family situation – tick the alternative that is most relevant to your situation

- I live: alone
- with parent(s)
- with wife/husband/live-in partner
- with wife/husband/live-in partner
and (number) children
- with (number) children

Questions about your opportunities for using your leisure time for activities making you feel good:

45. Which of these activities do you do in your leisure time?

(One cross in each row)

	seldom or never	once a month	once a week	two or more times a week	daily
a. I exercise at least 20 minutes at a pace that makes me sweaty and out of breath.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. I exercise at least 20 minutes at a quick pace but without being sweaty or out of breath.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. I am active outdoors at a calm pace (walking, garden work, hunting, fishing, etc.).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. I spend time with my family/children.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. I spend time with other people than family.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. I read, listen to music, play computer games, look at TV/video, etc.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g. I do hobby activities at home (needlework, woodwork, repair work, etc.).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h. I participate in group activities outside the home (study circle, hobby group, music group, etc.).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i. I participate in club or church or trade union activities or similar.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
j. I go to the cinema, theatre, dancing, football games or similar.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
k. other	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Questions about the present consultation:

46. Why did you contact the doctor? *(More than one cross permitted)*

For:

- complaints/pain in back, neck, arms/hands, legs/feet
- complaints/pain in abdomen/digestion
- anxiety, nervousness, depression or insomnia
- complaints/pain in chest or heart
- complaints/pain in respiratory tract
- complaints/pain in urinary tract
- headache, dizziness or balance problems
- rash, eczema, or other skin eruptions
- tiredness
- fever, possible infection
- injuries from accidents or similar (i.e. wounds, swellings, burns)
- complaints/pain in genital tract, menstrual disorders
- complaints/pain in connection with eyes/vision or ears/hearing
- other,
- specify

47. Did these complaints/pains keep you from
(One cross in each row)

	not at all	moderately	very much
performing everyday pursuits at home	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
seeing friends	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
taking care of yourself	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
performing your general leisure time activities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
sleeping	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

48. Did the complaints/pains keep you from

(One cross in each row)

	not at all	moderately	very much	not applicable
occupational work	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
spending time with your family	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
taking care of your children	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
other		<input type="checkbox"/>	<input type="checkbox"/>	

49. Had you had previous consultations with the physician you saw this time?

no, I had never seen this physician before	<input type="checkbox"/>
yes, occasionally	<input type="checkbox"/>
yes, many times	<input type="checkbox"/>

How important was it to you to get help with the matters below at specifically this appointment? (One cross on the line for each statement!)

50. To find out the cause of the complaints.

Very important	_____	Not important at all
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51. To find out if it was serious

Very important	_____	Not important at all
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52. To get medication to alleviate/cure the condition

Very important	_____	Not important at all
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53. To have tests

Very important	_____	Not important at all
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54. To get a referral to a specialist, x-ray, etc.

Very important	_____	Not important at all
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55. To be sick listed

Very important	_____	Not important at all
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56. To get a referral for treatment (to a physiotherapist, psychologist, etc.)
 Very important | _____ | Not important at all

57. To have the opportunity, in dialogue with the doctor, to get advice on what could be done to recover
 Very important | _____ | Not important at all

58. Other
 Very important | _____ | Not important at all

59. How much did you want to be sick listed? not at all
 ¼-time
 half time
 ¾-time
 full time
 could not decide

60. If you did **NOT** want to be sick listed by the doctor: why?
 my work capacity was not much affected
 I could not afford to be on sick leave
 sickness absence causes great problems at my work
 not needed, I was free from work for another reason
 I had reported sick but did not need a certificate
 other reasons

61. How long did you want to be on sick leave?
 (If you did NOT want to be on sick leave, go on to question 62)
 1-3 days
 4-7 days
 8-14 days
 15-29 days
 30 days or more
 could not decide

62. Would it have been necessary to be sick listed if you had another type of occupation?
- yes
- no
- do not know
63. Was sick listing brought up during the consultation?
- no
- yes, by the doctor
- yes, by me
- yes, but I do not remember by whom
64. Were you sick listed?
- no
- yes, 1/4-time
- yes, half time
- yes 3/4-time
- yes, full time
65. For how long were you sick listed?
- 1-3 days
- 4-7 days
- 8-14 days
- 15-29 days
- 30 days or more
66. How was the consultation carried out?
- | | yes | no |
|---|--------------------------|--------------------------|
| the doctor asked me questions | <input type="checkbox"/> | <input type="checkbox"/> |
| the doctor examined me | <input type="checkbox"/> | <input type="checkbox"/> |
| the doctor or a nurse took tests | <input type="checkbox"/> | <input type="checkbox"/> |
| the doctor consulted someone else about my complaints | <input type="checkbox"/> | <input type="checkbox"/> |

67. What did the doctor get to know about your job situation during the consultation?

(Tick one box for each question)

	yes	no	the doctor already knew
The doctor asked/I told the doctor:			
where I work	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
what I do at my job	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
how I perform my work tasks	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
how much I work (full time, part time)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
how I get to and from my work	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
how the complaints would influence my work capacity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

68. Did the doctor, during the consultation, get to know something else about your situation that you think is important to how you felt?

(Tick whatever boxes are relevant)

matters concerning my job situation, for example disagreements, heavy workload, problem with workmates or manager, risk for unemployment	<input type="checkbox"/>
childcare problems	<input type="checkbox"/>
financial problems	<input type="checkbox"/>
family problems	<input type="checkbox"/>
illness or need for care in the family	<input type="checkbox"/>
recent death in the family or a close relative	<input type="checkbox"/>
change of housing, place or country	<input type="checkbox"/>
other, describe shortly.....	<input type="checkbox"/>

69. How were you informed of the results of the examination at the consultation?

Tick the most relevant alternative. **Only one tick!**

the doctor and I talked about my complaints	<input type="checkbox"/>
I asked the doctor and he/she answered	<input type="checkbox"/>
I received no information	<input type="checkbox"/>

70. Did you get a referral for another examination or treatment because of your complaint/pain

yes	<input type="checkbox"/>
no	<input type="checkbox"/>

for what kind of treatment/examination?

71. What measures did the doctor suggest you to take in order to recover?

- I received a prescription or was recommended an over the counter drug
- I got advice on what to eat or drink
- I got advice on exercise
- I got advice on smoking
- I got advice on what to do or avoid doing
- other

72. Were other measures suggested because of your health status?

- the doctor asked if he/she could contact the social insurance office
- I got advice on contact with work
- another visit was scheduled
- a telephone appointment was scheduled
- other

73. What do you think was important for the doctor's decision to sick list you or not to sick list you?

(Tick one box in each row)

	very great importance	great importance	some importance	no importance	do not know
the doctor's assessment from examination and tests	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
the doctor's assessment of my health status based on my medical history	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
the doctor's assessment of my ability to cope with my work	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

74. How did you experience your consultation at the surgery?

	totally	mainly	neither nor	not very much	not at all
I was well treated by the staff at the surgery	<input type="checkbox"/>				
waiting time was reasonable	<input type="checkbox"/>				

75. How did you experience the doctor during the consultation?
Tick one box in each line!

	completely	mostly	fairly	not at all	do not know
The doctor was:					
competent	<input type="checkbox"/>				
calm	<input type="checkbox"/>				
sensitive	<input type="checkbox"/>				
experienced	<input type="checkbox"/>				
thorough	<input type="checkbox"/>				
understanding	<input type="checkbox"/>				
committed	<input type="checkbox"/>				
proper	<input type="checkbox"/>				

76. How do you regard the results of the consultation?

I am completely satisfied	<input type="checkbox"/>
I am rather satisfied	<input type="checkbox"/>
I am neither satisfied nor dissatisfied	<input type="checkbox"/>
I am rather dissatisfied	<input type="checkbox"/>
I am very dissatisfied	<input type="checkbox"/>

77. If you have any comments on our questionnaire and the questions, please write them here or continue on a separate piece of paper.

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Thank you for your participation!

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