

FREQUENT ATTENDERS IN PRIMARY HEALTH CARE

A cross-sectional study of frequent attenders' psychosocial and family factors, chronic diseases and reasons for encounter in a Finnish health centre

**SIMO
JYVÄSJÄRVI**

Department of Public Health Science and
General Practice, University of Oulu
Health Centre of Oulainen,
Unit of General Practice,
University Hospital of Oulu
Department of Psychiatry,
University of Oulu

OULU 2001



SIMO JYVÄSJÄRVI

**FREQUENT ATTENDERS IN
PRIMARY HEALTH CARE**

A cross-sectional study of frequent attenders' psychosocial and family factors, chronic diseases and reasons for encounter in a Finnish health centre

Academic Dissertation to be presented with the assent of the Faculty of Medicine, University of Oulu, for public discussion in the Auditorium I of the Institute of Dentistry (Aapistie 3), on September 7th, 2001, at 12 noon.

OULUN YLIOPISTO, OULU 2001

Copyright © 2001
University of Oulu, 2001

Manuscript received 3 July 2001
Manuscript accepted 30 July 2001

Communicated by
Professor Ville Lehtinen
Professor Jussi Kauhanen

ISBN 951-42-6446-0 (URL: <http://herkules.oulu.fi/isbn9514264460/>)

ALSO AVAILABLE IN PRINTED FORMAT

ISBN 951-42-6445-2

ISSN 0355-3221 (URL: <http://herkules.oulu.fi/issn03553221/>)

OULU UNIVERSITY PRESS
OULU 2001

Jyväsjärvi, Simo, Frequent attenders in primary health care A cross-sectional study of frequent attenders' psychosocial and family factors, chronic diseases and reasons for encounter in a Finnish health centre

Department of Public Health Science and General Practice, University of Oulu, P.O.Box 5000, FIN-90014 University of Oulu, Finland, Health Centre of Oulainen, P.O.Box 13, FIN-86301 Oulainen, Finland, Unit of General Practice, University Hospital of Oulu, P.O.Box 22, FIN-90221 Oulu, Finland, Department of Psychiatry, University of Oulu, P.O.Box 5000, FIN-90014 University of Oulu, Finland

2001

Oulu, Finland

(Manuscript received 3 July 2001)

Abstract

The aim of this cross-sectional controlled study was to determine frequent attenders' chronic diseases and their reasons for encounter in primary health care. Furthermore, the study aimed to determine the associations of social, psychological and family factors with frequent attendance in a Finnish health centre.

Patients who made eight or more annual visits to physicians in the health centre during one year were defined as frequent attenders (FA). All the FAs during 1994 (N = 304) and 304 randomly selected age- and sex-matched controls constituted the study population. The data were collected from annual statistics, medical records and postal questionnaires. Over one third of the study population was interviewed. International Classification of Primary Care (ICPC) was used to determine the reasons for encounter and Symptom Checklist -36 (SCL-36) to assess the psychological distress. Toronto Alexithymia Scale -20 (TAS-20) was used as a measure of alexithymia and Whiteley Index (WI) to determine hypochondriacal beliefs.

The results showed that 4.7% of the whole population aged 15 years or older in Oulainen were FAs. They accounted for 23.5% of all visits made within the respective age group. The mean age of the FAs was 49.8 years. Over two thirds of them were female. The FAs had lower basic education and occupational status than the controls. The FAs visited physicians in the health centre mostly for reasons related to the musculoskeletal, respiratory and digestive systems. There appeared to be more chronic diseases among the FAs than among the controls. The FAs had over three times more mental disorders than the controls.

The interviewed FAs had significantly more psychological distress, somatization and hypochondriacal beliefs than the controls. The risk of frequent attendance was higher in the older family life cycle phases than in the younger family life cycle phases. Multivariate analyses showed chronic somatic disease and hypochondriacal beliefs to be risk factors for frequent attendance. Concurrence of somatization and hypochondriacal beliefs increased the risk to be a FA.

As a conclusion, the results emphasize the need to consider the FAs' own bodily concerns expressed as hypochondriacal beliefs when managing them. Furthermore, the study implicates a need to integrate the biomedical, psychological and social dimensions in the care of FAs in primary health care.

Keywords: community health services utilization, morbidity, somatoform disorders

Non satis scire

To my family

Acknowledgements

This study was carried out in the Health Centre of Oulainen in co-operation with the Department of Public Health Science and General Practice and the Department of Psychiatry, Oulu University, and the Unit of General Practice, Oulu University Hospital. The topic and design of the study were the result of joint brainstorming with Professor Sirkka-Liisa Kivelä, M.D., Ph.D., the former Head of the Department of Public Health Science and General Practice and Unit of General Practice, Oulu University Hospital, Professor Erkki Väisänen, M.D., Ph.D., and Professor Sirkka Keinänen-Kiukaanniemi, M.D., Ph.D., in the late 1993. It seemed natural to continue the interesting tradition of research concerning the problems of frequent attenders, which had been started in Oulu University by Professor Pekka Larivaara, M.D., Ph.D. in the 1980's.

I was lucky to have a good and versatile interdisciplinary team of supervisors. First, I wish to express my sincere gratitude to professor Sirkka Keinänen-Kiukaanniemi, M.D., Ph.D., Head of the Department of Public Health Science and General Practice, for her inspiring and encouraging attitude and her wealth of new ideas during all phases of this study and for still leaving me space to work independently.

I am deeply grateful to Professor Erkki Väisänen, M.D., Ph.D., for his encouragement and supportive attitude as a supervisor and for appreciating the systemic and humane approach to the topic.

I am deeply grateful to Professor Sirkka-Liisa Kivelä, M.D., Ph.D., for her supervision and guidance of a novice researcher at the beginning of this study and for teaching me critical scientific thinking.

I also express my sincere thanks to Professor Pekka Larivaara, M.D., Ph.D., for his patient contribution in the supervision of this study and the expertise based on his own studies on this topic.

I am indebted to Professor Ville Lehtinen, M.D., Ph.D., and Professor Jussi Kauhanen, M.D., Ph.D., for their valuable recommendations and constructive criticism with regard to the preparation of the final manuscript.

My sincere thanks are due to my co-author Professor Matti Joukamaa, M.D., Ph.D., for his enthusiasm in making me acquainted with psychosomatic research and the concept

of alexithymia and for his prompt and detailed comments on the manuscripts of the original papers and the final manuscript.

I wish to express my warmest thanks to my co-workers in the Department of Public Health Science and General Practice. The discussions with Liisa Hiltunen M.D., Ph.D., Pekka Honkanen M.D., Ph.D., Keijo Koski M.D., Ph.D., Heikki Luukinen M.D., Ph.D., Ulla Rajala, M.D., Ph.D., and Mauri Laakso, M.D., gave me valuable advice and help in many theoretical and practical questions during this study. I also wish to express my sincere thanks to Professor Esko Kumpusalo, M.D., Ph.D., for his support and help.

I am much obliged to Professor Esa Läärä, M.Sc., Risto Bloigu, M.Sc., and Docent Pentti Nieminen, Ph.D., for their invaluable help and guidance in the messy field of statistical methodology.

I want to express my special thanks to the staff of the Department of Public Health Science and General Practice. I wish to thank Mr. Pasi Puukari and Mrs. Marja Ruuth for careful data entry. I owe my thanks to the data operators, especially Mr. Paavo Mäkinen, for their help in the statistical analyses. The staff in the office, Mrs. Aino Räänä and Mrs. Ritva Mannila, deserve my thanks for their kind and helpful service. My warmest thanks go to Mrs. Seija Martinoja for her kind and practical help.

I am deeply grateful to Professor Matti Isohanni, M.D., Ph.D., Head of the Department of Psychiatry in Oulu University, for his encouraging and supporting attitude and counselling during my doctoral studies. I wish to present my special thanks to the staff of the Department of Psychiatry, especially Mrs. Helinä Hakko, Ph.D., for her kind help with the problems of statistical software and Mrs. Helena Vörlin and Mrs. Raija Anttonen for their friendly help.

I am deeply grateful to my employer, the Oulainen Health District, for the understanding and support towards my study. Without such a favourable and flexible atmosphere, this project might have failed. Especially, I owe my gratitude to Ahti Mäenpää, M.D., Medical Director, for his forbearing understanding when I presented repeated applications for leave of absence from my duties. I also wish to thank Ritva Lämsä, Financial Director, for her kind and supporting help during this project. Special thanks are due to my colleagues and the staff in the Health Centre of Oulainen. I appreciated the help of you all during the data collection and your sensible encouragement during these years. The help of our paramedical team was invaluable during the retrieval of medical records from the archives, and extra thanks are due to Mr. Pauli Ulmonen for his huge task to collect the data of x-ray visits.

I was happy to have two talented and conscientious nurses to take care of the interviews of the study. I express my warmest thanks to Mrs. Päivi Haapakoski and Mrs. Tuula Lehtola for their invaluable and persistent contribution when interviewing the study subjects.

Special acknowledgements go to Mr. Markku Vielma, Software Designer in Tietoenator Oyj, who was responsible for the selection of the study groups from the annual statistics of the health centre. Also, I want to thank Mr. Jaakko Pukkila, ADP-System Designer in Northern Ostrobothnia Hospital District ADP-Center, for his kind help in providing the study subjects' utilization data from the Northern Ostrobothnia Hospital District.

I am indebted to Professor Simo Kokko, M.D., Ph.D., National Research and Development Centre for Welfare and Health (STAKES) for his valuable advice in

designing this study. I am also grateful to Professor Hannu Virokannas, M.D., Ph.D., for his constructive criticism and support in planning the study.

I wish to thank warmly the staff of the library of the Medical Faculty and the Department of Psychiatry, University of Oulu, and the library of Kastelli Research Center.

I am really grateful to Mrs. Sirkka-Liisa Leinonen, authorized translator, for her qualified revision of the English language of the manuscripts and for flexible co-operation.

I sincerely thank the participants of the study, the over 600 persons in Oulainen who made this project possible. I also owe an apology to my patients. I sometimes felt that my leaves of absence resulted in a neglect of your care.

This study has been supported by grants from Emil Aaltonen Foundation and the Northern Ostrobothnia Hospital District.

Finally, I owe my heartfelt gratitude to my loving family. My warmest thanks go to my wife Arja for love and support throughout these long years, during which she had to bear my absence, both physical and mental, when I got engrossed in the analyses or writing or was just absent-mindedly wandering in my thoughts. I want to thank sincerely our son Heikki for his interested empathy and understanding of my study. Special thanks go to our son Jussi for bringing me back to reality with his intensive drum solos and for giving me an opportunity to relax during our joint fly-fishing trips to Lapland. I warmly thank our daughter Mari for reminding me of the essence of life.

Oulainen, June 2001

Simo Jyväsjärvi

Abbreviations

BDI	Beck Depression Inventory
CI	confidence interval
CMI	Cornell Medical Index
CO	control
DAS	Dyadic Adjustment Scale
DIS	Diagnostic Interview Schedule
DSM-III, DSM-IV	Diagnostic and Statistical Manual of Mental Disorders Edition 3. and 4.
ECA	Epidemiologic Catchment Area
FA	frequent attender
GHQ	General Health Questionnaire
GP	general practitioner
HC	health centre
HMO	Health Maintenance Organization
ICD-9	International Classification of Diseases 9 th Revision
ICD-10	International Classification of Diseases 10 th Revision
ICHPPC-2	International Classification of Health Problems in Primary Care-2
ICPC	International Classification of Primary Care
MBPS	Münchausen by proxy syndrome
MCI	Marital Communication Inventory
N.A.	not applicable
NHP	Nottingham Health Profile
OR	odds ratio
PTSD	posttraumatic stress disorder
SCL-36, SCL-25, SCL-90	Symptom Checklist-36, Symptom Checklist-25, Symptom Checklist-90
SD	Standard deviation
STAKES	National Research and Development Centre for Welfare and Health

TAS-20	Toronto Alexithymia Scale –20
UK	United Kingdom
UKKI study	Uusikaupunki – Kemijärvi study (Social Psychiatric Investigation of the Social Insurance Institute)
US	United States
WHO	World Health Organisation
WI	Whiteley Index

List of original publications

- I Jyväsjärvi S, Keinänen-Kiukaanniemi S, Väisänen E, Larivaara P & Kivelä S (1998) Frequent attenders in a Finnish health centre: morbidity and reasons for encounter. *Scand J Prim Health Care* 16: 141-148.
- II Jyväsjärvi S, Joukamaa M, Väisänen E, Larivaara P, Kivelä S & Keinänen-Kiukaanniemi S (1999) Alexithymia, hypochondriacal beliefs, and psychological distress among frequent attenders in primary health care. *Compr Psychiatry* 40: 292-298.
- III Jyväsjärvi S, Joukamaa M, Väisänen E, Larivaara P, Kivelä S & Keinänen-Kiukaanniemi S (2001) Somatizing frequent attenders in primary health care. *J Psychosom Res* 50: 185-192.
- IV Jyväsjärvi S, Väisänen E, Larivaara P, Kivelä S-L & Keinänen-Kiukaanniemi S Somatization, family life cycle and marital satisfaction among frequent attenders in primary health care. (submitted in *Psychosomatics*)

Original articles are referred in the text by Roman numerals I-IV (Paper I-IV).

Contents

Abstract	
Acknowledgements	
Abbreviations	
List of original publications	
Contents	
1 Introduction	17
2 Review of the literature	19
2.1 Use of health care services	19
2.1.1 Theoretical aspects of use of health care services	20
2.1.1.1 Andersen's behavioral model	20
2.1.1.2 Purola's model	20
2.1.1.3 Antonovsky's model	20
2.1.1.4 Health belief model	21
2.1.1.5 Biopsychosocial model and use of health care	21
2.1.2 Use of health care services in Finland	21
2.2 Frequent attenders	22
2.2.1 Definition	22
2.2.2 Prevalence of frequent attendance	31
2.2.3 Frequent attenders' use of health services	31
2.2.3.1 Use of primary health care	31
2.2.3.2 Use of secondary (specialized) health care	31
2.2.3.3 Doctor shoppers	32
2.2.3.4 Out-of-hours frequent attenders	32
2.2.3.5 Natural course of frequent attendance	32
2.2.4 Frequent attenders' use of health services - related factors	33
2.2.4.1 Perceived health	33
2.2.4.2 Health behavior and needs	34
2.2.4.3 Symptoms	34
2.2.5 Reasons for encounter	34
2.2.6 Chronic diseases of frequent attenders	36
2.2.6.1 Chronic somatic diseases of frequent attenders	36

2.2.6.2	Chronic mental disorders of frequent attenders.....	37
2.2.7	Psychological factors related to frequent attendance	38
2.2.7.1	Stress	38
2.2.7.2	Stressful life events	38
2.2.7.3	Psychological distress	38
2.2.7.4	Depression.....	39
2.2.7.5	Somatization.....	39
2.2.7.6	Alexithymia	41
2.2.7.7	Hypochondriasis.....	42
2.2.7.8	Psychiatric comorbidity among frequent attenders	42
2.2.8	Social factors relating to frequent attendance	43
2.2.8.1	Sociodemographic backgrounds of frequent attenders.....	43
1.1.1.1.	Social support and frequent attenders	44
2.2.9	Family factors relating to frequent attendance	44
2.2.9.1	Family structure and interaction among frequent attenders.....	45
2.2.9.2	Family life cycle.....	45
2.2.9.3	Marital relationship	46
2.2.9.4	Münchhausen by proxy syndrome	46
2.3	Summary of the literature.....	46
3	Objectives of the study.....	48
4	Subjects and methods.....	49
4.1	Health centre of Oulainen	49
4.2	Criteria for a frequent attender	49
4.3	Study population	49
4.4	Study design.....	50
4.5	Variables	50
4.5.1	Variables collected from medical records.....	50
4.5.2	Variables collected from annual statistics.....	51
4.5.3	Variables measured with the postal questionnaire	51
4.5.4	Variables measured in the personal interview and with the interview questionnaire	52
4.6	Statistical analyses	53
4.7	Approval by Ethical Committee	53
5	Results.....	54
5.1	Prevalence and sociodemographic characteristics of frequent attenders (Paper I). 54	
5.1.1	Prevalence of frequent attendance and use of health care services in the health centre	54
5.1.2	Age distribution	54
5.1.3	Sociodemographic background.....	55
5.2	Self-rated health and health-related quality of life	55
5.3	Frequent attenders' main reasons for encounter (Paper I)	55
5.4	Chronic diseases of frequent attenders (Paper I)	56
5.5	Psychiatric symptoms and disorders assessed by the Cornell Medical Index health questionnaire (CMI)	57
5.6	Psychological distress, alexithymia and hypochondriacal beliefs among frequent attenders (Papers II, III)	60

5.6.1 Psychological distress	60
5.6.2 Alexithymia among frequent attenders.....	61
5.6.3 Hypochondriacal beliefs among frequent attenders	61
5.7 Somatization among frequent attenders (Paper III, IV)	64
5.8 Family-related factors and frequent attendance (Paper IV).....	68
5.8.1 Family size and structure.....	68
5.8.2 Family life cycle.....	68
5.8.3 Marital satisfaction of frequent attenders	68
5.9 Results of multivariate analyses (Papers II, III, IV)	70
5.9.1 Factors associating with frequent attendance	70
5.9.1.1 Chronic somatic disease and hypochondriacal beliefs as predictors of frequent attendance	70
5.9.1.2 The interaction effect of hypochondriacal beliefs and somatization on frequent attendance	72
5.9.2 Factors associating with frequent attenders' somatization	72
5.9.2.1 Hypochondriacal beliefs and poor self-rated health as predictors of frequent attendee's somatization (Paper III).....	72
5.9.2.2 Poor marital communication as a predictor of female frequent attenders' somatization	73
6 Discussion	74
6.1 Subjects and methods.....	74
6.1.1 Study population	74
6.1.2 Design	75
6.1.3 Methods.....	75
6.1.3.1 Criterion of frequent attendance.....	75
6.1.3.2 Data collection	76
6.1.3.3 Measures	76
6.2 Results.....	77
6.2.1 Prevalence and sociodemographic characteristics of frequent attenders (Paper I).....	77
6.2.2 Self-rated health and health-related quality of life	79
6.2.3 Main reasons for encounter by frequent attenders (Paper I).....	79
6.2.4 Chronic diseases of frequent attenders (Paper I).....	80
6.2.5 Psychiatric symptoms and disorders assessed by the Cornell Medical Index health questionnaire (CMI)	81
6.2.6 Psychological distress, alexithymia, hypochondriacal beliefs and somatization among frequent attenders (Papers II, III)	82
6.2.6.1 Psychological distress	82
6.2.6.2 Alexithymia	82
6.2.6.3 Hypochondriacal beliefs.....	83
6.2.6.4 Somatization.....	83
6.2.7 Family-related factors and frequent attendance (Paper IV).....	84
6.2.8 Results of multivariate analyses	85
6.2.9 Gender differences among frequent attenders	85
6.3 Strengths and limitations of the study	86
7 Conclusions.....	87

8 Implications.....	89
9 Summary	90
9.1 Study population and study design.....	90
9.2 Methods.....	91
9.3 Results.....	91
9.4 Conclusions.....	92
10 References.....	93
Original publications	
Appendix	

1 Introduction

An English general practitioner called Backett and his coworkers were the first to report in 1954 that a small proportion of patients were responsible for most of the workload of a doctor (Backett *et al.* 1954). Since then, numerous studies have confirmed the disproportionately high use of health care by frequent attenders, also called high users or high utilizers. Frequent attenders represent about 5-15% of the population, and they use approximately 20-40% of health care services (McArdle *et al.* 1974, Smedby 1974, Browne *et al.* 1982, Westhead 1985, Larivaara 1987). They also cause a lot of costs in both primary and secondary health care (Von Korff *et al.* 1992, Demers 1995).

In the previous studies concerning frequent attenders, a variety of characteristics connected with frequent attendance have been identified. The findings indicate that frequent attenders comprise a highly heterogeneous group of patients with multiple and complex problems (Neal *et al.* 1996). Frequent attenders have high rates of somatic illnesses, mental disorders and social difficulties, often concurrently (Schrire 1986, Gill & Sharpe 1999). Frequent attendance is related to poor self-perceived health (Borgquist *et al.* 1993), a poor quality of life (Heywood *et al.* 1998) and a high number of various, often unexplained somatic symptoms (McFarland *et al.* 1985), and frequent attenders are more likely to seek medical help for minor symptoms (Wagner *et al.* 1995).

Previously, frequent use of health care services has been connected with such psychological factors as psychological distress (Katon *et al.* 1990, Karlsson *et al.* 1995a), somatization (Katon *et al.* 1991, Ford 1992, Portegijs *et al.* 1996) and hypochondriacal beliefs (Barsky *et al.* 1986a, Pålsson 1988). Frequent attendance associates with alexithymia, not directly but mediated by psychological distress (Joukamaa *et al.* 1996). The cognitive misinterpretation and amplification of bodily sensations found among hypochondriacal patients are assumed to enhance somatization (Barsky & Wyshak 1990, Hitchcock & Mathews 1992). On the other hand, alexithymia is connected with somatization (Bach & Bach 1995), hypochondriasis (Rodrigo *et al.* 1989) and psychological distress (Saarijärvi *et al.* 1993). Physicians are commonly frustrated by somatizing frequent attenders (Katon *et al.* 1991, Mechanic 1992), and their approach to somatizing patients' bodily concerns is often unsatisfactory (Blackwell & DeMorgan 1996). Patients often perceive a discrepancy between their own ideas and lay beliefs

about illness on the one hand and doctors' medical explanations on the other (Salmon *et al.* 1999).

Although there is ample evidence of family support for the physical and mental health of individuals (Campbell 1987), few studies have examined the relationships of family structure, family interactions and marital relationship with frequent attendance, and the findings have been controversial. Only some mentions of the family life cycle of frequent attenders can be found in the previous literature (Báez *et al.* 1998).

In Finland, frequent attenders in primary health care have earlier been studied in a rural and an urban health centre (Larivaara 1987, Karlsson *et al.* 1994, Karlsson *et al.* 1995a, Karlsson *et al.* 1995b, Karlsson 1996, Joukamaa *et al.* 1996, Karlsson *et al.* 1997). These studies showed the associations of sociodemographic factors, somatic and psychiatric morbidity, psychosomatic symptoms and psychological distress with frequent attendance.

Nowadays, primary health care is facing several challenges. Insufficient resources and demands for increasing efficacy are familiar to the general practitioners (GPs) working in health centres. GPs' profession is burdened by the stress of an increasing workload. The workload due to frequently attending patients is larger than their proportion of the visits, because GPs perceive them as demanding, difficult, and often frustrating patients with limited prospects for improvement (O'Dowd 1988, Ford 1992). Thus, more research-based knowledge is needed to find efficient approaches to the recognition and treatment of frequent attenders, who make up such a large part of GPs' everyday work (Neal *et al.* 1996).

The aim of the present study was to determine the prevalence of frequent attendance, frequent attenders' reasons for encounter and the related chronic diseases of frequent attenders in primary health care. Furthermore, the study aimed to assess the associations of certain psychological, social and family factors with frequent attendance in a Finnish health centre, in order to gain some insight into the biopsychosocial background of frequent attendance and to develop some new approaches to the management of frequent attenders in primary health care.

2 Review of the literature

2.1 Use of health care services

Research on the utilization of health care services is of increasing value because of the high and still rising expenditure in health care. Such research is associated with the medical, social and behavioral sciences and also with health economics (Purola 1971, Purola 1972). The use of health services has been explained by patients' personal factors (health or illness, symptoms, knowledge, beliefs, experiences, feelings of threat, needs, coping factors etc.), social factors (sociodemographic factors, family factors, social support etc.) and factors related to the health care system (geographic distance, availability, accessibility, costs etc.).

The users of health care services perceive themselves as less healthy, fewer of them have attempted self-treatment and more of them report personal problems and stress than non-users (Anderson *et al.* 1977). Previous use of health care services is more strongly related to current use of health care services than are measures of previous health status (Eve 1988). In a review of health care utilization studies, McKinlay concludes that factors relating to family life, perception of needs, childhood habits and relationships with service personnel are important determinants of utilization behaviour (McKinlay 1972). The utilization of health care services is related to age, gender, education, religion, ethnicity, socioeconomic status, social support, etc. (McKinlay 1972, Mechanic 1979, Kouzis & Eaton 1998). The rate of utilization is generally lower among males than females and increases with age (McKinlay 1972, Mechanic 1976). Medical needs explain the use of health services among both older and younger patients (Evashwick *et al.* 1984, Hibbard & Pope 1986). Mental health status is a powerful predictor of patient-initiated utilization of health services among the elderly (Hibbard & Pope 1986). Differences in social welfare and social security systems affect the attendance rates greatly (Schrire 1986).

2.1.1 Theoretical aspects of use of health care services

Various conceptual models have been developed to operationalize the complex and multi-dimensional issue of health care utilization. These multifactorial models offer some theoretical frameworks to be used in the research on the use of health care services to explain utilization.

2.1.1.1 Andersen's behavioral model

Andersen and Laake (1987) have developed a conceptual model, called the behavioral model of utilization, for determining the use of health services. According to Andersen's model, physician contacts are determined by three factors: predisposing factors, enabling factors and need factors. According to the authors, predisposing factors include gender, age and social status. Enabling factors include conditions that facilitate or inhibit the use of physician services, e.g. the distance to the health centre, the type of municipality, working time and family size. Need variables include chronic diseases, disability days, new illness conditions and psychological well-being. The need variables seem to explain best the number of visits to physicians. (Kronenfeld 1980, Andersen & Laake 1987.) Only a few studies have analyzed the context of health care by including both environmental and provider-related variables of utilization (Phillips *et al.* 1998).

2.1.1.2 Purola's model

In the model developed by Purola, the basic setting for the use of health care services is, firstly, the disease in the medical sense and, secondly, the perceived illness as an originator of behavioral reactions. Thirdly, the predisposing and enabling factors act as modulators of the person's behavioral reactions. (Purola 1971, Purola 1972.)

2.1.1.3 Antonovsky's model

Antonovsky's model of utilization includes host characteristics, characteristics of the medical institutions and characteristics of the larger sociocultural environment. This model takes into account the fact that medical care constitutes a small social system, which may be used to deal with diffuse social and psychological needs when the system is available, when its use is socially encouraged, and when it is receptive to peoples' needs and orientation. (Antonovsky 1972.)

2.1.1.4 Health belief model

The health behavior of a population can also be explained using the health belief model originally conceptualized by Becker (Janz & Becker 1984). In this model, the person's reactions to symptoms of illness are modified by various factors, e.g. motivation, the experienced threat of illness and coping factors. The model includes an interesting concept, "cue to action", which means that different cues, information or recommendations may act as the final stimulus to the behavior carried out, e.g. an encounter with a physician. (Leavitt 1979.)

2.1.1.5 Biopsychosocial model and use of health care

The biopsychosocial model originally introduced by Engel (1977) has not been used, until now, as a conceptual basis of research on health care utilization. The biopsychosocial model is based on the general systems theory of Von Bertalanffy (1968), which implies that all levels of an organization or system, beginning from molecules and cells and ending up with society or biosphere, are linked to each other in a hierarchical relationship, so that a change in one effects changes in the others.

Theoretically, as Engel pointed out, systems theory provides a conceptual approach suitable not only for the proposed biopsychosocial concept of disease but also for studying disease and medical care as interrelated processes (Engel 1977). Thus, the biopsychosocial approach would benefit the research on health care utilization, which aims to understand more thoroughly the relationships between various explanatory factors (e.g. somatic diseases, psychological factors and social environment, such as family) of health care utilization.

2.1.2 Use of health care services in Finland

About 86% of the Finnish population visit a physician at least once a year (Vohlonen *et al.* 1991). The average number of visits to GPs in health centres in 1998 was about 2.1 visits per year in the whole country, and this means a total of about 10.8 million visits per year (SOTKA Statistics, Stakes, Finland). The private medical sector comprises about 4.9 million visits to physicians per year (Tapani Niskanen, Stakes, personal communication). According to Häkkinen, the mean number of visits to physicians was 3.4 in 1987, of which 2.3 were GP visits and 1.1 were visits to medical specialists. Of all visits to physicians, including outpatient visits to hospitals, 44% were visits to GPs in health centres. (Häkkinen 1991.) In an interview study of the Finnish population, about 7% of men and 9% of women visited a GP more often than eight times a year (Berg *et al.* 1990).

The use of health services increases with age and with the increasing number of chronic diseases. Women use more health care services than men, and the use of health care services is higher in the lower social classes (Berg *et al.* 1990, Häkkinen 1991).

Moreover, in cities the use is higher than in rural areas (Nyman 1982). Divorced and widowed persons visit GPs more often than married or single persons (Berg *et al.* 1990).

2.2 Frequent attenders

"Why, whenever there is an outbreak of diarrhoea or an influenza epidemic, do the same damn patients seem to get it every time?"

Manton (1985)

Backett *et al.* reported in 1954 that 16% of patients in a general practice had ten or more consultations per year and were responsible for 52% of the doctor's workload (Backett *et al.* 1954). Since then, numerous studies have examined a variety of associated characteristics of frequent attenders, indicating that frequent attenders comprise a highly heterogeneous group of patients with a wide variety of needs (Neal *et al.* 1996). They have high rates of somatic diseases, mental disorders and social difficulties. These patients are likely to have multiple complex problems, often including chronic somatic diseases with or without psychological and social problems. (Schrire 1986, Gill & Sharpe 1999.)

Neal *et al.* (1996) note that, despite extensive research, it has not been established whether frequent attendance is simply behavior at one end of the normal distribution of consulting frequency or something more special. There are two hypotheses about frequent attender patients. Firstly, they may be individuals behaving appropriately in response to real need, who happen to be at the top end of the consulting spectrum. Secondly, they may be deviant individuals, who cause an unnecessary and unwelcome workload and with whom "something must be done". (Neal *et al.* 1996.)

Frequent attenders are often considered "heartsink patients" (O'Dowd 1988) or hateful patients (Groves 1978). These names reflect the frustration GPs often feel with these patients, who are never cured in spite of the GP's persevering efforts at care. More synonyms of frequent attenders are listed in Table 1.

The studies of frequent attendance have been reviewed by Schrire (1986), Karlsson *et al.* (1994), Karlsson (1996) and, more recently, by Gill & Sharpe (1999).

2.2.1 Definition

It is difficult to define a frequent attender. The first difficulty is how to define consultation and the second difficulty is how to define the cut-off point in the numbers of consultations. Thirdly, one must define the observation period for which the consultation rate is calculated. (Neal *et al.* 1996.)

In the previous studies of frequent attenders, face-to-face contacts with GPs have been defined as consultations, and the observation period has mostly been one year (Table 2).

Some researchers have included home visits (Heywood *et al.* 1998) and telephone contacts (Dowrick *et al.* 2000) as consultations.

Courtenay *et al.* (1974) based their definition on the upper quartile of visits stratified by age and sex. The top decile of consultations stratified by age and sex has been used in some studies as the criterion of frequent attendance (Westhead 1985, Von Korff *et al.* 1992, Švab & Zaletel-Krakelj 1993). Most of the studies have used more or less arbitrary numerical definitions of frequent attendance, varying from five to 20 consultations per year (Table 2). Goodridge (1982) used fat folders (100 g or more) to define frequent attenders. Dowrick *et al.* (2000) defined frequent attenders as patients having an annual rate of consultation over twice as high as the practice's sex- and age-related mean.

The use of health care services is increasing in most countries, and the concept of frequent attender may be viewed as a phenomenon changing over time.

Table 1. Synonyms for frequent attender.

Synonym	References
Black hole	Lin <i>et al.</i> 1991
Chronic complainer	Rittelmeyer, Jr. 1985
Chronic doctorer	Kemp 1963
Chronic neurotic	Schrire 1986
Clinger	Groves 1978
Constant attender	McCormick 1972
Crock	Drossman 1978
Demander	Groves 1978
Denier	Groves 1978
Doctor promiscuity	Manton 1985
Doctor shopper	Demers 1995
Familiar face	Kemp 1963, McCormick 1972
Frequent attender	McArdle <i>et al.</i> 1974, Hood & Farmer 1974, Browne <i>et al.</i> 1982
Frequent clinic attender	Toomey <i>et al.</i> 1982
Frequent user	Fenstermacher 1984
Frustrating patient	Lin <i>et al.</i> 1991
Habitual frequent attender	Westhead 1985
Hard core patient	Backett <i>et al.</i> 1954
Hateful patient	Groves 1978
Heartsink patient	O'Dowd 1988, Neal <i>et al.</i> 1996,
Help rejector	Groves 1978
High attender	Freer <i>et al.</i> 1985
High consulter	Morris <i>et al.</i> 1992
High consumer	Borgquist <i>et al.</i> 1993
High user	Semmence 1969, Schrire 1986
High utilizer	Weimer <i>et al.</i> 1983, Katon <i>et al.</i> 1990
Inappropriate utilizer	Olbrisch 1977
Misuser	Wagner & Hendrich 1993
Multi-user	Borgquist <i>et al.</i> 1993
Obnoxious patient	Groves 1978
Overutilizer	McKinlay 1972
Patient with fat folder	Goodridge 1982
Problem patient	Drossman 1978, Larivaara 1988, Lin <i>et al.</i> 1991
Repeater	Andren & Rosenquist 1985
Returning patient	Wamoscher 1966
Self-pitier	Groves 1978
Thick-file case	Franklin 1971
Turkey	Drossman 1978

Table 2. Review of the previous studies of frequent attenders. Study populations, definitions of FA, key questions and main results.

Author(s), year	Study population	Definition of FA	Key questions, hypothesis	Main results
Wamoscher 1966	Population of two settlements in the south of Israel. 1 69 FAs were compared with other patients.	FA: 10 or more consultations per year (including home visits).	A one-year survey of attendance rate and related problems.	FAs (14.4%) were responsible for 48.8% of all doctor / patient contacts. Number of consultations (mean) 16.2 versus (vs.) 2.9 (FAs vs. other patients). 61% of FAs were women. 43% of FAs came with purely organic complaints. Functional complaints were more common among female FAs. FAs with functional complaints visited more frequently. There were "FA families" in this study, including one family of four generations.
Semmenne 1969	1136 patients of all of the two GP practice patients (2468) who consulted the GP during one quarter of a year in Abingdon, UK. FAs: 165 males, 265 females, altogether 430. No COs.	FAs: 3 consultations per quarter of a year (12 times a year).	Aim: to identify FAs and to compare the results of treatment between FAs with psychiatric conditions and FAs with other conditions. A two-year follow-up of FAs was included.	165 male FAs (13.9%) made 64% of male consultations. 265 female FAs (21% made 1310 (69%) of female consultations. No social class associations with FA was found. 13% of FAs had a mental diagnosis and they accounted for 14% of visits. In follow-up, 32% of FAs remained FAs over the next two years. Of the "mental high users", 80% remained FAs. The results of treatment of psychoneurotic illnesses were poor. Patients with psychoneurotic illness are most likely to remain FAs.
Courtenay <i>et al.</i> 1974	A random sample of 382 patients in a two-doctor practice of 3400 patients in south London, UK. 98 FAs, 284 (rest of sample) COs.	FAs: contacts equal to or greater than the upper quartile for age and sex.	The purpose of the study was to determine whether FAs had any special characteristics compared with the rest of the sample.	98 FAs (26% of the sample) made 61% of contacts, FAs were more common in smaller than larger families. Slight evidence of clustering of FAs within families. Marital status did not differ between groups. Distance from surgery was not related to FA. FAs did not associate with the time on GP's list. 43% of FAs had at least one major somatic diagnosis. 27% of FAs had at least one major psychological diagnosis. 6% had both a somatic and a psychological diagnosis. Three-year follow-up revealed a slight decrease of FA in the followed sample of 40 families (35% to 24%).
Hood & Farmer 1974	Six-doctor practice in Birmingham, UK. Patients 25-40 year old. 23 FAs, 23 COs.	FA: 5 visits or more per 3 months (20 per year). CO: age and sex-matched, one visit or under per 3 months (= < 4 per year).	The study attempted to identify differences between FAs and infrequent attenders, including attitudes towards health, doctors, themselves and reasons for consulting.	Social class distribution similar. Fewer FAs married (13 vs. 21) (p<0.005). Mean number of children of married subjects equal. GHQ score higher than CO (p<0.001). Eysenck Personality Inventory points NS. Osgood Semantic Differential difference (p<0.05): low self-confidence, negative evaluation for help, present situation of life rated worse. Less than half labeled as psychiatric cases by GP.

Table 2. Continued.

Author(s), year	Study population	Definition of FA	Key questions, hypothesis	Main results
McArdle <i>et al.</i> 1974	A sample of 33 FAs among 11400 patients of four GPs in HC in Glasgow, UK (children and pregnant women excluded). Semistructured interview. 33 FAs, no COs.	FA: 12 or more visits per year, no CO group.	An interview study of a sample of FAs to find out the principal complaints, medical (physical or nervous/social or multiple) problems and sociodemographic backgrounds of FAs.	33 FAs were interviewed. FAs consume a substantial portion of HC resources. Problems of unemployment, loneliness, housing and alcohol were found. 58% of FAs had psychological problems. Of FAs, 42% had been referred to a psychiatrist during the 20 preceding years, 48% had physical-social complaints, 36% had nervous-social complaints and 15% had multiple complaints.
Smedby 1974	A sample of Swedish population over 15 years old 1963. Numbers of FAs and COs N.A.	FA: 7 or more visits per year. CO: all interviewed persons.	Combined interview and register-based study among a sample of adult Swedish population concerning their illnesses and use of health care services and related factors.	FAs (10% , men 8% , women 11%) made 43% of visits. Age distribution: highest proportion in the 55-64 year group (15%). Place of residence: FAs were more frequent in large cities. Difference between social groups: FAs were more frequent among the lowest social group. Self-perceived health, symptoms and number of illnesses related to FA. FAs had more hospital care days and health insurance days. One third of FAs had "nervous disorders".
Videman <i>et al.</i> 1976	A random sample of 1927 patients in a HC in Kuusamo, Finland, during 1969-1970. Emergency and on-call visits were excluded.	FA: 13 or more visits per two years. CO: other patients.	The aim of the study was to find out the accumulation of the use of health care services and related factors in GPs' surgeries.	FAs (3,9% of population) made 19,8% of visits. Neoplasms, mental illnesses and diseases of the cardiovascular and locomotive systems were common among FAs.
Browne <i>et al.</i> 1982	A random sample of 200 FA (47% of all FAs) in a Canadian Family Practice (9313 patients) compared to 200 modal users (7% of all modal users) and 200 zero users (7% of all zero users).	FA: 9 or more visits per year. Modal user: 1-2 visits per year.	The purpose was to explore the prevalence and characteristics of FAs in a Canadian health service compared to modal and zero users.	FA (4,5%) used 21% of visits. FAs were more physically, socially and emotionally distressed and more of them were single. FAs had more problems of self-esteem, and they were more externally controlled, had greater degree of family dysfunction, tended to be unemployed, retired or mothers of infants, had low incomes. FAs tended to be high users of other services and used more pills. FAs presented more emotional and digestive system complaints.

Table2. Continued.

Author(s), year	Study population	Definition of FA	Key questions, hypothesis	Main results
Goodridge 1982	A sample of one doctor's patients in an urban five-doctor group practice of 12850 patients, UK.	Fat-folder patients: patient folder weight 100 g or more. Female fat-folder patients had age- and sex-matched controls.	The null hypothesis was that patients with fat folders did not have special characteristics.	4% of female patients and 0.5% of male patients had fat folders. 54.9% of female fat folder patients were FAs (>10 visits per year). There were more divorced women, changing of the doctor, use of psychotropic medication among fat-folder patients than among COs. Evidence of marital disharmony was found among fat-folder patients. One third of fat-folder patients were patients with mainly organic illnesses and another one third were patients with equally organic and emotional illnesses.
Westhead 1985	A sample 1491 patients (every second) of practice patients in a two-man GP practice, Whitehaven, Cumbria, UK.	FA: the top decile of most frequent attenders of each decade age group for each sex during four years. CO: same number of age- and sex-matched non-frequent attenders.	The aim was to compare a range of social, medical and psychological characteristics of habitual FAs with those of COs matched for age and sex.	109 FA patients, 86 controls. FAs (10%) used 30% of consultations. FAs' visits: male 7.0-11.7, female 8.6-11.0, COs' visits: male 0.9-1.7, female 1.0-1.7. Marital breakdown more common among FAs. FAs' neuroticism scores (Eysenk) higher than among COs. 45% of FAs had a minor neurotic illness in GHQ vs. 15% of COs. 48% of FAs assessed their physical health as poor vs. 9% of COs. The most common category of physical illnesses was cardiovascular diseases.
Larivaara 1987	A rural Finnish health centre in Kolari. Population 4913 (all ages). 370 FAs.	FA: 8 or more visits per year. CO: whole population.	The purpose was to determine the number of FAs in a HC and the features characterizing FAs and the doctors' possibilities for treating FAs and the effectiveness of treatment measures of FAs.	FAs 7.5% of whole population of municipality. Of FAs 56% were women. FAs used 31.8% of visits. Mean number of visits was 10.3 per year. More married and widowed or divorced persons and persons from lower socioeconomic class among FAs. 48% visited general care units, 6% mental care units. 48% of FAs had psychosomatic illness or symptoms. 75% of FA had need for a treatment plan.
Savonius 1988	An urban Finnish health centre in Espoo. Patients seen during one month constituted the study population (all ages, n=4051). 349 FAs.	FA: 10 or more visits per year. No CO population.	The aim was to determine the prevalence of FAs, the reasons for encounter by FAs and the continuity of care among FAs.	FAs accounted for 8.6% of patients during one month. 65% were women. Continuity of care was low: continuity index 0.47 among FAs. Frequent attendance and related problems were not usually mentioned in the patient records.

Table 2. Continued.

Author(s), year	Study population	Definition of FA	Key questions, hypothesis	Main results
Von Korff <i>et al.</i> 1992	HMO primary care clinics, State of Washington, US. Patients 18-75 year s old. 145 depressive high utilizers selected. No COs.	FA: the top decile of the numbers of ambulatory care visits stratified by age and sex. No CO group.	Hypothesis: Depressive FAs whose depressive symptoms improve, show a more favourable course of disability.	FAs' depression and disability show synchrony over time. Depression and disability are controlled by some other factor (chronic disease or personality disorder). The causal relationship between depression and disability warrants more research.
Švab & Zaletelj Krakelj 1993	A rural health centre in Slovenia. A random sample of the population (623 persons, 304 men and 319 women).	FA: the top decile of most frequent attenders in each age group CO: the rest of the sample. 188 FA patients, 320 COs.	The aim was to examine morbidity, symptoms, prevalence of superficial contacts with GP, referrals and prescriptions among FAs compared with COs.	The mean contact frequency of FAs was 11.8. FAs made 67% of visits in the study population. The three main ICD categories as the reason for encounter were: 1) respiratory, 2) cardiovascular, 3) traumas. When all reasons were considered: 1) respiratory, 2) cardiovascular, 3) musculoskeletal. FAs had more mental, malignant and gastrointestinal diagnoses as reasons for encounter than COs. There were more superficial contacts and more referrals to specialists among FAs. The differences in prescribing drugs were not significant.
Ward <i>et al.</i> 1994	Three general practices in Western Australia. All patients during a 6-month period and again after 11 months during a 6-month period were studied (n=7199).	FA: 7 or more visits per 6 months (14 per year), medium attenders 4-6 visits, low attenders 1-3 visits.	The aim was to examine the stability of attendance patterns in terms of the number of visits and diagnoses over an 18-month period.	8% of patients were FAs during both 6-month periods. 22% of FAs during the first period remained FAs during the second period. Long-term FAs were older, there were more women among them and they suffered from chronic diagnoses, such as circulatory, musculoskeletal and mental disorders. Short-term FAs suffered from more self-limiting conditions, such as depression and pregnancy.
Andersson <i>et al.</i> 1995	An urban Swedish health centre in Umeå in 1991. 179 FAs and 179 age- and sex-matched COs of all ages were studied.	FA: 5 or more consultations during a year. CO: 1-4 consultations during a year.	The aim was to describe the sociodemographic patterns, consultations and nature of problems for FAs in a HC.	1.7% of inhabitants were FAs and they accounted for 15% of consultations and the average consultation rate was 6.3 per year. GPs used more time during the consultations of FAs. Problems of musculoskeletal system, psychological and social problems were the most common reasons for encounter among FAs. More of female FAs than male FAs and COs were divorced.

Table 2. Continued.

Author(s), year	Study population	Definition of FA	Key questions, hypothesis	Main results
Karlsson 1996	An urban Finnish health centre in Turku. FAs (96) and COs (466) (age between 18 and 65 y.) were selected of 1000 consecutive patients' sample of HC patients.	FA: 11 or more visits per year. CO: other patients.	The aim was to investigate FAs multidimensionally (sociodemographic factors, physical and psychiatric illnesses, psychological distress, alexithymia) and to create a clinically useful way of grouping FAs. The study included a follow-up of 18 months.	FAs had lower vocational training and lower socioeconomic status. More disability pensioners, more physical illnesses, more mixed (physical-psychiatric) complaints among FAs. FAs more distressed (44% vs. 26%). 54% of FAs had a psychiatric diagnosis, mostly depression (24%) and anxiety (24%). Alexithymia associated with FA mediated by distress. Five distinct clinical groups of FAs were identified: 'physical', 'psychiatric', 'crisis', 'chronically somatizing' and 'multiproblem' groups of FAs. In follow-up, clear differences emerged in attendance rates, psychological distress and self-perceived satisfaction between the defined clinical groups.
Báez <i>et al.</i> 1998	Nine general practices in Spain, a case-control study. Cases: patients with the highest decile of patient-initiated visits. Controls: patients with single patient-initiated visits. 102 cases and 100 controls were selected by stratified sampling.	FA: the highest decile of patient-initiated visits. CO: patients with single patient-initiated visits.	The aim was to assess the association of chronic physical illnesses, mental disorders, life stress and sociodemographic factors with patient-initiated frequent attendance in primary health care.	Medium high life stress, chronic physical illness, mental disorder, and age associated with FA. FAs (10% of patients) accounted for 27.5% of all patient-initiated visits. Mean number of visits was 9 per year. Age, chronic physical illness, mental disorder and life stress together explained 82% of FA. FAs were older, more often females, less educated and more often widowed or divorced. There were more pensioners among FAs. Family life cycle: FAs were more often in the situation of break-up or contraction. There were no differences in family dysfunction or social support between FAs and COs. Authors emphasize biopsychosocial approach and need for qualitative research
Heywood <i>et al.</i> 1998	A teaching general practice of 12400 patients in UK. 204 FAs identified, of whom 132 were interviewed (65%), 204 age- and sex-matched controls selected, of whom 102 attended the interview (50%).	FA: 12 or more consultations per year CO: frequency 11 or fewer. Consultation: face-to-face contact between a fully registered patient and a GP, including home visits and out-of-hours contacts.	To define and identify frequent attenders and to characterize their attributes and use of services.	FAs' (3.1% of patients) consultation frequency was 15 times a year, five times that of COs. FAs accounted for 15.4% of all consultations. Sex: FAs 86% of FAs were females vs. 52% among general population. Married: FAs 60% vs. COs 78% (p<0.01). More divorced, widowed or separated and living alone among FAs. More FAs were in lower social classes. 94% of FAs had chronic health problem vs. 39% of COs (p<0.01). FAs had more prescriptions and referrals to a hospital consultant (p<0.001). FAs were equally satisfied with services and doctor-patient relationship compared to COs. 52% of FAs were depressed on GHQ-28 compared to 29% of COs. FAs showed more distress in all modalities of well-being on NHP.

Table2. Continued.

Author(s), year	Study population	Definition of FA	Key questions, hypothesis	Main results
Neal <i>et al.</i> 1998	Four general practices in Leeds, UK comprising 61000 patients. The data included all consultations (592000 consultations) during 41 months.	FA: The most frequently consulting 3%, CO: the rest of the patient population. Consultation: face-to-face doctor contacts, including home visits and planned health promotion.	The aim was to examine the distribution of the number of consultations per patient and to estimate the workload generated by FAs and to demonstrate the contribution of age, sex and practice to the likelihood of FA.	The most frequent 3% of all attenders accounted for 15% of all consultations. Females and older people were more likely to be FAs. The cut-off point of 3% equals to about 12 consultations per year. The overall appropriateness of FAs needs to be addressed.
Dowrick <i>et al.</i> 2000	Two general practices, one of 10500 patients in Liverpool, UK and one of 24000 population in Granada, Spain. 127 FAs and 175 COs take part in the survey. No mention of those who did not want to participate.	FA: consultation rate over twice as high as the practice's sex- and age-related mean. CO: consultation rate below the practice's sex- and age-related mean. Consultations included telephone contacts and home visits, antenatal visits were excluded.	The aim was to assess whether FAs are more likely to be associated with depressive symptoms than with physical health problems.	Consultation frequency: FAs 12.7 vs. COs 3.7. FAs were more likely to be female (OR 2.7), widowed or divorced (OR 2.1) and from social class V (OR 3.0). No differences in education. Depressive symptoms (BDI score) higher and proportion of depressive persons higher among FAs (OR 26.6 (p<0.001)). Self-reported health lower (OR 7.6) and more physical health problems. More psychological, social, respiratory problems in ICHPPC-2. Depression, self-reported health and respiratory problems were associated with FA in logistic regression analysis.

2.2.2 Prevalence of frequent attendance

In the frequent attender studies, the prevalence of frequent attendance depends on the criteria used (Table 2). Information of population-based prevalence is given in some studies. Andersson *et al.* (1995) found 2% of inhabitants to be frequent attenders, while in Finland Larivaara considered 8% of the population as frequent attenders (Larivaara 1987, Larivaara *et al.* 1996). Usually, prevalence is determined as per patient population. The patient population prevalence of frequent attendance varies from 4% to 18% (Table 2).

2.2.3 Frequent attenders' use of health services

Frequent attenders consume a substantial portion of the health care service resources in both primary and secondary health care (Table 2), (Gill *et al.* 1998). The mean consultation rates per year depend on the criteria used to define frequent attender. Westhead (1985) found the mean consultation rate to range from seven to 11, depending on the age group. In the study of Švab & Zaletel-Krakerlj (1993), the mean attendance rate was 12 per year. In the cut-off based studies, the mean consultation rates have varied from six to 16 (Table 2).

2.2.3.1 Use of primary health care

Frequent attenders cause a remarkable workload in primary health care, which can be estimated as the proportion of services used by frequent attenders. In previous studies, frequent attenders made 15% - 69% of all contacts to GPs, the percentage depending on the definition of frequent attendance and the populations studied (Table 2). In the study of Neal *et al.* (1998) in Leeds, UK, the most frequent 1% of attenders accounted for 6% of all consultations, and the most frequent 3% for 15% of all consultations. Gill *et al.* (1998) reported a progressive increase in GPs' total workload, and frequent attenders were responsible for a large part of the increase.

2.2.3.2 Use of secondary (specialized) health care

The frequent attenders in primary health care are frequent attenders for all health care services (Smedby 1974) and also social agencies (Corney & Murray 1988). In the study of Heywood *et al.* (1998), the referral rate of frequent attenders to hospital was more than

five times greater than that of controls. Larivaara found that 48% of frequent attenders used general hospital services, but only 6% mental care services (Larivaara 1987, Larivaara *et al.* 1996). Švab & Zaletel-Krakerlj (1993) found more referrals to specialists in their frequent attender group. Consistently high users (26%) among an elderly population accounted for 55% of hospital admissions (Freeborn *et al.* 1990). In a study from Alaska, high utilizers had a higher risk of hospitalization during a six-year follow-up period than low utilizers (Nighswander 1984).

2.2.3.3 Doctor shoppers

At the one end of the continuum of frequent attendance, doctor-shopping frequent attenders can be defined as patients with many visits to health care in a wide variety of health care sources, e.g. primary health care, private doctors and specialized care (Demers 1995). In Canada, 1% of patients appeared to be doctor shoppers, who received ambulatory care from more than 20 physicians. They received 10 times more medical services than the overall patient population, and their mean costs per patient was also 10 times higher. The most frequent diagnoses among doctor-shopping frequent attenders were anxiety, abdominal pain, drug and alcohol dependence and depression. 82% of doctor shoppers had at least one diagnosis related to mental disorders or ill-defined symptoms. (Demers 1995.) Doctor-shopping behavior associates with chronic illnesses, mental disorders, somatization, hypochondriasis and disturbances in the doctor-patient relationship (Kasteler *et al.* 1976, Sato *et al.* 1995).

2.2.3.4 Out-of-hours frequent attenders

Out-of-hours frequent attenders (4 or more visits to out-of-hours family practice service) made up 9.5% of all attenders in an out-of-hours service in Denmark and accounted for more than 40% of the contacts and the aggregate costs (Vedsted & Olesen 1999a). Age and previous frequent attendance in out-of-hours service were risk factors for long-term frequent attendance (Vedsted & Olesen 1999b).

2.2.3.5 Natural course of frequent attendance

The frequent consulting behavior seems to persist in many cases (Gill *et al.* 1998, Gill & Sharpe 1999), and the persistence may be associated with emotional distress (Semence 1969). According to Freer *et al.* (1985), frequent attenders' attendance rates remained stable over a three-year period. Of the frequent attenders studied, 25% had no change, while 43% increased or decreased their use by one or two visits. Ward *et al.* (1994) found that 22% of frequent attenders remained frequent attenders during 18 months' follow-up.

Frequent attenders' consultation frequency persisted at a higher level than controls' frequency during successive years (Andersson *et al.* 1995, Gill *et al.* 1998). Kokko found that only 3% of patients were frequent attenders during a nine-year period of observation (Kokko 1988, Kokko 1990).

2.2.4 Frequent attenders' use of health services - related factors

In various models that have explained the use of health care services, subjective perceived health, various symptoms and subjective experiences of illness are included as important predisposing factors of health care use.

Illness may be defined as the perception, evaluation, explanation, and labelling of symptoms by the patient and his family and the social network, whereas disease may be defined as the malfunctioning of biological and / or psychological processes (Rosen *et al.* 1982, Kokko 1988). Illness is the subjective experience of the sufferer, while disease is the pathological process (Fry 1986). Health status and the perceived severity of illness seem to be most important predictors of health care utilization (Mechanic 1979, Krakau 1991).

2.2.4.1 Perceived health

According to the WHO definition of health, health is more than absence of disease: it is complete mental and physical well-being (Fry 1986). René Dubos describes health as an ability to adapt one's environment or, if necessary, to adapt to it (Dubos 1965).

Population studies have shown that women report symptoms more often than men (Mechanic 1976, Heistaro *et al.* 1997). Higher education associates with better perceived health (Lahelma *et al.* 1995). A personal perception of oneself as healthy seems to be the major factor distinguishing between non-attenders and attenders (Schrire 1986). Health need, as measured by the perceived health status and the number of health problems, was found to be consistently associated with increased utilization of medical services, both primary health care and specialist visits (Dunlop *et al.* 2000).

Frequent attenders have been found to show a clear correlation between self-perceived health and visits to GPs (Smedby 1974, Westhead 1985, McFarland *et al.* 1985). According to the study of Borgquist *et al.* (1993), frequent attenders had poor perceived health, and Freeborn *et al.* (1990) reported a similar finding among elderly high users. Very frequent attenders showed a poor quality of life on all modalities of well-being on the Nottingham Health Profile (NHP) (Heywood *et al.* 1998). Self-reported ill health was associated with frequent attendance in the study of Dowrick *et al.* (2000).

2.2.4.2 Health behavior and needs

Sociodemographic background affects the person's health behavior (Mechanic 1992, Viinamäki *et al.* 1997). It is well known that men's health behavior is more risky than women's (Kivelä & Lammi 1985).

Hood & Farmer (1974) found that insufficient positive motivation and low self-confidence make frequent attenders more likely to adopt a sick role when confronted by problems in life. The problem concerning frequent attenders in primary health care is whether the uneven distribution of care matches an uneven distribution of needs (Courtenay *et al.* 1974).

2.2.4.3 Symptoms

Various symptoms belong to the everyday life of human beings, although the experienced discomfort or threat of symptoms and the person's coping factors finally contribute to the health behavior carried out, such as consulting a GP. Robinson & Granfield (1986) describe the differences between frequent attenders and non-frequent attenders in meeting the discomfort of symptoms and affect of mood or attention to experienced and consciously felt symptoms. The threshold of tolerance and the degree of perceived threat or anxiety generated by pain influence the decision to consult a doctor (Schrire 1986). Women seem to report more subjective symptoms than men. It may be, however, that women do not perceive any more symptoms than men, but are more willing to report them (Mechanic 1976, Kroenke & Spitzer 1998). A strong association between somatic symptoms and psychiatric morbidity has been found (Kisely *et al.* 1997).

Frequent attenders report a higher number of physical symptoms than average users (McFarland *et al.* 1985) and cannot generate normalizing explanations for common bodily sensations (Sensky *et al.* 1996). A correlation between patients' symptoms and the use of health care has been found (Smedby 1974, Robinson & Granfield 1986, Corney & Murray 1988). Frequent attenders are more likely to seek care for minor symptoms (Wagner *et al.* 1995).

2.2.5 Reasons for encounter

The reason for encounter has been defined as the agreed statement of the reason(s) why a person enters the health care system, representing the demand for care by that person (ICPC Working Party 1987).

In Finland, illness was the reason for encounter in 74% of the visits to health centres in 1983 (Kekki 1983). In the study of Hagman (1981), where the International Classification of Diseases 9th revision (ICD-9) was used, the three main reasons for encounter were respiratory, cardiovascular and musculoskeletal illnesses. Respiratory and

musculoskeletal illnesses and accidents were the three main reasons for encounter in eastern Finland (Kokko 1988).

International Classification of Primary Care (ICPC) offers a simple, logical and easy way to classify the reasons for encounter in primary health care (ICPC Working Party 1987, Bentsen & Hjortdahl 1991, Lamberts *et al.* 1992). The three most common ICPC-defined reasons for encounter by primary health care patients in Norway were musculoskeletal (20%), cardiovascular (14%) and respiratory (11%) symptoms (Claussen *et al.* 1994). Rokstad *et al.* (1997) obtained similar results. In a large survey in Australia, respiratory problems were the most important reason for consulting a GP (34%), followed by skin symptoms (21%) and musculoskeletal symptoms (16%) (Britt *et al.* 1998).

In Finland, Mäntyselkä (1998) studied the ICPC-coded reasons for encounter in 30 Finnish health centres and found the three main reasons for encounter to be musculoskeletal (18%) and respiratory symptoms (18%) and unspecific reasons (14%). GPs estimated psychiatric factors to be the main or background reason for encounter in 40% of the cases in Finnish health centres (Winblad *et al.* 1994). Mental disorders were ranked as fifth in importance among the reasons for encounter in Kokko's study (Kokko 1988), but in the study of Mäntyselkä (1998), GPs assessed only 2% of the reasons to be psychiatric reasons for encounter. In Norway, psychiatric symptoms were the fourth most important reason for encounter (12%) (Rokstad *et al.* 1997). Patients seldom report psychiatric reasons for their encounters, as only about 1-4% of patients reported a psychiatric reason as their main reason to visit a GP (Lehtinen *et al.* 1984, Joukamaa *et al.* 1991).

The main reasons for frequent attenders to consult a GP are physical complaints (Karlsson *et al.* 1994). Frequent attenders complain more commonly about respiratory symptoms and gastrointestinal or back pain than controls (Robinson & Granfield 1986). According to Wagner & Hendrich (1993), health care misusers, referred to as frequent attenders, who received such attributes of misuse as inappropriate or psychosomatic users, had more musculoskeletal and mental disorders than controls.

Based on the ICD-9 classification, respiratory, cardiovascular and musculoskeletal diseases were the three main diagnoses found as the reasons for encounter among frequent attenders. Frequent attenders had significantly more commonly diagnoses of malignant diseases, mental disorders and gastrointestinal diseases and less commonly diagnoses of endocrine, respiratory or skin diseases than infrequent attenders. (Švab & Zaletel-Krakelj 1993.) According to International Classification of Health Problems in Primary Care (ICHPPC-2), various ill-defined symptoms and signs were the main reasons for encounter among constant frequent attender patients. Musculoskeletal, circulatory and respiratory diagnoses came next on the list. (Ward *et al.* 1994.) In their ICPC-based study, Andersson *et al.* (1995) found problems arising from the musculoskeletal system and psychological and social problems to be most common among frequent attenders, often in combination, while chronic diseases, such as cardiovascular diseases and diabetes, were not connected with frequent attendance. Báez *et al.* (1998) conclude that over 40% of frequent attendance can be attributed to exposure to chronic physical illness, about one third to mental disorders and 15% to life stress.

In Finland, Larivaara (1987) found frequent attenders to complain mostly of ear, nose, throat or eye symptoms or musculoskeletal and general symptoms and less often of emotional problems. Also, Karlsson *et al.* (1994) found somatic complaints the main

reason for consulting, and only 1% of frequent attenders came due to psychiatric symptoms, although both psychiatric and somatic complaints were found to be the reason for encounter in 11% of cases compared to 5% of controls.

2.2.6 Chronic diseases of frequent attenders

Frequent attenders have high rates of somatic diseases, mental disorders and social difficulties. These patients' complex problems often include chronic somatic diseases with or without psychological and social problems (Báez *et al.* 1998, Heywood *et al.* 1998, Gill & Sharpe 1999).

2.2.6.1 Chronic somatic diseases of frequent attenders

“Frequent attenders are sick people when considered both objectively and subjectively.”

Smedby (1974)

The presence of chronic disease is a potent risk factor for increased attendance (Schrire 1986, Báez *et al.* 1998, Heywood *et al.* 1998). Smedby (1974) found that the number of self-reported illnesses associated positively with frequent attendance. Using ICHPPC-2, Dowrick *et al.* (2000) found more psychological, social and respiratory problems among frequent attenders than controls. Morris *et al.* (1992) found high consulters to have a lower cardio-respiratory health and a higher risk factor status than average consulters.

Previously in Finland, Videman *et al.* (1976) found neoplasms, mental disorders, and diseases of the cardiovascular and musculoskeletal systems common among frequent attenders. Larivaara found every fifth frequent attender in a health centre to have a chronic somatic disease as their main problem (Larivaara 1987, Larivaara *et al.* 1996). Karlsson *et al.* found that frequent attenders had more physical morbidity than controls. As far as ICD-9 based diagnoses were concerned, respiratory and musculoskeletal diagnoses tended to be more frequent. Frequent attenders had more multiple diagnoses than controls. (Karlsson *et al.* 1994.)

According to a study in Alaska, high utilizers have a higher risk for early death than low utilizers, and half of the deaths are associated with alcohol (Nighswander 1984). The mortality of frequent attenders has also been studied among frequent emergency department visitors. Frequent emergency department visits predicted mortality within nine years. Heavy emergency department users (over four times a year) had twofold excess mortality. The excess mortality was most significantly due to violent death (suicide, probable suicide, alcohol / drug abuse), which accounted for one third of the excess mortality among frequent emergency department visitors. (Hansagi *et al.* 1990.)

2.2.6.2 Chronic mental disorders of frequent attenders

"There seems little doubt that a considerable proportion of the complaints about which patients consult their doctors are not primarily or solely related to physical causes but originate from emotional problems."

Balint (1957)

The prevalence of mental disorders in the Finnish population varies from 16% to 29% (Väisänen 1975, Lehtinen 1988, Lehtinen 1991, Lehtinen *et al.* 1991, Viinamäki *et al.* 2000). Of GPs' patients in the Helsinki area, 8% had a mental disorder and 14% both a mental disorder and a somatic disease (Lönnqvist & Niskanen 1972). The prevalence of mental disorders was 34% among primary health care patients in Turku in a Nordic multicentre study. The overall prevalence in the Nordic countries was lower (26%). (Fink *et al.* 1995.) Of Finnish health centre patients, 28% had mental disorders when the General Health Questionnaire (GHQ) was used as a measure of mental disorder (Lehtinen *et al.* 1984). According to Johnstone & Goldberg (1976), 32% of GPs' patients had conspicuous psychiatric disorders when GHQ was used in the UK. The rate of mental disorders measured with Diagnostic Interview Schedule (DIS) was 22% among medical users in the Epidemiologic Catchment Area (ECA) Program study in the US, and there were high rates of affective disorders among women and notable substance abuse among men (Kessler *et al.* 1987).

Previously, frequent attendance has been connected with neurotic personality and neuroses (Table 2) (Polliack 1971, Schrire 1986). Kessel (1960) was the first to suggest that neurosis, social problems and intrafamily conflicts are associated with high consultation rates. Smedby (1974) found that one third of frequent attenders reported "nervous disorders", women more commonly than men. McArdle *et al.* (1974) found that 58% of frequent attenders had psychological problems and 42% of them had been referred to a psychiatrist during the 20 preceding years. One fourth of frequent attenders had a major psychological diagnosis in the study of Courtenay *et al.* (1974). According to Báez *et al.* (1998), mental disorders associated with patient-initiated frequent attendance. Psychiatric morbidity increased the risk to consult a GP among female high attenders (Corney & Murray 1988). Mental disorders are also common among children who are frequently presented to the GP with physical symptoms (Bowman & Garralda 1993). Patients in contact with psychiatric services are frequent attenders of other medical services (Hansson *et al.* 1997), and the higher use by them can be explained by the concomitant physical symptoms and discomfort (Mechanic *et al.* 1982).

In Finland, Videman *et al.* (1976) found mental disorders to be one of the main groups of diseases among frequent attenders. Larivaara (1987) found that psychosomatic illness or symptoms were the main problem of frequent attender patient in 48% of cases. According to Karlsson *et al.* (1995b), 54% of frequent attenders had a psychiatric diagnosis.

2.2.7 Psychological factors related to frequent attendance

2.2.7.1 Stress

In his review article, Hinkle (1973) quotes the definition of *stress* by Selye and Wolff. According to them, stress in biology indicates a state within a living creature, which results from the interaction of the organism with noxious stimuli or circumstances. Later on, stress and coping have conceptualized by Coelho *et al.* (1974) and Cassel (1976). According to Antonovsky's theory of coping, the essential factor in coping with stress is the sense of coherence (Antonovsky 1979). Coping with stress is a multilevel process, including effects of psychological, hormonal, metabolic and immunological functions and also of autonomic and central nervous system functions (Chrousos & Gold 1992, Lindholm & Gockel 2000). The buffer effect of social support on stress has been presented by Kaplan *et al.* (1977) and Payne & Jones (1987).

Recently, the interactions between stress, coping and social support were reviewed by Thoits (1995). It has been claimed that life stress has increased in the industrial countries (Huttunen 1981). In Finland, nearly 15% of the population have feelings of stress (Berg *et al.* 1990). Daily stress associates positively with the use of health care services (Gortmaker *et al.* 1982).

2.2.7.2 Stressful life events

A relationship between the accumulation of stressful life events and the onset of physical illness has been demonstrated (Rahe *et al.* 1964). Stressful life events also predict higher utilization. The more stressful life events test the person's coping ability, and the more the distress the person feels, the more likely he/she is to attend his doctor (Tessler *et al.* 1976, Gortmaker *et al.* 1982, Schrire 1986, Báez *et al.* 1998). In the study of Robinson & Granfield (1986), frequent consulters had fewer stressful life events but they coped less well with them because they had less satisfactory family and social support. The death of the spouse is the most stressful life event one can face (Holmes & Rahe 1967), and it affects injuriously the health of the widowed person (Wan 1982).

2.2.7.3 Psychological distress

The word *distress* means pain, anxiety, sorrow, acute physical or mental suffering, affliction or trouble (Webster's Encyclopedic Unabridged Dictionary 1996). Psychological distress associates with subjective ill health (Mechanic 1979, Cockerham *et al.* 1988), illness behavior (Mechanic 1978), health need (Preville *et al.* 1998), propensity to reporting physical symptoms (Cockerham *et al.* 1988) and use of health services (Tessler *et al.* 1976, Manning & Wells 1992). Balint (1957) stated that,

underlying a physical ticket of entry, there is often psychological distress. Musculoskeletal illness and poor outcome of musculoskeletal illness were connected with psychological distress (Jørgensen *et al.* 2000a, Jørgensen *et al.* 2000b).

Frequent attenders are more likely to feel psychological distress than non-frequent attenders (Browne *et al.* 1982, McFarland *et al.* 1985, Katon *et al.* 1990, Karlsson *et al.* 1995a), even among the elderly population (Freeborn *et al.* 1990). In the study of Katon *et al.* (1990), 51% of frequent attenders were considered psychologically distressed. In Finland, Karlsson *et al.* (1995a) found 44% of frequent attenders distressed, and the mean score of psychological distress on the Symptom Checklist – 25 (SCL-25) scale was significantly higher among frequent attenders than among controls. The psychologically distressed frequent attenders are perceived as frustrating by their physicians (Lin *et al.* 1991).

2.2.7.4 Depression

Studies concerning the prevalence of depression in the general population have been recently reviewed by Angst (1992), Poutanen (1996) and Rajala (1997). Altogether 10-20% of men and 15-30% of women have depressive symptoms, and the prevalence of clinical major depression varies within 2-6% among men and 1-12% among women. The ten-year prevalence of depression is estimated to be about 15% (Angst 1992). In Finland, the prevalence of depression is comparable to the international figures (Väisänen 1975, Lehtinen *et al.* 1990), although elderly populations have higher prevalence rates (Kivelä *et al.* 1988, Rajala *et al.* 1995, Rajala 1997). It has been said that one fifth of people have depressive episodes during their life (Lehtinen 1995).

The prevalence of depression among primary care patients varies within 12-25% (Katon 1987), and the one-month prevalence of depression among Finnish working age patients is 11% (Poutanen 1996, Salokangas *et al.* 1996). GPs' ability to recognize depression is not good (Paykel & Priest 1992, Joukamaa *et al.* 1994, Joukamaa *et al.* 1995, Coyne *et al.* 1995, Poutanen 1996).

Depression is connected with frequent attendance (McFarland *et al.* 1985). Dowrick *et al.* found that 59% of frequent attenders were depressive compared to 5% of controls. Depressive symptoms were the major predictor of frequent attendance in this study. (Dowrick *et al.* 2000.) According to Heywood *et al.* (1998), 52% of very frequent attenders were depressive compared to 29% of controls. Of distressed frequent attenders, 24% had major depression and 17% dysthymic disorder. Two thirds of these patients had a lifetime history of major depression. (Katon *et al.* 1990.) In Finland, Karlsson *et al.* (1995b) found 24% of frequent attenders to have depression.

2.2.7.5 Somatization

“It appears as if these patients believe it is better to be sick than crazy.”

Lipowski defined somatization as a tendency to experience and communicate somatic distress in response to psychosocial stress and to seek medical help for it (Lipowski 1988). Due to differences in the criteria used to define somatization and the differences in the study populations, the prevalence of somatization varies from 1% to 12% (Quill 1985, Escobar *et al.* 1987, Lipowski 1988, Noyes *et al.* 1995). According to Väisänen (1975), 7% of the Finnish population have serious psychosomatic disorders and 53% have milder symptoms of somatization. Among primary care patients, the prevalence of somatization varies from 8% to 25% (Bridges & Goldberg 1985, Kirmayer & Robbins 1991, Noyes *et al.* 1995, Kroenke *et al.* 1997, Kisely *et al.* 1997, Escobar *et al.* 1998). In Finland, one fourth of health centre patients were considered to have a psychosomatic reason for their encounters with GPs (Winblad *et al.* 1994).

Somatizing patients have a negative perception of their health (Katon *et al.* 1991, Gureje *et al.* 1997). Somatizing patients often have psychosocial difficulties (Mechanic 1992), experience substantial distress (Noyes *et al.* 1995) and show enhanced sensitivity to normal physical sensations (Robinson & Granfield 1986, Barsky & Wyshak 1990, Blackwell & DeMorgan 1996). Somatizing patients tend to use bodily symptoms to communicate because they have difficulties to express their feelings in words. Alexithymia (Nemiah *et al.* 1976) associates positively with somatization (Bach & Bach 1995, Bach & Bach 1996, Taylor *et al.* 1997). Somatizing patients are characterized by abnormal illness behavior following the interpretation and attribution of bodily perceptions (Lipowski 1988, Mechanic 1992, Noyes *et al.* 1995).

Somatizing patients prefer general medical services to mental health services (Simon 1992) and use an excess of hospital care (Zoccolillo & Cloninger 1986, Fink 1992). Somatization frequently goes unrecognized (Quill 1985, Fink *et al.* 1999), and physicians tend to exclude organic etiologies through multiple tests and procedures (Quill 1985, Margo & Margo 1994), which causes the health care system a great deal of expense (Smith *et al.* 1986, Lipowski 1988, Ford 1992, Blackwell & DeMorgan 1996). Somatizing patients are challenging in the doctor-patient relationship, and physicians are commonly frustrated by such patients (Katon *et al.* 1991, Mechanic 1992, Blackwell & DeMorgan 1996).

Most of the somatizing patients have psychological symptoms and half of them meet the criteria for a current psychiatric diagnosis, typically a somatization disorder, hypochondriasis, depression or anxiety (Bridges & Goldberg 1985, Lipowski 1988, Katon & Russo 1989, Simon & VonKorff 1991, Noyes *et al.* 1995, Rogers *et al.* 1996, Fink *et al.* 1999).

Somatization has been connected with frequent use of health services (O'Reilly 1988, Katon *et al.* 1991, Ford 1992, Portegijs *et al.* 1996, Karlsson *et al.* 1997). Portegijs *et al.* (1996) found the prevalence of somatization to be 45% in a group of frequent attender patients in general practice. Of distressed frequent attenders, 20% were somatizers (Katon *et al.* 1990).

In Finland, previous studies have revealed an association between somatization and frequent attendance in primary health care. Larivaara found psychosomatic disease or symptoms the chief problem of frequent attender patients in 48% of cases in a rural

health centre in Kolari (Larivaara 1987, Larivaara *et al.* 1996). About one fifth of frequent attenders were classified as chronically somatizing patients in an urban health centre in Turku (Karlsson *et al.* 1997).

2.2.7.6 Alexithymia

Alexithymia refers to a cognitive-affective disturbance in psychic functioning characterized by difficulties in the capacity to verbalize affects and to elaborate fantasies (Taylor 1984). It comes from a Greek word meaning “no word for emotions”. The term *alexithymia* was first coined by Sifneos (1973). The concept of alexithymia has since been refined and developed (Taylor *et al.* 1991, Taylor *et al.* 1997). Numerous studies have shown that alexithymia is associated with many different somatic diseases and mental disorders (Taylor *et al.* 1997). The construct of alexithymia was recently reviewed by Taylor *et al.* (1991), Kauhanen (1993), Taylor *et al.* (1997) and Salminen *et al.* (1999a).

The following four dimensions are considered to constitute alexithymia: difficulty in identifying and describing feelings verbally, difficulty in distinguishing between feelings and bodily sensations of emotional arousal, paucity of fantasies and an externally oriented, concrete cognitive style. There has been a debate in the literature as to whether alexithymia is a stable personality trait or a transient state (Warnes 1986, Kauhanen 1993, Salminen *et al.* 1994). Primary and secondary alexithymia have been tentatively distinguished: primary alexithymia is a life-long disposition, whereas secondary alexithymia could be result from a somatic illness or some other kind of stress (Freyberger 1977).

The prevalence of alexithymia depends on the measures and cut-off points of alexithymia used and the population studied. In a normal population, the prevalence is about 10% - 13%, being higher among men than among women (Salminen *et al.* 1999b, Honkalampi *et al.* 2000) and higher among the elderly (Joukamaa *et al.* 1996). Alexithymia is more common among less educated persons and among persons from lower socioeconomic classes (Kauhanen *et al.* 1993, Saarijärvi *et al.* 1993, Salminen *et al.* 1999b). Among the different groups of psychiatric patients, the prevalence varies within 38-40% (Taylor *et al.* 1992, Saarijärvi *et al.* 1993). Alexithymia correlates with increased illness behavior (Lumley *et al.* 1996, Lumley *et al.* 1997), frequently reported physical symptoms (Cohen *et al.* 1994) and psychological distress (Saarijärvi *et al.* 1993). Alexithymia also associates with somatization (Bach & Bach 1995, Bach & Bach 1996, Taylor *et al.* 1997), hypochondriasis (Rodrigo *et al.* 1989, Kauhanen *et al.* 1991), panic disorder (Joukamaa & Lepola 1994), depression (Honkalampi *et al.* 2000) and heavy alcohol use (Kauhanen *et al.* 1992, Kauhanen 1993).

Among frequent attenders, the prevalence of alexithymia was 25% in the study of Joukamaa *et al.* (1996). Among distressed frequent attenders, the prevalence was 30% (Joukamaa *et al.* 1996).

2.2.7.7 *Hypochondriasis*

Hypochondriasis comes originally from a Greek word *hypochondrios*, meaning the upper abdomen, the presumed seat of melancholy (Webster's Encyclopedic Unabridged Dictionary 1996). Hypochondriasis means, according to the DSM-IV classification, preoccupation of at least six months' duration with fears of having or the idea that one has a serious disease based on a misinterpretation of bodily symptoms, despite appropriate medical evaluation and reassurance. This preoccupation causes clinically significant distress or impairment in some important areas of functioning. (American Psychiatric Association 1994.)

According to a review by Kellner (1985), constitutional factors, disease in family or in childhood and previous disease predispose to hypochondriasis, and stress may be a precipitating factor. Hypochondriacal subjects show enhanced perceptual sensitivity to illness cues, which may further enhance their concern with bodily symptoms (Hitchcock & Mathews 1992). Barsky and Klerman write about the perceptual amplification of bodily sensations and the cognitive misinterpretation by hypochondriacal patients, and they propose a new general concept of "amplifying somatic style". They suggest this term to be used instead of hypochondriasis, which has a stigmatizing connotation. (Barsky & Klerman 1983.) Barsky & Wyshak (1990) reported enhanced somatosensory amplification among hypochondriacs.

The prevalence of hypochondriasis as a disorder varies from 0.4% to 14%, depending on the population surveyed and the methods used (Beaber & Rodney 1984, Kellner 1985, Barsky *et al.* 1990). The prevalences among males and females vary in different studies (Pilowsky 1970, Barsky *et al.* 1990). Hypochondriasis is associated with various somatic and psychological problems, especially depression (Beaber & Rodney 1984, Barsky *et al.* 1986b).

Hypochondriacal attitudes are associated with frequent use of medical services (Barsky *et al.* 1986a, Pålsson 1988) and doctor-shopping behavior (Kasteler *et al.* 1976). Hypochondriacal beliefs often go unrecognized in primary health care (Beaber & Rodney 1984, Pålsson 1988), although GPs are aware of their patients' concerns and fears of disease and bodily preoccupation. Hypochondriacal patients are often described as frustrating patients (Barsky & Klerman 1983).

Franklin (1971) claimed that frequent attenders have two components that interact with each other, one being an underlying chronic but unrecognized psychiatric illness and the other a massive hypochondriacal superstructure.

2.2.7.8 *Psychiatric comorbidity among frequent attenders*

The occurrence of multiple diagnoses (comorbidity) is an issue of major importance in health care. Psychiatric comorbidity has been found in chronic somatic diseases (Mayou *et al.* 1988, Ruoff 1996) and vice versa: mental disorders contribute to the risk of somatic symptoms and diseases and their outcome (Wells *et al.* 1991, Aromaa *et al.* 1994, Sherbourne *et al.* 1996). There is considerable comorbidity between various mental

disorders. Comorbidity of anxiety with depression (Coyne *et al.* 1994, Roy-Byrne 1996, Honkalampi *et al.* 2000) and vice versa (Montgomery 1990) are well known. Comorbidity of somatization with other mental disorders (Escobar *et al.* 1998, Fink *et al.* 1999), e.g. depression (Rogers *et al.* 1996), has been reported. Posttraumatic stress disorder (PTSD) is particularly likely to be comorbid with affective disorders, other anxiety disorders, somatization, substance abuse and dissociative disorders (Brady 1997) as well as physical health problems (Beckham *et al.* 1998). On the other hand, psychiatric comorbidity relates to better recognition and outcome of other psychological disorders (Ormel *et al.* 1990). Comorbidity studies have been recently reviewed by Angold *et al.* (1999).

2.2.8 Social factors relating to frequent attendance

Health status is connected with age, sex, socioeconomic status, education, income, language, unemployment and many other sociodemographic factors that characterize the population (Koskinen 1995). Primary care use and costs increase in a linear fashion with declining socioeconomic status (Worrall *et al.* 1997). It has been found, for example, that cardiovascular risk factor profiles and increased mortality concentrate in the lower social classes but differently among men and women (Pekkanen *et al.* 1995).

The social problems identified among frequent attenders often connect with chronic illnesses and psychological problems (McArdle *et al.* 1974, Browne *et al.* 1982, Schrire 1986, Gill & Sharpe 1999).

2.2.8.1 Sociodemographic backgrounds of frequent attenders

Frequent attendance has been connected with older age and female gender (Table 2), although almost all morbidity studies show that females usually attend more frequently than men (Nathanson 1977). Frequent attenders are more likely to be divorced or widowed (Westhead 1985, Larivaara 1987, Larivaara *et al.* 1996, Báez *et al.* 1998, Heywood *et al.* 1998, Dowrick *et al.* 2000). Lower socioeconomic status has been connected with frequent attendance (Table 2). Lower education has been considered a risk factor for frequent attendance (Karlsson 1996, Báez *et al.* 1998, Dunlop *et al.* 2000) but not in all studies (Dowrick *et al.* 2000). Frequent attenders were more likely to be unemployed (McArdle *et al.* 1974, Browne *et al.* 1982) or retired or to be on disability pension (Browne *et al.* 1982, Karlsson *et al.* 1994, Báez *et al.* 1998). Frequent attenders were more common in large cities than in rural areas (Smedby 1974, Vuori *et al.* 1983). Frequent attenders have been found to live alone (Heywood *et al.* 1998) and to have problems with housing and alcohol use (McArdle *et al.* 1974). Cultural differences in illness behavior will influence attendance patterns (Schrire 1986).

2.2.8.2 Social support and frequent attenders

Social support is defined as information leading the subject to believe that he is cared for and loved, esteemed, and a member of a network of mutual obligations (Cobb 1976). There is a lot of evidence of the connections between social support and physical and mental health (Kaplan *et al.* 1977, Holahan & Moos 1981, Payne & Jones 1987, Bowling 1991, Thoits 1995, Stansfeld *et al.* 1998). Social support has a buffer effect on stressful life events, protecting a subject against psychological distress (Paulsen & Shaver 1991) and the development of mental disorders, especially depression (Paykel 1994, Dalgard *et al.* 1995).

The concept of social support and its effects on health and health behavior have been reviewed by several researchers (Caplan 1974, Cassel 1976, Cobb 1976, O'Reilly 1988). Israel (1982) reviewed the associations between social network and health.

The availability of social support in the community determines health care attendance (Schrire 1986). People who are lonely and have fewer social resources for coping tend to visit more frequently (McArdle *et al.* 1974, Browne *et al.* 1982, Robinson & Granfield 1986). Even owning a pet serves as social support, leading to less use of doctor contacts (Siegel 1990). Lesser social support combined with a high level of psychological distress was a significant risk factor for high use of health care services (Kouzis & Eaton 1998).

Social burden is an opposite to social support, but there is a lack of studies on the effects of social burden on the use of health care services.

2.2.9 Family factors relating to frequent attendance

"My moral really is that three facets are deeply involved in the thick file case - the patient, the family and the doctor."

Kemp (1963)

In his review of studies concerning health care service use, McKinlay pays attention to the social network and the family (McKinlay 1972). Family is the major source of social support but also a source of stress, both of which affect health (Cohen & Syme 1985, Campbell 1987, Parkerson *et al.* 1989, Ell 1996, Pratt 1976). There is ample evidence of impacts of the family on the health and illnesses of the family members (Campbell 1987). The family and its functioning and interactions affect both physical, psychosomatic and mental health (Alanen *et al.* 1966, Minuchin *et al.* 1975, Wynne 1981, Wirsching & Stierlin 1982).

The way in which the family copes with and adapts to the illness of one of its members has a strong impact on the physical and psychosocial well-being of all family members and the clinical course and duration of the illness itself (Tansella 1995). Family dysfunction decreases coping behavior. Illness behavior is affected by the family members' behavior partly via the "family culture of using health care services" and partly through learning. (Schrire 1986.) The reported perception of subjective health seems to be

in part learnt in childhood, in part shaped by one's status in society and in part conditioned by psychological stress (Mechanic 1979). Sudden changes in life and the loss of a significant family member change illness behavior (Dowrick 1992). "Worried" parents tend to perceive common and trivial symptoms, e.g. colds, as threatening and consult physicians (Hansen 1994, Kai 1996).

2.2.9.1 Family structure and interaction among frequent attenders

The relations between family structure, family interaction and marital status and the use of health services have been studied to some extent, but the studies have produced different and even controversial findings (McKinlay 1972). Huygen (1978) reported a significant consistency in the number of consultations per family member within family and across generations. The number of contacts with the family physician as well as subjective symptoms and readiness to seek medical help are rather equal between family members (Picken & Ireland 1969, Huygen 1978). The mother's psychological distress affects her propensity to seek medical services for her children (Tessler & Mechanic 1978). The maternal use of health services appears to be a more powerful predictor of use by children than other family and maternal variables (Newacheck & Halfon 1986).

The family structure and interactional patterns differ between high and low health service utilizer families. Wamoscher (1966) reported frequently attending families, and Wilson (1977) later pointed out that high utilizer families really exist, and he found high utilization families to have more social and economic problems than families with a lower utilization rate. Frequent use concentrates in large families (Wilson 1977), although opposite results have also been presented (Picken & Ireland 1969, Courtenay *et al.* 1974, Garcia Lavandera *et al.* 1996). The families of frequent attenders showed characteristics of dysfunctionality and were less social than low utilizer families (Browne *et al.* 1982, Weimer *et al.* 1983). The "life situation" diagnosis of frequent attender patients reveals family problems and stressful life events (e.g. bereavement) (Larivaara 1987, Larivaara *et al.* 1996).

2.2.9.2 Family life cycle

Family life cycle as a concept means the series of stages or events that mark a family's life, offering an organizing schema for viewing the family as a system proceeding through time. The family life cycle theory provides a conceptual framework for understanding the common stresses of marital life. (Medalie 1979, Carter & McGoldrick 1980, McDaniel *et al.* 1990.) An association between the person's position in the family life cycle and chronic illness and distress has been confirmed (Rolland 1987, Newby 1996). The literature contains only a few references to the importance of the family life cycle when studying health care use (McKinlay 1972). Báez *et al.* (1998) found more frequent attenders in the breaking or contraction phases of family life cycle.

2.2.9.3 Marital relationship

Marital status is related to health problems, mortality rate, subjective illness, illness behaviour and use of health services, mainly due to differences in stress, life styles and social support (Morgan 1980, Burman & Margolin 1992). Marital adjustment, satisfaction and happiness associate with physical and psychological health (Renne 1971, Campbell 1987, Saarijärvi *et al.* 1990, Horwitz *et al.* 1998). The use of health services is more frequent among divorced, separated, widowed and never-married persons than among those who are married (Evashwick *et al.* 1984, Westhead 1985).

In some previous studies, marital disharmony or marital stress have been found among frequent attenders (Browne *et al.* 1982, Goodridge 1982, Weimer *et al.* 1983, Schrire 1986), but there are also studies without these findings (Courtenay *et al.* 1974, Karlsson *et al.* 1995a, Báez *et al.* 1998).

2.2.9.4 Münchausen by proxy syndrome

Frequent attenders may be present personally or via a proxy, frequently using a child in this way (Schrire 1986, Schreier & Libow 1994). The Münchausen by proxy syndrome (MBPS) is a condition in which a mother pretends her infant or child is ill or causes the infant or child to be ill in order to engage in an intensely ambivalent but often destructive relationship with a physician. MBPS was first described by Meadow in 1977. (Schreier & Libow 1994).

2.3 Summary of the literature

Since Backett's report of a minority of patients who are responsible for most of the workload of GPs (Backett *et al.* 1954), major progress has been made in the research on frequent attenders. Because of the difficulties and differences in the definition of frequent attender, the observed prevalence of the problem in primary health care varies notably, also depending on the populations studied. The portrait of these individuals at the top end of the consultation spectrum has been outlined, and the complex social, psychological and illness-related factors underlying frequent attendance have been clarified. Some previous studies can be criticized for problems in definition or study design, such as small sample size or the lack of a control group. Many of the studies must be interpreted with caution because of the differences in the health care systems of different countries. The studies of frequent attendance often focus on details, and certain uncritical body-mind dualism can be found in the previous literature.

Various theoretical models have been established for explaining and conceptualizing the use of health care services. However, the studies concerning frequent attendance are seldom based on any specific theoretical framework. Some efforts to categorize frequent attenders have been made, but the experiences of such categorization in everyday practice

are scant (Kokko 1988, Karlsson 1996). Altogether, there is a general agreement that we need a comprehensive approach to frequent attenders, taking into account both biomedical, social and psychological elements of the patient, his/her life, and the family (McArdle *et al.* 1974, Westhead 1985, Larivaara 1987, Báez *et al.* 1998).

3 Objectives of the study

The aims of the present study were:

1. To assess the prevalence of frequent attendance in a Finnish health centre and frequent attenders' use of health care services in primary and secondary health care.
2. To determine frequent attenders' chronic diseases, and their reasons for encounter with a physician in the health centre.
3. To study the associations of social factors with frequent attendance.
4. To study the associations of psychological factors, such as psychological distress, alexithymia, hypochondriacal beliefs and somatization, with frequent attendance.
5. To study the associations of family factors, such as family size, structure, family life cycle and marital satisfaction, with frequent attendance.

4 Subjects and methods

4.1 Health centre of Oulainen

The study was carried out in the health centre of Oulainen, which is a small country town with about 8200 inhabitants located in Northern Ostrobothnia in Finland. Oulainen belongs to the Public Health District of Oulainen together with its neighbouring municipalities Vihanti and Merijärvi. The main health centre of the Oulainen Health District is located in Oulainen. There are six GPs working in the health centre. The public primary health care facility is the most important way to access health care services, and only a small part of health services (approximately 10%) are obtained from the private medical sector in Oulainen.

4.2 Criteria for a frequent attender

Persons who had made eight or more visits to GPs in the health centre during the year 1994 were defined as frequent attenders (Larivaara 1987). Only face-to-face contacts with GPs were considered as eligible consultations, and home visits, phone contacts and regular contacts for antenatal care were excluded. Visits to other physicians were not included, either.

4.3 Study population

The frequent attender patients were screened from the annual statistics of the health centre, which were maintained by a computer program "TEHO-PLUS" (Tietoenator Oyj). Only those who lived in the Oulainen municipality and were aged 15 years or older were included. Altogether 304 frequent attenders were found from the statistics of the year

1994. For every frequent attender, one age- and sex-matched control ("nonfrequent attender") was selected from the computerized population register by random sampling. The population register included all the inhabitants of Oulainen.

4.4 Study design

The flow chart of this comparative, cross-sectional study is shown in Figure 1 of Paper II. The study data were collected from the patients' medical records, from the annual statistics of the Health District of Oulainen and the Northern Ostrobothnia Hospital District (first phase), from a postal questionnaire (second phase) and from personal interviews and a questionnaire (third phase).

In the first phase, the medical records of the frequent attenders and their controls were examined by the author. The annual statistics of the Oulainen Health District and the Northern Ostrobothnia Hospital District concerning the visits, inpatient episodes and inpatient days of the study groups during the study year 1994 were gathered and analyzed.

In the second phase, a postal questionnaire was sent to all frequent attenders and controls in 1995. The questionnaire had been tested in a pilot study. The response rate was 75.6% for frequent attenders and 74.0% for controls. Five frequent attenders had died before the postal questionnaire was sent. The information on non-responders was collected from the annual statistics and medical records and from a short postal questionnaire, the response rate being 62.4%.

In the third phase, half of the original sample (every second subject selected from the lists of frequent attenders and controls in the date of birth order) were invited to participate in a personal interview. Four frequent attenders and two controls had died before the interview. Two trained nurses interviewed 113 frequent attenders and 107 controls in 1996. The participation rates were 76.4% and 71.3%, respectively. After the interview, every interviewee filled in a questionnaire.

4.5 Variables

4.5.1 Variables collected from medical records

The following data were collected from the medical records available in the health centre of Oulainen. First, for every visit to a GP during 1994, the main reason for the encounter or the principal problem presented by the patient was classified according to the ICPC chapter (letter) code (ICPC Working Party 1987). The type of visit was coded as follows: normal appointment visit, visit without appointment, phone call and home visit. The type of the disease episode was determined. Single visit refers to one visit, acute episode to a

duration of four weeks or less, subacute episode to a duration of between four weeks and six months and chronic episode to a condition lasting for six months or more.

For every patient, the chronic diseases that had been diagnosed by the GPs or recognized in hospital examinations and recorded in the medical records were classified according to ICD-9 (International Classification of Diseases 1986). The visits to GPs' surgeries, home visits and phone calls during the years 1992 and 1993 were counted. The total numbers of laboratory visits, laboratory tests, x-ray visits and x-ray films during the study year 1994 were also counted. Two frequent attender patients and six controls had moved from the municipality, and their medical records were not available.

4.5.2 Variables collected from annual statistics

From the annual statistics of the Oulainen Health District, the following data were gathered for all frequent attenders and controls: number of visits, number of contacted physicians, number of treatment procedures (e.g. injections, sutures, punctures, etc.) and number of visits during normal working hours or emergency hours (from 4 p.m. to 8 a.m. and during weekends) during the study year 1994. The number of inpatient episodes in the health centre and the number of inpatient days in the health centre during the study year 1994 were also calculated based on the health centre statistics.

Furthermore, the annual statistics of the Northern Ostrobothnia Hospital District were used to determine the utilization of specialized care by frequent attenders and controls during the study year 1994: the number of inpatient days in general and mental hospitals, the number of inpatient episodes in general and mental hospitals and the number of outpatient visits to general and mental hospitals. Data were available for the whole study population.

4.5.3 Variables measured with the postal questionnaire

The postal questionnaire included questions about sociodemographic background, family, living conditions, social support, subjective health, chronic illnesses, use of health and social services and satisfaction with health care services. The socioeconomic classification was made according to Statistics Finland (Classification of occupations 1981). The classes 1-2 included self-employed persons, class 3 upper-level non-manual workers, class 4 lower-level non-manual workers, class 5 manual workers and the classes 6-9 students, pensioners and others.

The Finnish version of the Nottingham Health Profile (NHP) was included in the postal questionnaire to assess the health-related quality of life of frequent attenders and controls (Hunt *et al.* 1985, McDowell & Newell 1987). The Finnish version has been validated in the Finnish population (Koivukangas *et al.* 1995). One Likert-type question concerning self-rated health was included in the postal questionnaire.

The postal questionnaire included a health questionnaire, a Finnish version of the Cornell Medical Index questionnaire (CMI) (Brodman *et al.* 1956). A five-category classification based on the CMI scores was used to determine the severity of psychic symptoms or disorders (Väisänen 1975, Lehtinen *et al.* 1993). The categories were: no symptoms, suggestive disorder, mild psychiatric disorder, moderate psychiatric disorder and serious psychiatric disorder.

4.5.4 Variables measured in the personal interview and with the interview questionnaire

The personal interview included questions about family structure, self-rated health, health behaviour, social support and stressful life events. The stressful life events over the past five years were scored according to the Social Readjustment Rating Scale developed by Holmes and Rahe (Rahe score) (Holmes & Rahe 1967). The family life cycle situation was determined according to Hill's classification (Hill 1970) (See Appendix). In the analyses, the original 10-class categorization was reduced to four classes. The classes 1-4 (new parents family – preschool family), 5-8 (school age family – family as a launching centre) and 9-10 (postparental family – aging family) were combined, and the fourth class in the analyses was 11 (none of the alternatives).

To assess psychological distress among frequent attenders, a 36-item version (SCL-36) of the Symptom Checklist-90 (SCL-90) was used (Derogatis *et al.* 1973). SCL-36 includes subscales for assessing somatization, depression and anxiety. A mean score higher than or equal to 1.55 was considered an indicator of psychological distress (Fink *et al.* 1995). We used a cut-off point of eight symptoms or more (assessed as symptoms bothering a little bit or more in the SCL-36 questionnaire) out of the 12 symptoms on the SCL-36 somatization scale as a criterion for somatization. A total of 112 frequent attenders and 106 controls completed the SCL-36 questionnaire.

Alexithymia was measured using the Toronto Alexithymia Scale-20 (TAS-20) (Parker *et al.* 1993). TAS-20 is a valid and reliable self-report measurement tool for assessing alexithymia (Bagby *et al.* 1994a, Bagby *et al.* 1994b). It includes three factors, which represent the three dimensions of alexithymia. Factor 1 reflects difficulties in identifying feelings and distinguishing them from the bodily sensations of emotion, Factor 2 difficulties in describing feelings to others, and Factor 3 an externally oriented mode of thinking. The factorial validity of TAS-20 has been shown to be relevant (Parker *et al.* 1993), and the scale also functions well as a Finnish translated version (Joukamaa *et al.* 2001). When dichotomizing the TAS-20 score, sum scores higher than 60 were regarded as alexithymic (Taylor *et al.* 1997).

Hypochondriasis was screened using the Whiteley Index (WI) originally devised by Pilowsky (Pilowsky 1967). WI has been validated among primary health care patients (Wyshak *et al.* 1991, Speckens *et al.* 1996). Values higher than or equal to 6 points were regarded as hypochondriacal when dichotomizing the WI score (Pålsson 1988).

The assessment of marital satisfaction included measures of marital adjustment, marital communication and marital happiness. Marital adjustment was assessed by 14

items derived from the originally 32-item Dyadic Adjustment Scale (DAS). The questions of DAS included items of agreement and disagreement between the spouses. DAS has been found to be a validated and reliable measure of marital adjustment (Spanier 1979). Marital communication was assessed using six items derived from the Marital Communication Inventory (MCI), the validity of which has been confirmed in previous studies (Bienvenu 1970, Kinnunen *et al.* 1975). One direct Likert-type question on overall marital happiness was also included (Tolkki-Nikkonen 1985). The total score of marital satisfaction was a sum of the scores of DAS, MCI and the assessment of marital happiness (Saarijärvi *et al.* 1990). The higher the total score, the better the person's satisfaction with his/her marital relationship. Sixty-seven (59.3%) of the interviewed frequent attenders and 69 (64.5%) of the interviewed controls completed the marital satisfaction questionnaire.

4.6 Statistical analyses

In the statistical analyses, the SPSS for Windows software versions 6.1, 7.0 and 8.0 (SPSS Inc. 1989-1997) and the SAS software package (SAS Institute) were used. Chi-square tests or Fisher's exact tests were used for between-group comparisons of categorical data and t-tests for normally distributed continuous data. Mann-Whitney *U* tests were used for non-normally distributed continuous variables. The matched pairs of frequent attenders and controls were used to assess the differences in the proportions of ICPC-based reasons for encounter, the ICD-9-based diagnoses (paper I) and the health-related quality of life (NHP dimensions) between the study groups. In these analyses, McNemar's tests for categorical data and the paired samples t-test or Wilcoxon's tests for continuous data were used. Multivariate logistic regression analyses were used to calculate the adjusted odds ratio (OR) and its 95% confidence intervals (CI). The selection of explanatory variables into the model was conducted by a stepwise method (papers II-IV).

4.7 Approval by Ethical Committee

Informed consent was obtained from every participant in the interview after the purpose of the study had been explained to them. The study protocol was approved by the Ethics Committee of the University of Oulu. The Ministry of Social Affairs and Health granted a permission to use the statistics of the Health District of Oulainen and the Northern Ostrobothnia Hospital District and the medical records of the patients in the health centre.

5 Results

5.1 Prevalence and sociodemographic characteristics of frequent attenders (Paper I)

5.1.1 Prevalence of frequent attendance and use of health care services in the health centre

In this study, 304 patients were found to be frequent attenders in the health centre of Oulainen during the study year 1994. Frequent attenders accounted for 6.8% of the health centre patients and 4.7% of the whole population aged 15 years or older in Oulainen. Eighty-five controls (28%) had not visited GPs at all during the study year.

The use of health care services in the health centre is shown in Table I of Paper I. Frequent attenders had made 23.5% of all visits in the age group of 15 years or older, compared to 4.2% made by controls. Frequent attenders had used more services in the emergency hours (from 16 p.m. to 8 a.m. and during weekends) and made more visits without an appointment than controls. During the two years preceding the study year, frequent attenders' use of health services had been constantly higher than that of controls. Frequent attenders had had more acute episodes of illness than controls, but controls had made more single visits than frequent attenders.

5.1.2 Age distribution

The age distribution of frequent attenders is shown in Figure 1 of Paper I. Their mean age (SD) was 49.8 (18.5) years. Male frequent attenders were significantly younger than female frequent attenders, their mean age being 47.0 (18.7), while female frequent attenders' mean age was 51.1 (18.3) years ($P=0.010$).

There was an overrepresentation of male frequent attenders in the group aged 25-34 years and in the groups aged over 55 years, and a similar overrepresentation of females in the age groups of 25-34 years, 45-54 years and over 65 years.

5.1.3 Sociodemographic background

Two thirds of the frequent attenders (67.8%) were women. The sociodemographic characteristics of the study groups are presented in Table II of Paper I. Female frequent attenders had lower basic education than controls, but no difference in this respect was seen among men. The vocational training of female frequent attenders was lower than that of female controls. The occupational status of frequent attenders differed from that of controls due to differences between the male groups – almost one third of male frequent attenders were on disability pension, and there were fewer employed persons among male frequent attenders than among male controls. Unemployment was not significantly more common among frequent attenders than among controls.

There were no differences in the socioeconomic classification between the study groups, although frequent attenders estimated their economic situation as poorer than controls.

5.2 Self-rated health and health-related quality of life

A higher proportion of frequent attenders than controls rated their health as rather poor or poor (27.6% versus (vs.) 9.8%, $P < 0.001$). The difference was larger among males (40.8% vs. 10.0%, $P < 0.001$) than among females (21.3% vs. 9.8%, $P = 0.004$). The self-rated health of male frequent attenders was poorer than that of female frequent attenders ($P = 0.002$).

Frequent attenders assessed their health-related quality of life as significantly poorer on almost all dimensions of NHP (Table 3). Only the difference on the social isolation dimension of NHP was non-significant between the study groups. Frequent attenders reported significantly higher frequencies of health-related problems than controls in most activities of everyday life, except in social and sexual life (NHP Part Two sum scores in Table 3).

5.3 Frequent attenders' main reasons for encounter (Paper I)

Frequent attenders' main reasons for encounter are presented in Table IV of Paper I. Frequent attenders made every fourth visit to a GP due to problems of the musculoskeletal system. The next most frequent reasons for encounter reasons were

related to symptoms of the respiratory and digestive systems. Frequent attenders had a twofold rate of visits related to psychiatric symptoms than controls. They also made more visits due to problems of the musculoskeletal system and the digestive system, but made significantly fewer complaints concerning the endocrine, gynaecological, dermatological and circulatory systems than controls (Figure 1).

Table 3. Health-related quality of life among frequent attenders and controls by gender. Nottingham Health Profile (NHP) dimensions (means (SD)).

NHP dimensions	Men <i>n</i> of pairs=34			Women <i>n</i> of pairs=91			Total <i>n</i> of pairs=125		
	FAs	COs	P	FAs	COs	P	FAs	COs	P
Energy	30.0 (36.9)	11.0 (25.0)	0.021	22.3 (30.5)	12.2 (26.3)	0.027	24.3 (32.3)	11.9 (25.8)	0.001
Sleep	33.7 (36.8)	19.4 (31.6)	0.055	28.0 (33.9)	17.0 (27.3)	0.011	29.5 (34.7)	17.6 (28.4)	0.001
Pain	32.6 (35.3)	6.5 (14.3)	0.002	27.4 (31.4)	9.2 (19.7)	<0.001	28.8 (32.4)	8.5 (18.4)	<0.001
Social i.	14.0 (27.0)	7.5 (19.0)	0.327	8.7 (18.0)	8.0 (16.4)	0.882	10.1 (20.8)	7.9 (17.1)	0.517
Emotion	26.8 (30.5)	10.2 (18.7)	0.017	13.7 (20.7)	10.3 (18.4)	0.325	17.5 (24.5)	10.3 (18.4)	0.024
Physical	16.5 (25.4)	10.7 (20.2)	0.324	15.1 (15.1)	9.1 (17.5)	0.014	15.5 (22.0)	9.6 (18.2)	0.010
NHP 2	2.3 (2.0)	0.7 (1.6)	0.013	1.4 (1.9)	0.6 (1.2)	0.009	1.7 (1.9)	0.6 (1.3)	<0.001

Social i. = social isolation, NHP 2 = NHP Part Two; P-values by Wilcoxon tests.

5.4 Chronic diseases of frequent attenders (Paper I)

There appeared to be more chronic morbidity among frequent attenders than among controls. The mean number of diagnoses among frequent attenders was 2.0 compared to 1.1 among controls (Table I of Paper I). Of frequent attenders, 84.4% had one or more chronic diagnoses compared to 58.7% of controls ($P < 0.001$), and the difference was equal in both genders.

Frequent attenders' most common chronic diseases classified according to ICD-9 were diseases of the circulatory system, diseases of the musculoskeletal system and mental disorders (Table III of Paper I). The most distinct differences in the frequency of diagnoses between frequent attenders and controls were seen in the frequency of psychiatric, digestive and musculoskeletal diagnoses. Frequent attenders had an over threefold rate of psychiatric diagnoses compared to controls (Figure 2).

Every fourth male frequent attender and every fifth female frequent attender had a psychiatric diagnosis. The differences in the frequencies of digestive and musculoskeletal diagnoses between the study groups were more pronounced among females than among males. Male frequent attenders had more commonly psychiatric diagnoses, diagnoses related to injuries and respiratory system diagnoses than female frequent attenders.

Endocrine diseases and diseases of the musculoskeletal and digestive systems were likely to increase the risk to be a frequent attender among females.

5.5 Psychiatric symptoms and disorders assessed by the Cornell Medical Index health questionnaire (CMI)

The results of the assessment of psychiatric symptoms and disorders based on the CMI health questionnaire are presented in Table 4. Of frequent attenders, 71 persons (31.4%) had a moderate or severe mental disorder compared to 56 persons (25.2%) among controls. The difference was non-significant. However, male frequent attenders had significantly more moderate or severe mental disorders than controls (26 (36.1%) vs. 10 (16.9%); $P=0.015$).

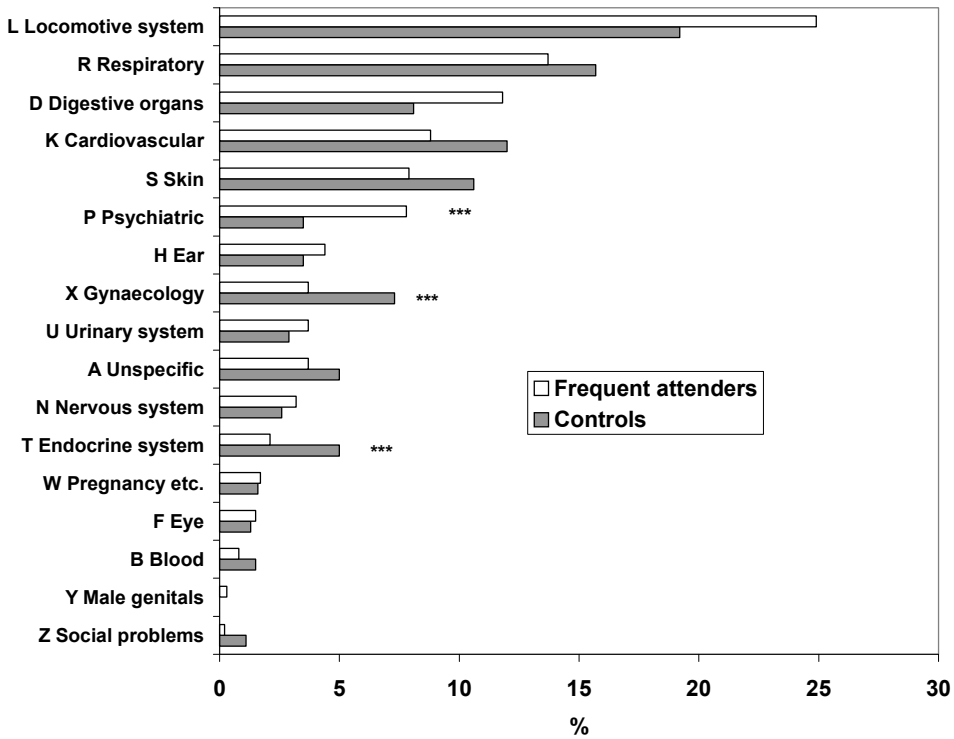


Fig. 1. Reasons for encounter with GPs classified by the International Classification of Primary Care (ICPC) chapter codes (%). Sorted by frequent attenders' reasons for encounter. Symbols: * = Difference between the study groups highly significant (P<0.001). P-values by McNemar's tests for matched pairs.**

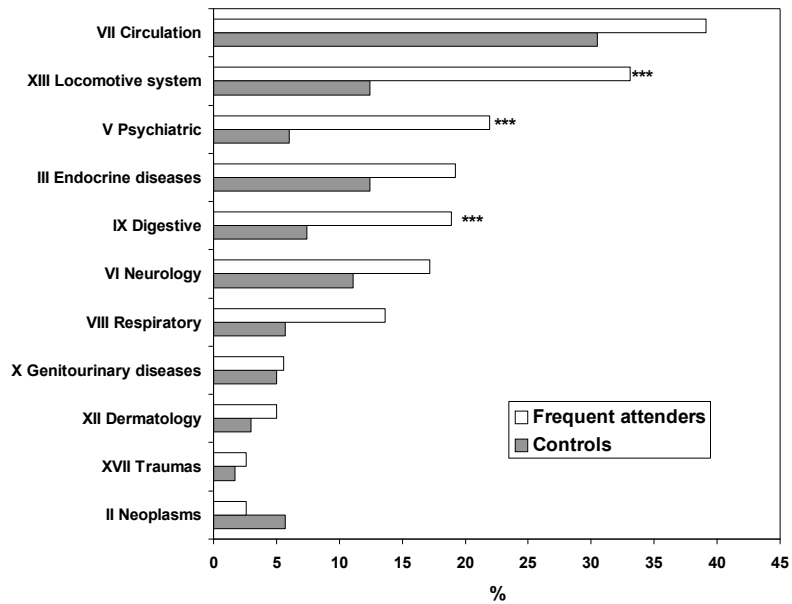


Fig. 2. The proportions of the eleven most frequently diagnosed chronic diseases according to the International Classification of Diseases 9th Revision (ICD-9) diagnostic categories among frequent attenders and controls (%). Sorted by the proportions of chronic diseases among frequent attenders. Symbols: * = Difference between the study groups highly significant (P<0.001). P-values by McNemar's tests for matched pairs.**

Table 4. Psychiatric symptoms and disorders as assessed by the Cornell Medical Index (CMI) questionnaire among frequent attenders and controls by gender. Values are numbers (percentages).

CMI-categorization	Men			Women			Total		
	FAs <i>n</i> =72	COs <i>n</i> =59	P	FAs <i>n</i> =154	COs <i>n</i> =163	P	FAs <i>n</i> =226	COs <i>n</i> =222	P
			0.019			0.904			0.323
No symptoms	26 (36.1)	34 (57.6)		36 (23.4)	46 (28.2)		62 (27.4)	80 (36.0)	
Suggested disorder	11 (15.3)	13 (22.0)		41 (26.6)	39 (23.9)		52 (23.0)	52 (23.4)	
Mild disorder	9 (12.5)	2 (3.4)		32 (20.8)	32 (19.6)		41 (18.1)	34 (15.3)	
Moderate disorder	10 (13.9)	3 (5.1)		24 (15.6)	24 (14.7)		34 (15.0)	27 (12.2)	
Severe disorder	16 (22.2)	7 (11.9)		21 (13.6)	22 (13.5)		37 (16.4)	29 (13.1)	

P-values by chi-square tests.

5.6 Psychological distress, alexithymia and hypochondriacal beliefs among frequent attenders (Papers II, III)

5.6.1 Psychological distress

The interviewed frequent attenders were significantly more psychologically distressed than controls (Table 5). This was due to the higher psychological distress scores of male frequent attenders – there was no significant difference between the female study groups in this respect (Table 2 of paper II).

Among male frequent attenders, a higher level of psychological distress was apparent on all subscales of SCL-36 (depression, anxiety and somatization) in comparison with control males, whereas no such difference existed among females. Between all frequent attenders and controls, significant differences were only found in the total score of SCL-36 and on the somatization subscale (Table 5, Table 2 of Paper II).

Of frequent attenders, 33.9% were psychologically distressed, whereas the prevalence of the psychological distress among controls was 18.9%. The prevalence was 40.0% among male frequent attenders and 31.7% among female frequent attenders (Table 6).

5.6.2 Alexithymia among frequent attenders

Male frequent attenders' TAS-20 score was higher than that of male controls, whereas the corresponding difference between female frequent attenders and controls and between the total study groups was non-significant (Table 5, Table 2 of Paper II).

In the TAS-20 factors, male frequent attenders had more difficulties in identifying feelings (TAS-20 Factor 1) than male controls, while the other factors of TAS-20 revealed no significant differences between the male groups (Table 2 of Paper II).

The prevalence of alexithymia was 12.4% among frequent attenders compared to 7.5% among controls; the difference was non-significant. The proportion of alexithymic persons was 25.8% among male frequent attenders vs. 3.2% among control men ($P=0.026$). The respective percentages among females were 7.3% vs. 9.2% (Table 6). The difference between male and female frequent attenders was not significant.

5.6.3 Hypochondriacal beliefs among frequent attenders

The mean score of WI was significantly higher among the interviewed frequent attenders than among the interviewed controls (Table 5, Figure 3). This was due to the difference between the male groups, the mean WI score being over twofold among male frequent attenders compared to respective controls, whereas the difference between the female groups was non-significant (Table 2 of Paper II).

Almost one third of frequent attenders were concerned about their symptoms and scored above the cut-off point of WI. Among controls, the prevalence of hypochondriasis was 11.2%. Among men, 58% of frequent attenders were hypochondriacal compared to 7% of control men ($P<0.001$) (Table 6). There were significantly more hypochondriacal males than hypochondriacal females among frequent attenders ($P<0.001$).

Table 5. Alexithymia (TAS-20 total score, TAS-20 factors), hypochondriacal beliefs (Whiteley Index) and psychological distress (SCL-36 and SCL-36 factors) among frequent attenders and controls by gender (means (SD)).

Variable	Men			Women			Total		
	FAs	COs	P	FAs	COs	P	FAs	COs	P
	n=31	n=31		n=82	n=76		n=113	n=107	
TAS-20	51.7 (11.0)	46.1 (8.7)	0.040	45.6 (10.5)	45.0 (11.4)	0.661	47.3 (10.9)	45.3 (10.7)	0.183
TAS-20 F 1	16.0 (6.1)	11.2 (4.3)	<0.001	12.8 (5.2)	13.1 (5.2)	0.656	13.7 (5.6)	12.6 (5.0)	0.139
TAS-20 F 2	13.2 (4.3)	12.4 (4.5)	0.558	11.1 (4.3)	11.6 (4.6)	0.506	11.6 (4.4)	11.8 (4.6)	0.770
TAS-20 F 3	22.6 (3.8)	22.5 (4.0)	0.761	21.8 (5.0)	20.4 (5.4)	0.168	22.0 (4.7)	21.0 (5.1)	0.231
WI	5.8 (3.1)	2.3 (1.8)	<0.001	3.3 (2.5)	3.0 (2.4)	0.422	4.0 (2.9)	2.8 (2.3)	0.002
SCL-36	56.3 (13.6)	44.5 (13.8)	<0.001	50.2 (12.3)	47.9 (11.8)	0.445	51.9 (12.9)	46.9 (12.5)	0.006
SCL-36 som	20.9 (6.8)	15.5 (4.7)	<0.001	18.7 (5.3)	17.0 (5.4)	0.061	19.3 (5.8)	16.6 (5.2)	<0.001
SCL-36 dep	19.1 (4.7)	15.8 (5.6)	0.001	17.2 (5.3)	17.9 (4.0)	0.157	17.8 (5.2)	17.2 (4.6)	0.483
SCL-36 anx	11.3 (3.0)	9.5 (3.1)	0.006	9.6 (2.4)	9.6 (2.1)	0.849	10.1 (2.7)	9.6 (2.4)	0.100

TAS F 1 = TAS Factor 1, TAS F 2 = TAS Factor 2, TAS F 3 = TAS Factor 3, SCL-36 som = SCL-36 somatization subscale, SCL-36 dep = SCL-36 depression subscale, SCL-36 anx = SCL-36 anxiety subscale; P-values by Mann-Whitney *U* tests.

Table 6. Proportions of psychologically distressed, somatizing, alexithymic and hypochondriacal patients among frequent attenders and controls by gender.

Variable	Men			Women			Total		
	FAs	COs	P	FAs	COs	P	FAs	COs	P
	n (%)	n (%)		n (%)	n (%)		n (%)	n (%)	
Distressed	12 (40.0)	3 (9.7)	0.008 ¹	26 (31.7)	17 (22.7)	0.205	38 (33.9)	20 (18.9)	0.012
Somatizing	12 (40.0)	3 (9.7)	0.008 ¹	20 (24.4)	14 (18.7)	0.384	32 (28.6)	17 (16.0)	0.027
Alexithymic	8 (25.8)	1 (3.2)	0.026 ¹	6 (7.3)	7 (9.2)	0.665	14 (12.4)	8 (7.5)	0.225
Hypochondriacal	18 (58.1)	2 (6.5)	<0.001 ¹	16 (19.5)	10 (13.2)	0.282	34 (30.1)	12 (11.2)	0.001

P-values by chi-square tests; ¹P-values by Fisher's tests.

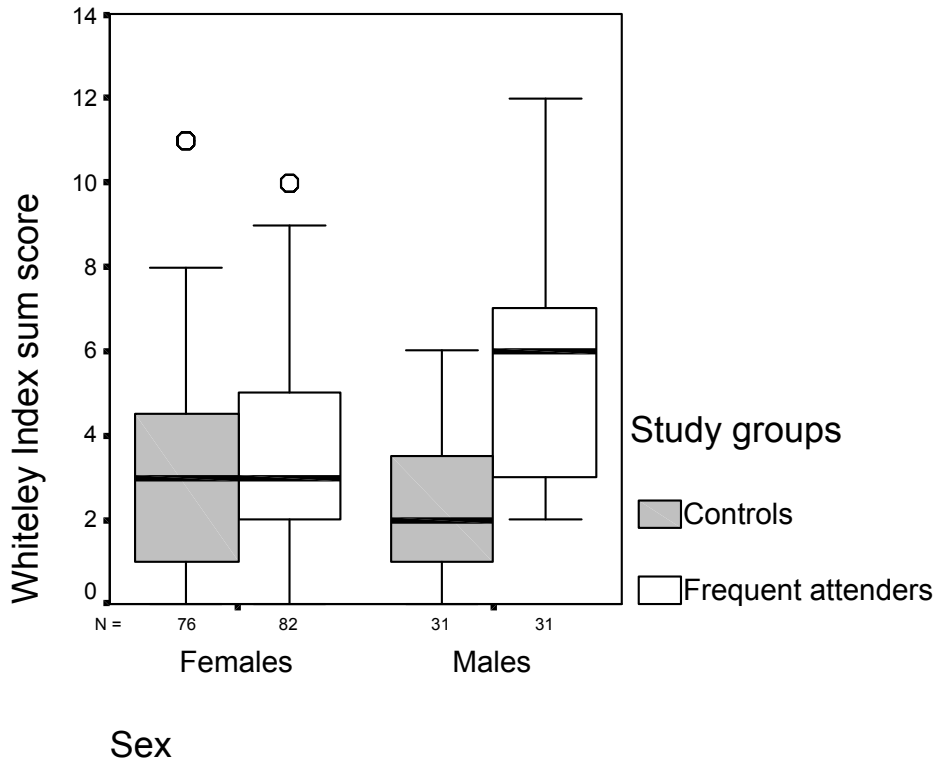


Fig. 3. Boxplots of hypochondriacal beliefs (Whiteley Index sum score, WI) among frequent attenders and controls by gender. The horizontal line in the middle of the box is the median value of WI and the lower (upper) boundary indicates the 25th (75th) percentile. The boxplot also displays outliers; cases with values more than 1.5 box length from the upper (lower) edge of the box are designated with a circle. The highest and lowest observed values that are not outliers are also shown. Lines have been drawn from the ends of the boxes to those values. The difference between male frequent attenders and controls is significant ($P < 0.001$). The difference between male and female frequent attenders is significant ($P < 0.001$). P-values by Mann-Whitney U tests.

5.7 Somatization among frequent attenders (Paper III, IV)

On closer consideration of the somatization subscale of SCL-36, it was found that the interviewed frequent attenders had more somatization than the respective controls.

Among males, the difference was highly significant, but there was a tendency towards a difference between the female study groups, too (Table 5, Table 2 of paper II).

When the score on the somatization subscale of SCL-36 was dichotomized using a cut-off point of eight symptoms as the criterion of somatization, it was found that nearly 29% of frequent attenders were somatizers, while the corresponding percentage among controls was 16% ($P=0.027$) (Paper III). The prevalence of somatization was 40.0% among male frequent attenders and 24.4% among female frequent attenders (Table 6).

Somatizing frequent attenders differed from non-somatizing frequent attenders. They were older and had a lower basic education and occupational status than nonsomatizing frequent attenders (Table I of Paper III). Somatizing frequent attenders' self-rated health was poorer and they had more chronic diseases than respective non-somatizers. They used more health care services, both inpatient services of primary health care and inpatient and outpatient services of secondary health care, than the respective non-somatizers' use. (Table II of Paper III).

The association of psychosocial factors with frequent attenders' somatization was evident: somatizing frequent attenders were significantly more distressed and alexithymic and had more mental disorders and hypochondriacal beliefs than respective non-somatizers (Table III of Paper III, Figure 4).

Marital satisfaction was not associated with somatization in the total group of frequent attenders. When comparisons were made by gender, it turned out that poor communication in the marital relationship tended to be connected with somatization among female frequent attenders. In the male group, dyadic adjustment between the spouses was even better among somatizing male frequent attenders compared to non-somatizing male frequent attenders. Somatizing female frequent attenders assessed their marital communication as significantly poorer than the respective males (Table 5 of Paper IV, Figure 5).

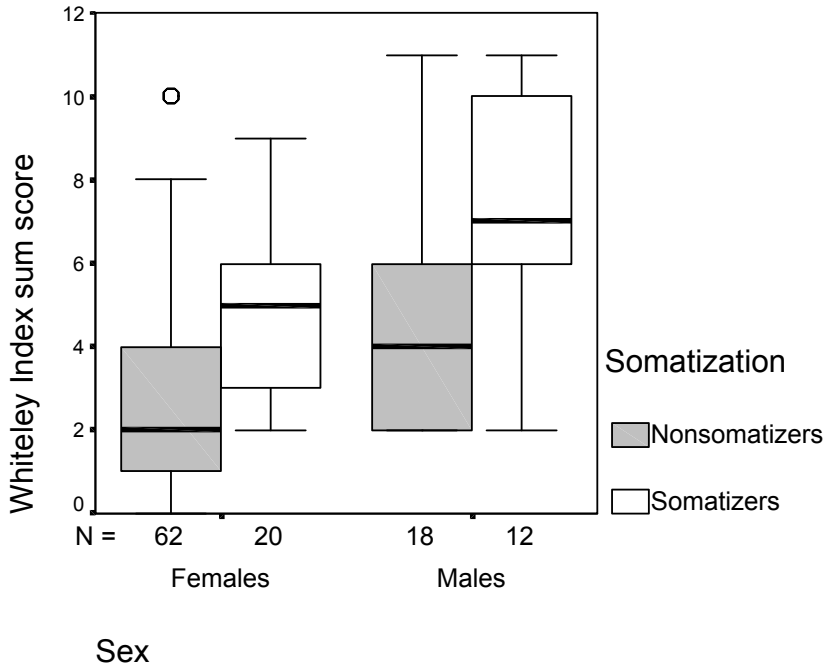


Fig. 4. Boxplots of hypochondriacal beliefs (Whiteley Index sum score, WI) among somatizing and non-somatizing frequent attenders (FA) by gender. The horizontal line in the middle of the box is the median value of WI and the lower (upper) boundary indicates the 25th (75th) percentile. The boxplot also displays outliers; cases with values more than 1.5 box length from the upper (lower) edge of the box are designated with a circle. The largest and smallest observed values that are not outliers are also shown. Lines have been drawn from the ends of the box to those values. The difference between somatizing and nonsomatizing male FAs is significant ($P=0.011$) and that between the respective female groups is also significant ($P=0.001$). The difference between somatizing male and female FAs is significant ($P=0.006$). P-values by Mann-Whitney U tests.

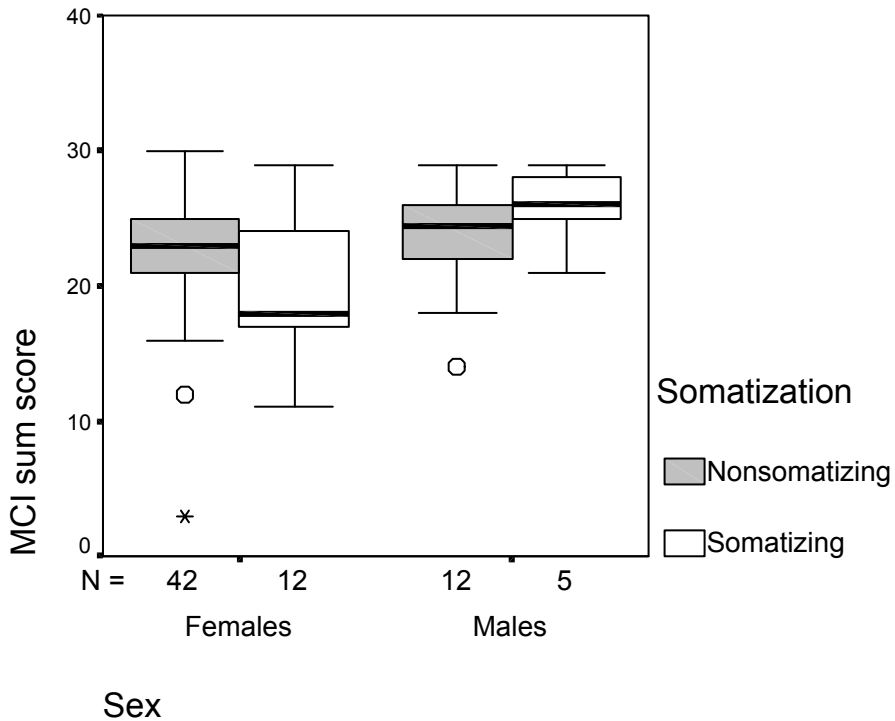


Fig. 5. Boxplots of Marital Communication Inventory (MCI) sum scores among somatizing and non-somatizing frequent attenders by gender. The horizontal line in the middle of the box is the median value of MCI and the lower (upper) boundary indicates the 25th (75th) percentile. The boxplot also displays outliers and extreme values; cases with values more than 1.5 (3.0) box length from the upper (lower) edge of the box are designated with a circle (asterisk), respectively. The highest and lowest observed values that are not outliers are also shown. Lines have been drawn from the ends of the box to those values. The difference between somatizing female and male FAs is significant ($P=0.027$). *P*-value by Mann-Whitney *U* tests.

5.8 Family-related factors and frequent attendance (Paper IV)

5.8.1 Family size and structure

The size and structure of the present family or the family of origin did not differ between the total study groups or between the male and female groups. The proportions of persons having sisters and brothers or having a mother or father still alive did not differ significantly between the study groups. Furthermore, the differences in the numbers of brothers, sisters, stepbrothers, stepsisters and siblings were non-significant between the study groups. The number of family members living together in the present family was almost equal among the frequent attenders and controls.

5.8.2 Family life cycle

There were significantly fewer frequent attenders among the families of the younger family life cycle phase (new parents – preschool family) and more frequent attenders among the families of the older family life cycle phase (school age – family as a launching centre and postparental – aging family phases) than among the respective control families (Table 2 of Paper IV, Figure 6).

The proportion of frequent attenders among women belonging to school age – family as a launching phase families was significantly higher than the respective proportion among men (Table 2 of Paper IV).

5.8.3 Marital satisfaction of frequent attenders

The interviewed frequent attenders were equally satisfied with their marital relationship as the respective controls when assessed by means of the adjustment between the spouses, the marital communication between the spouses and happiness in the marital relationship. However, male frequent attenders were significantly more satisfied with their communication in the marital relationship than female frequent attenders (Table 3 of Paper IV).

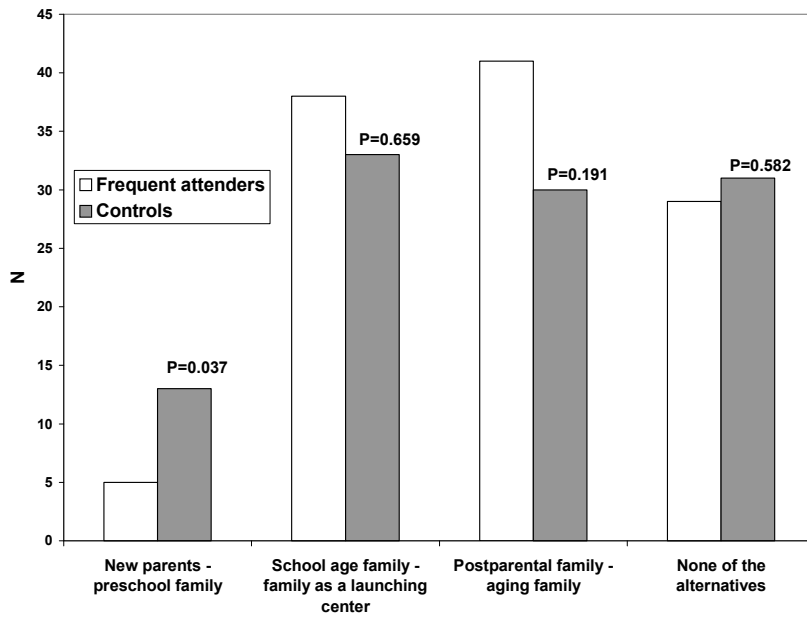


Fig. 6. Numbers of frequent attenders and controls at the various family life cycle phases. P-values by chi-square tests.

5.9 Results of multivariate analyses (Papers II, III, IV)

5.9.1 *Factors associating with frequent attendance*

The aim of multivariate analyses was to find out which factors explain patients' frequent attendance in the health centre. Using frequent attendance as a dependent variable, the factors that were significantly connected with frequent attendance in bivariate analyses were included in the logistic regression analyses as potential explanatory variables. These dichotomized factors were basic education (over / under 12 years), occupational status (working / not working), poor self-rated health (health rated as very good, rather good or satisfactory / health rated rather poor or poor), chronic somatic disease (no / yes), chronic mental disorder (no / yes), psychological distress (non-distressed / distressed), somatization (non-somatizing / somatizing) and hypochondriacal beliefs (no / yes). Age and gender were included as potential confounding variables in the analyses.

The odds ratios (OR) and their 95% confidence intervals (95% CI) based on the logistic regression analyses are shown in Table 7 before and after adjustment for chronic somatic disease. After controlling for chronic somatic disease, it was found that a low occupational status, poor self-rated health, mental disorders and hypochondriacal beliefs associated with frequent attendance.

5.9.1.1 *Chronic somatic disease and hypochondriacal beliefs as predictors of frequent attendance*

When these factors (low occupational status, poor self-rated health, mental disorders, hypochondriacal beliefs and chronic somatic disease) were included in the same model and a stepwise regression analysis was carried out, it turned out that chronic somatic disease and hypochondriacal beliefs were the only significant predictors of frequent attendance.

Patients with a chronic somatic disease were more likely to be frequent attenders (OR 5.6; 95% CI 2.6 – 12.5; $P < 0.001$) than patients without a chronic somatic disease. Hypochondriacal beliefs associated significantly with frequent attendance (OR 3.4; 95% CI 1.6 – 7.2; $P = 0.002$).

Table 7. Association of various psychosocial and health factors with frequent attendance. Frequent attendance as the dependent variable and psychosocial factors as covariates one by one, adjusted for age and sex. The odds ratios (OR) and 95% confidence intervals (CI) are from logistic regression analyses, without and after adjusting for chronic somatic disease (method: Enter).

Variable	Without adjustment			Adjusted for chronic somatic disease		
	OR	95% CI	P	OR	95% CI	P
Low basic education	3.1	1.0 – 9.6	0.052	3.0	0.9 – 14.7	0.075
Low occupational status	3.1	1.4 – 7.2	0.007	2.9	1.2 – 6.9	0.018
Low self-rated health	4.7	2.1 – 10.5	<0.001	3.0	1.3 – 7.0	0.012
Chronic somatic disease	5.8	2.7 – 12.5	<0.001	N.A.		
Chronic mental disorder	2.9	1.1 – 7.8	0.031	2.8	1.0 – 7.6	0.049
Psychological distress	2.2	1.1 – 4.1	0.018	1.7	0.9 – 3.3	0.115
Somatization	2.1	1.0 – 4.1	0.039	1.8	0.9 – 3.6	0.109
Hypochondriacal beliefs	3.6	1.7 – 7.5	0.001	3.4	1.6 – 7.2	0.002
Hypochondriacal beliefs and somatization interactive term	10.0	2.2 – 45.3	0.003	9.4	2.1 – 43.3	0.004

P-values by Wald's tests.

Table 8. Association of various psychosocial and health factors with somatization among frequent attenders. Dichotomized somatization variable as the dependent variable and psychosocial and health factors as covariates one by one, adjusted for age and sex. The odds ratios (OR) and 95% confidence intervals (CI) are from logistic regression analyses (method: Enter).

Variable	OR	95% CI	P
Low occupational status	2.0	0.6 – 7.3	0.291
Low self-rated health	15.3	1.7 – 134.1	0.014
Chronic mental disorder	4.6	1.5 – 14.1	0.008
Hypochondriacal beliefs	4.2	1.6 – 11.1	0.004

P-values by Wald's tests.

5.9.1.2 The interaction effect of hypochondriacal beliefs and somatization on frequent attendance

In order to find out the simultaneous interaction effect of hypochondriacal beliefs and somatization on frequent attendance, the interaction term was included in the stepwise logistic regression model with the somatization main effect term and chronic somatic disease, age and gender as other covariates. The analysis revealed that the interaction effect term and chronic somatic disease were significant explanatory factors of frequent attendance. The interaction effect (simultaneous occurrence of somatization and hypochondriacal beliefs) was a significant risk factor for frequent attendance ($P=0.006$) when the main effect term of somatization was included in the model and age, gender and chronic somatic disease were controlled for (Paper III).

5.9.2 Factors associating with frequent attenders' somatization

5.9.2.1 Hypochondriacal beliefs and poor self-rated health as predictors of frequent attendee's somatization (Paper III)

The potential explanatory factors significantly connected with frequent attenders' somatization in the bivariate analyses were included in the logistic regression analyses. The dichotomized somatization variable was included in the analyses as a dependent variable. The dichotomized potential explanatory variables were: occupational status (working / not working), poor self-rated health (health rated as very good, rather good or satisfactory / health rated as rather poor or poor), chronic mental disorder (no / yes) and hypochondriacal beliefs (no / yes). Age and gender were included as potential confounding variables in the analyses.

The results showed that poor self-rated health, hypochondriacal beliefs and chronic mental disorders were connected as significant explanatory factors with frequent attenders' somatization (Table 8). When modelling frequent attenders' somatization, these factors were included in the same logistic regression model and a stepwise logistic regression analysis was carried out. It was found out that poor self-rated health (OR 5.7; CI 1.9 – 17.0; $P=0.002$) and hypochondriacal beliefs (OR 3.2; 95% CI 1.1 – 9.4; $P=0.036$) were significant predictors of frequent attenders' somatization.

5.9.2.2 Poor marital communication as a predictor of female frequent attenders' somatization

According to bivariate analyses, poor marital communication tended to associate with female frequent attenders' somatization. The logistic regression analyses revealed an association between poor marital communication and somatization among female frequent attenders. When somatization was analyzed as a dependent variable, the odds ratio (OR) of being a somatizer was 5.8 (95% CI 1.3 - 25.1; P=0.019) among the female frequent attenders having the lowest quartile scores of marital communication, when the other quartiles were considered as a reference category, after controlling for age and chronic diseases. Among male frequent attenders, no such association existed.

Somatizing male frequent attenders assessed their marital communication as significantly better than somatizing female frequent attenders. Because of that, marital communication appeared to be a non-significant predictor of frequent attenders' somatization in the total study group, and it was thus not included in the multivariate model.

6 Discussion

6.1 Subjects and methods

6.1.1 Study population

The study population was a sample of the whole population aged 15 years or older in Oulainen, a small town situated in a rural area in Northern Ostrobothnia in Finland. The computerized population register in the health centre comprises a database of all the inhabitants in the municipalities of Oulainen, Merijärvi and Vihanti. The selection of frequent attenders was based on the computerized annual statistics, which are routinely collected in all health centres in Finland for administrative purposes. The age and sex-matched controls were selected from the same population register. The control group also included some subjects who had not visited a GP at all during the study year. Thus, the controls represented the whole non-frequently attending population in Oulainen.

Previously, most of the studies on frequent attendance have been based on patient populations (Table 2) and only a few on unselected population samples (Wamoscher 1966, Smedby 1974, Švab & Zaletel-Krakerlj 1993). Several studies have included no control group. In some studies, all non-frequent attenders or such patients divided into categories by utilization or the total population have been considered as controls (Table 2). In some studies, the control group or groups have been poorly defined, and only in some studies has an age- and sex-matched defined population been used as a control group (Hood & Farmer 1974, Westhead 1985).

The study population represents the population of a small Finnish town, and this fact must be borne in mind when generalizing the results to the whole Finnish population utilizing primary health services.

6.1.2 Design

The study was a cross-sectional controlled study with equal numbers of frequent attenders and age- and sex-matched controls. The collection of study data can be divided into three phases, which were carried out during the years 1995-1996 (Figure 1 of Paper II). The examination of medical records and the collection of data of the study population from the annual statistics took the year 1995, during which the mail inquiry was also carried out. The personal interviews were carried out by two trained nurses during the year 1996.

The interviewees were selected from the original list in the date of birth order, so that every second person from the list of frequent attenders and from the list of controls was selected, to maintain the representativeness of the sample.

6.1.3 Methods

6.1.3.1 Criterion of frequent attendance

The cut-off point of eight face-to-face contacts with GPs in the health centre per year was used as a criterion of frequent attendance in this study. Previously, some researchers have used the upper quartile (Courtenay *et al.* 1974) or decile (Westhead 1985, Von Korff *et al.* 1992, Švab & Zaletel-Krakelj 1993) of visits stratified by age and sex as the criterion of frequent attendance, although most of the previous studies have used cut-off points ranging from five to 20 consultations (Table 2). In Finland, Larivaara (1987) used eight visits to GPs as the cut-off point of frequent attendance in his study in a rural health centre in Northern Finland. The criterion of frequent attendance in the study of Karlsson (1996) was 11 visits (including the visits to physicians other than GPs in a health centre).

The method of selecting frequent attenders was feasible and reliable, but it assumes the use of a certain cut-off point of consultation frequency as the criterion of selection. Methodologically, a certain cut-off number of visits is an easier way to identify the frequent attenders from the statistics, but the method does not take into account the differences in the frequency of consultations between males and females and between various age groups. Females and the older age groups are over-represented in the study population, and the results are not fully comparable with all previous studies. In this study, the visits in the private medical sector were omitted, because the public health care facility is the primary way to access health care services in Oulainen. In addition to this, the gathering of reliable statistics from private health care would have been laborious or impossible.

The inclusion of non-attenders in the control group must be borne in mind when comparing the results with the results of the earlier studies. However, in the study of Browne *et al.* (1982), the non-attenders (zero users) differed significantly from the modal users only by having a higher internal locus of control.

6.1.3.2 Data collection

The statistical information of the utilization of health services in primary and secondary health care can be regarded as reliable and free of systematic bias. The information of the medical records in the health centre was gathered and coded by the author himself, which means that there is a certain risk of subjectivity when coding the information on, for instance, the ICD diagnoses of chronic diseases or the main ICPC-based reasons for encounter. The author could not be “blind” to the thickness of the medical files of the frequent attenders, either.

The problems of reliability implicit in the use postal questionnaires in general have been previously discussed (McDowell & Newell 1987, Hyyppä & Kronholm 1994). Nevertheless, the postal questionnaire was used to gather the basic sociodemographic data and information about the housing, family and health matters. The response rate in the mail inquiry was satisfactory and equal in both study groups. Although the non-responders were younger and more likely men than responders, there were no significant differences between the non-responders and responders in the sociodemographic backgrounds.

The structured personal interview and the included questionnaires aimed to gather confidential and intimate information about family, social support, health behavior and psychological items, which could have been difficult to obtain otherwise. The reliability of the interview phase was enhanced by using two trained nurses to minimize both systematic and random errors. The participation rate of the interview phase was quite equal and high enough in both study groups. The non-participants were younger and more often men than the participants, but there were no significant differences between the non-participants and participants in the number of visits or the basic sociodemographic characteristics.

6.1.3.3 Measures

Validated measures were used to assess the health, health-related quality of life and psychosocial and family factors of the participant. The Finnish version of NHP has been validated among the Finnish population as a measure of health-related quality of life (Koivukangas *et al.* 1995). The CMI health questionnaire has been used earlier in Finland to determine the severity of mental disorders (Väisänen 1975, Lehtinen *et al.* 1993). The SCL-36 questionnaire is a reduced version of the widely used SCL-90 questionnaire, which has been validated in a Finnish community sample. In this validation study, the Finnish interviewees scored consistently higher on all subscales of SCL-90 than the American population or patient samples, and this difference must be borne in mind when comparing the results with international studies. (Holi *et al.* 1998.)

As a criterion of somatization, we used the cut-off point of eight symptoms out of the 12 listed on the SCL-36 somatization subscale. We did not use any psychiatric diagnostic interview to validate our cut-off point. Previously, various criteria have been used to define somatization. Escobar *et al.* (1987, 1998) used four symptoms for men and six

symptoms for women in DIS to define “abridged somatization”. Kroenke *et al.* (1997,1998) defined the multisomatoform disorder as three or more medically unexplained physical symptoms and a history of two years of somatization. According to their study, the optimal threshold for pursuing a diagnosis of multisomatoform disorder, was seven or more symptoms (Kroenke *et al.* 1998). Portegijs *et al.* (1996) used five symptoms on the DSM III symptom list as a cut-off point for somatization among frequent attenders in his study.

The validity of TAS-20 has been shown to be relevant (Parker *et al.* 1993) and the Finnish translated version has also been validated (Joukamaa *et al.* 2001). WI is a reliable instrument for assessing hypochondriasis among primary health care patients (Wyshak *et al.* 1991, Speckens *et al.* 1996). Previously, DAS has been found to be a reliable measure of marital adjustment (Spanier 1979), and MCI has also been validated in a Finnish population (Kinnunen *et al.* 1975).

6.2 Results

6.2.1 Prevalence and sociodemographic characteristics of frequent attenders (Paper I)

This study showed 6.8% of the health centre patients and 4.7% of the whole population aged 15 years or older in Oulainen to be frequent attenders. Prevalence comparisons with earlier studies are difficult because of the different criteria of frequent attenders used (Table 2). The prevalence in this study equals with the results of Browne *et al.* (1982), who found 4.5% of patients to be frequent attenders when using a cut-off point of nine visits. In Sweden, Smedby (1974) found the prevalence of frequent attendance to be 10% with a cut-off point of seven visits. In recent studies, the prevalence has varied from a population prevalence of 1.7% (Andersson *et al.* 1995) to a patient prevalence of 3.1% to 8% of patients (Ward *et al.* 1994) (Table 2).

In Finland, Larivaara (1987) used the same cut-off point as was used in this study, and he found 7.5% of the population to be frequent attenders. Previously, Videman *et al.* (1976) had found 3.9% of patients and 2.7% of the population to be frequent attenders, using 6.5 visits per year (13 visits per two years) as a cut-off point. Savonius (1988) found a frequent attendance prevalence of 8.6% when using a criterion of 10 visits.

Frequent attenders cause a considerable workload to GPs in the health centre. We found that the contacts with frequent attenders accounted for almost one quarter (23.5%) of all contacts made by the patients 15 years or older. Previously, using comparable cut-off points, Browne *et al.* (1982) reported a workload of 21% and Smedby (1974) a workload of 43% to be caused by frequent attenders. In the studies of Andersson *et al.* (1995), Heywood *et al.* (1998) and Neal *et al.* (1998), frequent attenders used about 15% of all consultations, regardless of the different definitions of frequent attender applied. In

Finland, Videman *et al.* (1976) found the workload due to frequent attenders to be 19.8%, and Larivaara (1987) reported a workload of 31.8%.

Over two thirds of frequent attenders were female. This finding corroborates the results of the previous studies (Table 2). Frequent attenders were more likely to be older than the whole population of Oulainen, and male frequent attenders were younger than female frequent attenders. The age distribution (Figure 1 in Paper I) differed from the age distribution of the whole population and there were differences in the age distributions between female frequent attenders and male frequent attenders. Frequent attendance was a more pronounced phenomenon in the older than the younger age groups. Among women, frequent attendance was more pronounced in the age groups of 45-54 years and 65-74 years than in other age groups or among men. Aging alone does not explain these differences, but the explanations may be found in the psychosocial and family backgrounds, e.g. the phase of the family life cycle. The overrepresentation of frequent attenders in the age group of 25-34 years among both men and women suggests a need for further research about, for example, the role of social deprivation among young adults as the possible explanation of frequent attendance of this age group. The association of age with frequent attendance has been found earlier (Ward *et al.* 1994, Báez *et al.* 1998). The age distributions reported by Smedby (1974) and Andersson *et al.* (1995) were somewhat different compared with the findings of this study. In our study, the relative proportion of frequent attenders in the age group 55-64 years was lower than in their studies.

Frequent attenders had lower basic education and the differences in occupational status were evident – fewer frequent attenders were working and more of them were on disability pension. Previously, lower education has been reported (Karlsson *et al.* 1994, Báez *et al.* 1998) among frequent attenders, although Dowrick *et al.* (2000) found no differences in education. More pensioners have been found in some of the previous studies (Browne *et al.* 1982, Karlsson *et al.* 1994, Báez *et al.* 1998). In this study, no clear difference was seen in the marital status or in the socioeconomic classification of frequent attenders, although frequent attenders estimated their economic situation as poorer than controls. Several researchers have reported more widowed and / or divorced persons among frequent attenders (Goodridge 1982, Westhead 1985, Larivaara 1987, Báez *et al.* 1998, Dowrick *et al.* 2000), although Courtenay *et al.* (1974) reported no difference in marital status between frequent attenders and controls. Lower socioeconomic classes have been connected with frequent attendance previously (Smedby 1974, Larivaara 1987, Karlsson *et al.* 1994, Dowrick *et al.* 2000), but contradictory results have also reported (Semence 1969, Hood & Farmer 1974). Unemployment has been found to be a problem among frequent attenders (McArdle *et al.* 1974, Browne *et al.* 1982), but the present findings do not support the earlier results in this respect.

One third of frequent attenders had been frequent attenders during the two previous years, which confirms the natural history of frequent attendance pointed out in the previous reports (Freer *et al.* 1985, Ward *et al.* 1994, Gill *et al.* 1998).

6.2.2 Self-rated health and health-related quality of life

The finding of poor self-rated health among frequent attenders is in line with the earlier findings (Freeborn *et al.* 1990, Borgquist *et al.* 1993, Dowrick *et al.* 2000). We also found frequent attenders' health-related quality of life to be lower than that of controls on almost all dimensions of NHP among both men and women. Especially the difference on the pain dimension of NHP was highly significant. Health problems disturbed most activities of everyday life of frequent attenders. Previously, Heywood *et al.* (1998) have reported low health-related quality of life in all modalities of NHP among very frequent attenders.

6.2.3 Main reasons for encounter by frequent attenders (Paper I)

The three most frequent ICPC chapter coded main reasons for encounter found among the frequent attender group were symptoms of the musculoskeletal, respiratory and digestive systems. The most evident differences in the reasons for encounter between frequent attenders and controls were in psychiatric reasons and in musculoskeletal and digestive system symptoms. The roles of psychiatric reasons among male frequent attenders and musculoskeletal symptoms among female frequent attenders were pronounced. The most significant difference between genders was in musculoskeletal symptoms. Psychiatric reasons were the sixth most common reason for encounter among frequent attenders. In spite of the frequency of mental disorders, psychiatric reasons were not pronounced among the most common reasons for encounter, but somatic symptoms were preferred.

Some critical considerations must be made concerning the ICPC coding based on the information found in the medical records. In some instances, the main or principal reason for the patient contacting the GP was not obvious in the medical records, and the ICPC chapter based categorization was therefore not self-evident. In this study, it was not possible to code the reasons for encounter during the consultation, which would be better way to get information about the patients' needs for care. Certain subjectivity exercised by the author must be kept in mind, too. It might have been possible to improve the criterion validity of the coding by using another researcher to assess the consistency of the method.

The comparisons with earlier studies are somewhat difficult, because in the reviewed literature, pure ICPC chapter based coding has been used only by Andersson *et al.* (1995) in Sweden. In the previous reports, one cannot always know if the reported diagnosis reflects morbidity in general or the specific reason for encounter. Some reports are based on the ICD classification, while some of them use the ICHPPC coding and other classifications.

Various physical reasons (classified into the physical, physical / social or organic categories) have been found to be the main reasons for encounter by frequent attenders in many of the previous studies (Wamoscher 1966, McArdle *et al.* 1974, Heywood *et al.* 1998). Mental or emotional problems (classified into the emotional, mental, nervous /

social or functional categories) are mentioned in many reports as the second most common reason for encounter (Wamoscher 1966, Semmence 1969, McArdle *et al.* 1974, Browne *et al.* 1982, Heywood *et al.* 1998). In an ICD-9 classification based study, the three most common reasons were respiratory system diseases, cardiovascular disorders and musculoskeletal disorders (Švab & Zaletel-Krakelj 1993). In Sweden, in the study of Andersson *et al.* based on the ICPC chapter codes, the most common reasons for encounter were social reasons, followed by musculoskeletal symptoms and psychiatric reasons. For 37% of patients, a combination of musculoskeletal, social and psychiatric problems was found. (Andersson *et al.* 1995.)

In Finland, musculoskeletal and respiratory symptoms were the patients' two most frequent reasons for encounter in the study of Mäntyselkä (1998), which included data from 30 health centres. When considering frequent attenders, Larivaara (1987) reported ear, nose and throat symptoms, musculoskeletal symptoms and general symptoms as the three main reasons to contact a GP, and only 20% of frequent attenders complained of emotional symptoms. Savonius (1988) found respiratory symptoms to be the most important reason for encounter among frequent attenders, followed by various undifferentiated symptoms, urogenital symptoms and alcohol-related problems. Karlsson *et al.* (1995a) found the main reason for consulting to be somatic, as only 1% of frequent attenders visited due to a psychiatric reason and 12% due to mixed somatic and psychiatric reasons. In this study, the patients were asked for the reason of their visit to a GP.

When comparing the reasons for encounter between frequent attenders and controls, Browne *et al.* (1982) found emotional problems and gastrointestinal symptoms to be significantly more common reasons for encounter among frequent attenders compared to modal users. Švab & Zaletel-Krakelj (1993) reported a significantly larger proportion of contacts for malignant diseases, mental disorders and gastrointestinal diseases among frequent attenders compared to controls.

6.2.4 Chronic diseases of frequent attenders (Paper I)

There is general agreement about the higher morbidity of frequent attenders compared to normally attending patients (Schrire 1986, Báez *et al.* 1998, Gill & Sharpe 1999), and this finding was corroborated by this study. Frequent attenders had more chronic diagnoses per patient than controls, and the proportion of persons having one or more chronic diagnoses was higher among frequent attenders than among controls. The three most common diagnoses among frequent attenders based on the ICD-9 classification were diseases of the circulatory and musculoskeletal systems and mental disorders. Frequent attenders had more mental disorders and diagnoses pertaining to the digestive or musculoskeletal system than controls.

The researcher's decision about chronic disease diagnoses is always somewhat subjective, and the information obtained from medical records and hospital discharge summaries may be insufficient to determine the diagnosis and its chronicity. The validity

of coding the diagnosis might have been improved by using another researcher to assess the consistency of the method.

In the earlier studies concerning frequent attenders, the classifications of diseases have often been somewhat indefinite. Semmence (1969) states that 13% of the patients in his study had a mental diagnosis. Courtenay *et al.* (1974) found 43% of frequent attenders having at least one major “somatic diagnosis”, 27% at least one major “psychological diagnosis”, and 6% both “somatic and psychological diagnoses”. One third of frequent attenders had mainly an “organic illness” and another one third a combined “organic and emotional illness” according to Goodridge (1982). Westhead (1985) found circulatory system diseases to be common among frequent attenders. Recently, based on the ICHPPC-2 classification, Dowrick *et al.* (2000) found psychological diseases, musculoskeletal diseases and respiratory diseases to be the three most common current health problems of frequent attenders identified from medical records. Concerning the differences between frequent attenders and controls, they found the most pronounced differences in the psychological, social and respiratory illnesses. Heywood *et al.* (1998) and Dowrick *et al.* (2000) reported 94% of frequent attenders having a chronic health problem.

In Finland, Videman *et al.* (1976) found mental and musculoskeletal illnesses to be more common among frequent attenders than among other patients. Larivaara (1987) found 48% of frequent attenders to have a psychosomatic illness or symptom and 20% of them to have a chronic somatic illness as the main experienced problem. Karlsson *et al.* found 96% of frequent attenders to have at least one physical diagnosis, and multiple diagnoses were significantly more common among them than among controls. The three most common physical diagnoses according to the ICD-9 classification were the musculoskeletal, respiratory and circulatory system diagnoses. In this study, all of the known medical diagnoses were recorded, and the differences between frequent attenders and controls were non-significant. (Karlsson *et al.* 1994.) Concerning psychiatric morbidity, Karlsson *et al.* (1995b) found the prevalence of psychiatric illness to be 54% among frequent attenders.

The differences may reflect methodological rather than real prevalence differences between this study and the earlier studies.

6.2.5 Psychiatric symptoms and disorders assessed by the Cornell Medical Index health questionnaire (CMI)

An association between the occurrence of mental disorders based on the CMI questionnaire and frequent attendance was found only among men. Previously, Polliack (1971) found an association between attendance rates and CMI scores among both husbands and wives in a study concerning the attendance rates of married couples and their family members. The proportions of moderate and severe mental disorders among frequent attenders but also among controls were higher than those found in a Finnish population-based UKKI study (Lehtinen *et al.* 1993).

6.2.6 Psychological distress, alexithymia, hypochondriacal beliefs and somatization among frequent attenders (Papers II, III)

6.2.6.1 Psychological distress

The association of psychological distress with frequent attendance found in this study is in line with the earlier results (Katon *et al.* 1990, Karlsson *et al.* 1995a). We found a distinct gender difference – male frequent attenders were more psychologically distressed than their female counterparts, a finding that has not been reported earlier. The multivariate analyses revealed, nevertheless, that psychological distress was not a significant predictor of frequent attendance.

In the study of Katon *et al.* (1990), higher psychological distress was found on all subscales (anxiety, depression and somatization) of SCL-90, whereas we found only the somatization scores to be higher among frequent attenders than among controls. Male frequent attenders were more distressed than male controls according to all subscales of SCL-36 in our study. In the study of Karlsson *et al.* (1995a), the SCL-25 measure was used and the differences in psychological distress between frequent attenders and controls were even more pronounced than in our study. The prevalence of psychological distress was lower in our study than in the study of Karlsson *et al.*.

6.2.6.2 Alexithymia

We found alexithymia to be connected with frequent attendance among men but not among women. Male frequent attenders were less able to identify and describe verbally their feelings than controls (TAS-20 Factor 1). We found somatizing frequent attenders to be more alexithymic than non-somatizing frequent attenders. Previously, Joukamaa *et al.* (1996) reported an association of alexithymia with frequent attendance mediated by psychological distress, but not directly. In their study, alexithymia was connected with psychological distress, lower socioeconomic status and widowhood. Previously, similar connections and connections of alexithymia with age, male gender and low education have been found (Kauhanen 1993, Kauhanen *et al.* 1993, Saarijärvi *et al.* 1993, Salminen *et al.* 1999b). Previously, connections of alexithymia with somatization (Rodrigo *et al.* 1989, Bach & Bach 1995, Bach & Bach 1996), hypochondriasis (Rodrigo *et al.* 1989) and depression (Honkalampi *et al.* 2000) have been found.

Based on the findings in our study, one cannot draw definite conclusions about the role of alexithymia in the causality of frequent attendance. Theoretically, it can be hypothesized that incompetence in identifying and verbally describing one's feelings causes enhanced bodily preoccupation and somatization, and thereby alexithymia might be a risk factor for male patients' frequent attendance. However, as discussed earlier by Kauhanen (1993), one must take a wider perspective towards both somatization and

alexithymia, since alexithymia associates with various socioeconomic and illness behavioral factors and a lack of social contacts.

6.2.6.3 *Hypochondriacal beliefs*

One of the main results of this study was the clear and definite association of the occurrence of hypochondriacal beliefs with frequent attendance. A gender difference was found: the connection was significant among men but insignificant among women.

Thus, our results corroborate the earlier findings about the connection between hypochondriasis and high use of medical services (Barsky *et al.* 1986a, Pålsson 1988). Earlier, there have been some mentions of hypochondriacal worry in the literature concerning frequent attenders. Franklin (1971) suspects that frequent attenders have a “hypochondriacal superstructure” interacting with a chronic, unrecognized psychiatric disorder. Westhead (1985) found higher “N scores” in the Eysenck personality test among frequent attenders than among controls, which means that the frequent attenders were more likely to worry about their health or other problems (“nature worriers”).

In ICD-10 (International Classification of Diseases 1995) and in DSM-IV (American Psychiatric Association 1994), hypochondriasis is classified under the heading of somatoform disorders. Somatization and hypochondriasis are often considered as overlapping disorders connected with each other (Kirmayer & Robbins 1991). Hypochondriasis is associated with depression (Beaber & Rodney 1984, Barsky *et al.* 1986b), and on the other hand, depression also associates with somatization (Katon *et al.* 1991). The interaction effect of hypochondriasis and somatization on frequent attendance will be discussed later in the chapter titled “Somatization”.

In our study, male frequent attenders had more hypochondriacal beliefs than respective females. This finding is contradictory to the previous findings on the general population (Hernandez & Kellner 1992).

6.2.6.4 *Somatization*

We found that somatizing patients were more likely than non-somatizing patients to be frequent attenders in primary health care. Somatizing frequent attenders use more health care services than non-somatizing frequent attenders, and they can be considered “superfrequent attenders”. Multivariate analyses revealed an association of hypochondriacal beliefs and poor self-rated health with frequent attenders’ somatization. A significant interaction effect was found between somatization and hypochondriacal beliefs when explaining frequent attendance. The concurrence of somatization and hypochondriacal beliefs increases markedly the risk to be a frequent attender. Somatizing patients have hypochondriacal worries of their symptoms, and these worries enhance somatization and vice versa (Barsky & Klerman 1983, Barsky & Wyshak 1990, Ford 1992).

Our study confirms the previous reports concerning the association of somatization with frequent attendance and high use of services (Smith *et al.* 1986, Escobar *et al.* 1987, Lipowski 1988, Katon *et al.* 1991, Ford 1992, Portegijs *et al.* 1996) and the association of somatization with hypochondriacal beliefs (Barsky *et al.* 1986a, Kirmayer & Robbins 1991). Previously, it has been found that mental disorders contribute to both hypochondriacal worries (Beaber & Rodney 1984) and somatizers' use of health care services (Escobar *et al.* 1987). Our results are in line with the findings of Escobar *et al.*.

6.2.7 Family-related factors and frequent attendance (Paper IV)

We found no distinct association between frequent attendance and the patients' marital status, family structure and marital satisfaction. There were more frequent attenders in the older families than in the new parents family - preschool family phase of the family life cycle. A gender difference was found among the frequent attender somatizers in reporting marital satisfaction. Somatization associated with poor marital communication among female frequent attenders, but not among male frequent attenders.

In the previous literature, controversial findings of frequent attenders' family size have been reported (Picken & Ireland 1969, Courtenay *et al.* 1974, Wilson 1977). Some family dysfunction (Browne *et al.* 1982, Weimer *et al.* 1983, Bellón *et al.* 1999) and marital disharmony (Goodridge 1982, Schrire 1986) have been reported earlier among frequent attenders. Frequent attendance has been connected with the breaking or contraction phases of the family life cycle (Báez *et al.* 1998). Feelings of loneliness and separation during the "empty-nest" stage of the family life cycle, stressful life experiences connected with divorce or widowhood, and subsequent psychological distress and depression can be suggested as possible explanatory factors of the increased risk of frequent attendance seen among patients from the older family life cycle phases. The confounding effect of age was controlled in our study by the study design and by adjusting for age in the analyses.

Somatizing men were more satisfied with their marital relationship than somatizing women. The gender difference in marital satisfaction found especially among somatizing frequent attenders and concerning especially marital communication, leaves many questions unanswered. Previously, it has been shown that psychological distress (including somatization) associates with marital dissatisfaction among female patients with chronic low back pain, but not among respective male patients (Saarijärvi *et al.* 1990). The findings may imply that somatization among men is not a result of a poor marital relationship, as somatizing men report their marital relationship to be good and satisfactory. The cause of men's somatization may lie somewhere other than in their marital relationship. Among women, the result may reflect a poor marital relationship as one possible cause of somatization although opposite causative explanations must also be considered.

However, the explanations derived from the results of this study must be interpreted with caution because of the small sample size and the fact that satisfaction with the marital relationship was only assessed by one of the spouses.

6.2.8 Results of multivariate analyses

The results of multivariate analyses showed chronic somatic disease and hypochondriacal beliefs to be the main predictors of frequent attendance in primary health care. The concurrence of somatization and hypochondriacal beliefs highly increases the risk to be a frequent attender. The association of a chronic somatic disease with frequent attendance is a generally agreed fact reported in most previous studies (Table 2) (Kokko 1988). The significant connection of hypochondriacal beliefs with frequent attendance and the interaction of hypochondriasis and somatization on frequent attendance has not been reported earlier, and these findings are worth emphasizing.

Somatization among frequent attenders in primary health care was connected with poor self-rated health and hypochondriacal beliefs. The association between somatization and hypochondriasis is well-known (Barsky & Klerman 1983, Kirmayer & Robbins 1991), and the association between somatization and poor self-rated health has also been confirmed earlier (Katon *et al.* 1991, Gureje *et al.* 1997)

6.2.9 Gender differences among frequent attenders

This study reveals some aspects and details in the portrait of the frequent attender. However, the portrait of the female frequent attender remains somewhat obscure in the light of the present results. There were many gender differences between the male and female frequent attenders. Male frequent attenders had more mental disorders and psychiatric reasons for encounter than female frequent attenders. Male frequent attenders were more psychologically distressed and alexithymic and had more hypochondriacal beliefs than respective females.

Concerning the sociodemographic variables, fewer female frequent attenders were married and cohabiting and more of them were divorced or widowed than respective males. There was a gender difference in the association of disability for work with frequent attendance - male frequent attenders were more often on disability pension and fewer of them were working compared with female frequent attenders. Vocational education and socioeconomic classification were lower among female frequent attenders compared to males. Female frequent attenders had more endocrine and musculoskeletal diagnoses and urinary system reasons for encounter compared to male frequent attenders. Finally, somatizing female frequent attenders were more dissatisfied with their marital relationship than respective males.

The analyses of gender differences in the previous reports of frequent attendance have been restricted (Table 2). Andersson *et al.* (1995) found more divorced persons among female frequent attenders than among male frequent attenders. Larivaara (1987) showed more detailed gender differences in his study. Female frequent attenders were more commonly married, divorced or widowed. When considering the symptoms and complaints, female frequent attenders had more urological and emotional symptoms than respective males in Larivaara's study. Psychosomatic illnesses or symptoms were more frequent among female frequent attenders than among respective males in his study.

Previously, Wamoscher (1966) reported female frequent attenders to have more functional complaints than respective male patients. Mental disorders were more common reasons among female compared to male high users in the study of Semmence (1969).

Partially, the gender differences found in this and the earlier studies can be explained by the differences in reporting symptoms and the differences in illness behavior and morbidity between men and women (Mechanic 1976, Nathanson 1977, Kroenke & Spitzer 1998). The use of the same cut-off point for the definition of frequent attendance among men and women may explain partly the differences between male and female frequent attenders found in this study. More detailed research is needed to elucidate the gender differences between frequent attenders.

6.3 Strengths and limitations of the study

The strengths of this study lie in the setting and design. The study was a population-based cross-sectional study with an age- and sex-matched control group. Official statistics were used to determine the use of health care services by the study groups, and the definition of frequent attendance was based on the numbers of contacts with physicians found in the official statistics. The use of data from only one health centre reduced the possible confounding effect of differences in the access to health care services between health centres. Validated measures were used to assess the psychosocial and family factors of the study groups.

The first limitation of the study is the sample size and the restriction of the data to one health centre only. That limits the generalizability of the results. Secondly, the classification of chronic diseases and reasons for encounter was based on information in the medical records. The analysis of medical records was done by the author, and some degree of subjectivity is hence inevitable.

7 Conclusions

The following conclusions can be drawn from the results of this cross-sectional and comparative study carried out in primary health care in a Finnish health centre.

1. The prevalence of frequent attendance was 4.7% in the whole population aged 15 years or older. Frequent attenders accounted for 23.5% of all visits to physicians in this health centre made by the respective age group.
2. The prevalence of frequent attendance increased with age, but not linearly. Over two thirds of frequent attenders were female, and the basic education and occupational status of frequent attenders were lower than those of controls.
3. Frequent attenders visited the health centre mostly for reasons related to the musculoskeletal, respiratory and digestive systems. They had more psychiatric reasons and reasons related to the musculoskeletal and digestive systems for encounter than controls.
4. There appeared to be more chronic diseases among frequent attenders than controls. The most common chronic diseases were diseases of the circulatory and musculoskeletal system and mental disorders. Frequent attenders had over three times more mental disorders than controls.
5. Frequent attenders had significantly more psychological distress, somatization and hypochondriacal beliefs than controls.
6. There were fewer frequent attenders among the families at the younger family life cycle phases and more frequent attenders among the families at the older family life cycle phases compared to the control families.
7. There were gender differences between male and female frequent attenders in sociodemographic factors, chronic diseases and reasons for encounter. Male frequent attenders had more psychological distress, alexithymia, somatization and hypochondriacal beliefs than female frequent attenders.
8. A chronic somatic disease and hypochondriacal beliefs were risk factors for frequent attendance. Simultaneous occurrence of hypochondriacal beliefs and somatization increased the risk.
9. Hypochondriacal beliefs and poor perceived health were the risk factors for frequent attenders' somatization.

The portrait of frequent attenders was clarified to some extent – they are much more than only patients at the top end of the consultation frequency spectrum. Frequent attenders are sick people both subjectively and objectively, and they account for a considerable proportion of GPs' daily workload in the health centre. Their demand for care is connected mainly with somatic symptoms.

The most essential finding in this study was the association of hypochondriacal beliefs with frequent attendance, which should be considered seriously when managing frequent attenders. When hypochondriacal beliefs are combined with somatization, the risk to be a frequent attender is notably increased.

Frequent attendance is difficult to explain in terms of any of the various theoretical models of utilization. The threat of illness, described as a modifying factor in the health belief model, and the bodily concerns identified as hypochondriacal beliefs in this study may be dimensions of one and the same modifying factor. However, the more research is done on frequent attendance, the more complex and heterogeneous the dimensions of this very familiar but sometimes “heartsink” behaviour seem to be. The need for further research, preferably a qualitative approach, was highlighted in this study.

The understanding of frequently attending patients requires a holistic biopsychosocial model to explain the whole complexity of the different dimensions and levels interwoven in the lives of these challenging patients.

8 Implications

Based on the results of this study and the literature review, the following implications concerning GPs' everyday practice in primary health care can be suggested.

1. Frequent attendance *per se* can be seen as a sign or a symptom that may hide a large variety of health, social, psychological and family problems.
2. Although frequent attenders have more mental disorders and psychological distress, they use somatic complaints, usually symptoms of the musculoskeletal, respiratory or digestive systems as a ticket of entry to health care services.
3. The patients' own bodily concerns expressed as hypochondriacal beliefs and their own perception of their health as poor may aid the assessment of somatization among frequent attenders.
4. The bodily concerns or hypochondriacal beliefs should be considered seriously when interviewing and treating frequent attenders. There is a need for the use of a patient-centered, comprehensive approach that integrates the biomedical, psychological and social components of the problem and a need to listen to these patients' own concerns and beliefs, when managing frequent attenders in primary health care.
5. Somatizing patients are a particular group of frequent attenders. Their per capita expenditure in health care is high and they are challenging, demanding and sometimes frustrating patients for physicians. More research, education and training are needed to achieve appropriate clinical guidelines for the care of somatizing frequent attenders. The importance of the recognition of somatization, understanding of the psychological character of the perceived symptoms and the continuity and regularity of care are emphasized when implementing guidelines for the care of somatizing frequent attenders.
6. There is need for further research to elucidate more profoundly the questions raised in this study. A qualitative approach would be better able to open up new perspectives into this multifaceted problem of health care.

9 Summary

The aim of this cross-sectional study was, firstly, to assess the prevalence of frequent attendance and the use of health care services in primary and secondary health care frequent attenders account for. Secondly, we aimed to determine frequent attenders' chronic diseases and reasons for encounter in a Finnish health centre. Furthermore, the study aimed to determine the associations of social, psychological and family factors with frequent attendance in primary health care.

9.1 Study population and study design

The study was carried out in the health centre of Oulainen. The patients who had eight or more consultations with physicians in the health centre during one year were defined as frequent attenders. A sample of 304 frequent attenders, including all of the frequent attenders aged 15 years or older in Oulainen during the year 1994 and an equal number of randomly selected age- and sex-matched controls constituted the study population.

The data were collected from the annual statistics of the Oulainen Health District and the Northern Ostrobothnia Hospital District, from the medical records of the health centre, and from postal questionnaires. All the medical records were examined by the author. The postal questionnaire was sent to all members of the study population. The response rate was 75.6% for frequent attenders and 74.0% for control subjects. Half of the original sample (every second subject selected from the lists of frequent attenders and controls in the date of birth order) were invited to participate in a personal interview. Two trained nurses interviewed 113 frequent attenders and 107 controls.

9.2 Methods

Validated instruments were used to assess health-related quality of life, the reasons for encounter and psychosocial and family factors. The Finnish version of Nottingham Health Profile (NHP) was used to assess the health-related quality of life. A five-category classification based on Cornell Medical Index (CMI) scores was used to determine the severity of psychic symptoms or disorders. International Classification of Primary Care (ICPC) was used to categorize the reasons for encounter. The chronic diseases recorded in the medical records were classified according to the International Classification of Diseases 9th revision (ICD-9). Psychological distress was assessed using Symptom Checklist – 36 (SCL-36). Toronto Alexithymia Scale – 20 (TAS-20) was used as a measure of alexithymia and Whiteley Index (WI) to determine hypochondriacal beliefs. The family life cycle phases were determined according to Hill's classification. The Dyadic Adjustment Scale (DAS) and the Marital Communication Inventory (MCI) were used to determine marital satisfaction. A cut-off point of eight symptoms on the SCL-36 somatization subscale was used as a criterion of somatization.

9.3 Results

The results showed that 4.7% of the whole population aged 15 years or older in Oulainen were frequent attenders, and they accounted for 23.5% of the GPs' workload among all patients aged 15 years or older. Over two thirds of frequent attenders were females. The mean age of frequent attenders was 49.8 years. Their basic education and the occupational status were lower than those of controls.

Frequent attenders visited the health centre mostly for reasons related to the musculoskeletal, respiratory and digestive systems. Compared with controls, they had more psychiatric, musculoskeletal and digestive reasons for encounter. There appeared to be more chronic diseases among frequent attenders than controls, and the most common diagnostic ICD-9-based categories were diseases of the circulatory and musculoskeletal systems and mental disorders. The most distinct differences between frequent attenders and controls emerged in the frequency of mental disorders and digestive and musculoskeletal diseases.

The interview revealed significantly more psychological distress among frequent attenders than among controls: 34% vs. 19%. Male frequent attenders were more alexithymic than male controls, but there was no statistically significant difference when women were included in the analysis. The interviewed frequent attenders had significantly more hypochondriacal beliefs (30%) than controls (11%). The prevalence of somatization was significantly higher (29%) among frequent attenders than among controls (16%). Somatizing frequent attenders used even more health care services than non-somatizing frequent attenders. They had lower basic education and lower occupational status and they rated their health as poorer than non-somatizing frequent attenders.

There were no significant differences in family size and structure between the study groups. There were fewer frequent attenders at the younger family life cycle phase and more frequent attenders at the older family life cycle phases compared with the respective control families. Frequent attenders and controls were equally satisfied with the adjustment and communication in their marital relationship.

In this study, gender differences between male and female frequent attenders were found. Male frequent attenders had more mental disorders and psychiatric reasons for encounter than female frequent attenders. Male frequent attenders were more often psychologically distressed and alexithymic and had more commonly hypochondriacal beliefs than respective females. Fewer female frequent attenders were married and cohabiting and more of them were divorced or widowed than respective males. Male frequent attenders were more often on disability pension and fewer of them were working compared with female frequent attenders. Somatizing female frequent attenders assessed their marital communication as less good than male frequent attenders.

A chronic somatic disease and hypochondriacal beliefs were risk factors for frequent attendance. Furthermore, a significant interaction effect of hypochondriacal beliefs and somatization was found to explain frequent attendance. Thus, the concurrence of somatization and hypochondriacal beliefs notably increases the risk to be a frequent attender. Hypochondriacal beliefs and poor perceived health were risk factors for frequent attenders' somatization. Also, marital dissatisfaction and poor communication in the marital relationship seemed to be risk factors for female frequent attenders' somatization.

9.4 Conclusions

About five percent of the patients in a health centre were frequent attenders, and they accounted for about one fourth of the daily workload of GPs. Frequent attenders were sick people both subjectively and objectively. They had more chronic diseases than controls, but they also rated their health and quality of life as poorer than controls. Frequent attenders' demand for care was connected mainly with somatic symptoms, although they had more psychological distress and mental disorders than controls. Male frequent attenders had more mental disorders, psychological distress, alexithymia, somatization and hypochondriacal beliefs than female frequent attenders. The risk of frequent attendance was higher in the older family life cycle phases than in the younger family life cycle phases. A chronic somatic disease and hypochondriacal beliefs were risk factors for frequent attendance. Simultaneous occurrence of hypochondriacal beliefs and somatization increased the risk. Hypochondriacal beliefs and poor perceived health were the risk factors for frequent attenders' somatization.

The study implicates the need to consider frequent attenders' own bodily concerns expressed as hypochondriacal beliefs. Furthermore, the study implicates the need to develop appropriate and comprehensive clinical guidelines for the care of frequent attenders and the need to integrate the biomedical, psychological and social dimensions when implementing these guidelines in primary health care.

10 References

- Alanen YO, Rekola J, Stewen A, Takala K & Tuovinen M (1966) The family in the pathogenesis of schizophrenia and neurotic disorders. *Acta Psychiat Scand* 42 Suppl.
- American Psychiatric Association (1994) *Diagnostic and Statistical Manual of Mental Disorders*. American Psychiatric Association, Washington, DC.
- Andersen AS & Laake P (1987) A model for physician utilization within 2 weeks. Analysis of Norwegian data. *Med Care* 25: 300-310.
- Anderson JAD, Buck C, Danaher K & Fry J (1977) Users and non-users of doctors - implications for self care. *J R Coll Gen Practit* 27: 155-159.
- Andersson SO, Mattsson B & Lynoe N (1995) Patients frequently consulting general practitioners at a primary health care centre in Sweden - a comparative study. *Scand J Soc Med* 23: 251-257.
- Andren KG & Rosenquist U (1985) Heavy users of an emergency department: psycho-social and medical characteristics, other health care contacts and the effect of a hospital social worker intervention. *Soc Sci Med* 21: 761-770.
- Angold A, Costello EJ & Erkanli A (1999) Comorbidity. *J Child Psychol Psychiatry* 40: 57-87.
- Angst J (1992) Epidemiology of depression. *Psychopharmacology* 106 Suppl: S71-74.
- Antonovsky A (1972) A model to explain visits to doctor: With specific reference to the case of Israel. *J Health Soc Behav* 13: 446-454.
- Antonovsky A (1979) *Stress and coping*. Jossey-Bass Publishers, San Fransisco.
- Aromaa A, Raitasalo R, Reunanen A, Impivaara O, Heliövaara M, Knekt, P, Lehtinen V, Joukamaa M & Maatela J (1994) Depression and cardiovascular diseases. *Acta Psychiat Scand, Suppl* 377: 77-82.
- Bach M & Bach D (1995) Predictive value of alexithymia: a prospective study in somatizing patients. *Psychother Psychosom* 64: 43-48.
- Bach M & Bach D (1996) Alexithymia in somatoform disorder and somatic disease: a comparative study. *Psychother Psychosom* 65: 150-152.
- Backett EM, Heady JA & Evans JCG (1954) *Studies of a general practice (II) The doctor's job in an urban area*. *BMJ* 1: 109-115.
- Bagby RM, Parker JDA & Taylor GJ (1994a) The twenty-item Toronto Alexithymia Scale - I. Item selection and cross-validation of the factor structure. *J Psychosom Res* 38: 23-32.
- Bagby RM, Taylor GJ & Parker JDA (1994b) The twenty-item Toronto alexithymia scale - II. Convergent, discriminant, and concurrent validity. *J Psychosom Res* 38: 33-40.
- Balint M (1957) *The doctor, his patient and the illness*. Pittman Medical, London.
- Barsky AJ & Klerman GL (1983) Overview: hypochondriasis, bodily complaints and somatic styles. *Am J Psychiatry* 140: 273-283.
- Barsky AJ & Wyshak G (1990) Hypochondriasis and somatosensory amplification. *Br J Psychiatry* 57: 404-409.

- Barsky AJ, Wyshak G & Klerman GL (1986a) Medical and psychiatric determinants of outpatient medical utilization. *Med Care* 24: 548-560.
- Barsky AJ, Wyshak G & Klerman GL (1986b) Hypochondriasis: an evaluation of DSM-III criteria in medical outpatients. *Arch Gen Psychiatry* 43: 493-500.
- Barsky AJ, Wyshak G, Klerman GL & Latham KS (1990) The prevalence of hypochondriasis in medical outpatients. *Soc Psychiatry Psychiatr Epidemiol* 25: 89-94.
- Báez K, Aiarzaguena JM, Grandes G, Pedrero E, Aranguren J & Retolaza A. (1998) Understanding patient-initiated frequent attendance in primary care: a case-control study. *Br J Gen Pract* 48: 1824-1827.
- Beaber RJ & Rodney WM (1984) Underdiagnosis of hypochondriasis in family practice. *Psychosomatics* 25: 39-46.
- Beckham JC, Moore SD, Feldman ME, Hertzberg MA, Kirby AC, Fairbank & JA. (1998) Health status, somatization, and severity of posttraumatic stress disorder in Vietnam combat veterans with posttraumatic stress disorder. *Am J Psychiatry* 155: 1565-1569.
- Bellón JA, Delgado A, Luna JD & Lardelli P (1999) Psychosocial and health belief variables associated with frequent attendance in primary care. *Psychol Med* 29: 1347-1357.
- Bentsen BG & Hjortdahl P (1991) Hvorfor søker folk lege? (Why do people contact physicians?) [English abstract]. *Tidsskr Nor Laegeforen* 111: 2867-2870.
- Berg M-A, Peltoniemi J & Puska P (1990) Suomalaisen aikuisväestön terveystietäytyminen kevät 1990. *Kansanterveyslaitos, Helsinki*.
- Bienvenu MJ (1970) Measurement of marital communication. *Fam Coordinator* 1: 26-31.
- Blackwell B & DeMorgan NP (1996) The primary care of patients who have bodily concerns. *Arch Fam Med* 5: 457-463.
- Borgquist L, Hansson L, Nettelbladt P, Nordström G & Lindelöw G (1993) Perceived health and high consumers of care: a study of mental health problems in a Swedish primary health care district. *Psychol Med* 23: 763-770.
- Bowling A (1991) Social support and social networks: their relationship to the successful and unsuccessful survival of elderly people in the community. An analysis of concepts and a review of the evidence. *Fam Pract* 8: 68-83.
- Bowman FM & Garralda ME (1993) Psychiatric morbidity among children who are frequent attenders in general practice. *B J Gen Pract* 43: 6-9.
- Brady KT (1997) Posttraumatic stress disorder and comorbidity: recognizing the many faces of PTSD. *J Clin Psychiatry* 58 Suppl 9: 12-15.
- Bridges KW & Goldberg DP (1985) Somatic presentation of DSM-III psychiatric disorders in primary care. *J Psychosom Res* 29: 563-569.
- Britt H, Angelis M & Harris E (1998) The reliability and validity of doctor-recorded morbidity data in active data collection systems. *Scand J Prim Health Care* 16: 50-55.
- Brodman K, Erdman AJ & Wolff HG (1956) *Cornell Medical Index Questionnaire*. Manual. Cornell University Medical College, New York.
- Browne GB, Humphrey B, Pallister R, Browne JA & Shetzer L (1982) Prevalence and characteristics of frequent attenders in a prepaid Canadian family practice. *J Fam Pract* 14: 63-71.
- Burman B & Margolin G (1992) Analysis of the association between marital relationships and health problems: an interactional perspective. *Psychol Bull* 112: 39-63.
- Campbell TL (1987) *Family's impact on health: A critical review and annotated bibliography*. National Institute of Mental Health. Series DN No. 6, Supt. Of Docs., U.S. Govt. Print Off. Washington D.C.
- Caplan G (1974) *Support systems and community mental health*. Basic Books, New York.
- Carter EA & McGoldrick M (1980) *The family life cycle: A framework for family therapy*. Gardner Press, New York.
- Cassel J (1976) The contribution of the social environment to host resistance. *Am J Epid* 104: 107-123.
- Chrousos G & Gold P (1992) The concepts of stress system disorders: overview of behavioral and physical homeostasis. *JAMA* 267: 1244-1252.

- Classification of occupations (1981) Classification of occupations 1980. Central Statistical Office of Finland, Helsinki.
- Claussen B, Famm E & Nygård JF (1994) ICPC-diagnoser i 60 allmennpraksiser (ICPC-diagnoses in 60 general practices) [English abstract]. *Tidsskr Nor Laegeforen* 114: 821-824.
- Cobb S (1976) Social support as a moderator of life stress. *Psychosom Med* 38: 300-314.
- Cockerham WC, Kunz G & Lueschen G (1988) Psychological distress, perceived health status and physician utilization in America and West-Germany. *Soc Sci Med* 26: 829-838.
- Coelho G, Hamburg D & Adams J (1974) Coping and adaptation. Basic Books, New York.
- Cohen K, Auld F & Brooker H (1994) Is alexithymia related to psychosomatic disorder and somatizing? *J Psychosom Res* 38: 119-127.
- Cohen S & Syme SL (1985) Social support and health. Academic Press, Orlando.
- Corney R & Murray JB (1988) The characteristics of high and low attenders at two general practices. *Soc Psychiatry Psychiatr Epidemiol* 23: 39-48.
- Courtenay MJF, Curwen MP, Dave D, Robinson J & Stern MJ (1974) Frequent attenders in a family practice. *J R Coll Gen Pract* 24: 251-261.
- Coyne JC, Fechner-Bates S & Schwenk TL (1994) Prevalance, nature, and comorbidity of depressive disorders in primary care. *Gen Hosp Psychiatry* 16: 267-276.
- Coyne JC, Schwenk TL & Fechner-Bates S (1995) Nondetection of depression by primary care physicians reconsidered. *Gen Hosp Psychiatry* 17: 3-12.
- Dalgard OS, Bjork S & Tambs K (1995) Social support, negative life events and mental health. *Br J Psychiatry* 166: 29-34.
- Demers M (1995) Frequent users of ambulatory health care in Quebec: the case of doctor-shoppers. *Can Med Assoc J* 153: 37-42.
- Derogatis LR, Lipman RS & Covi C (1973) SCL-90: an outpatient psychiatric rating scale - preliminary report. *Psychopharmacol Bull* 9: 13-27.
- Dowrick C (1992) Why do the O'Sheas consult so often? An exploration of complex family illness behavior. *Soc Sci Med* 34: 491-497.
- Dowrick CF, Bellon JA & Gomez MJ (2000) GP frequent attendance in Liverpool and Granada: the impact of depressive symptoms. *Br J Gen Pract* 50: 361-365.
- Drossman DA (1978) The problem patient. Evaluation and care of medical patients with psychosocial disturbances. *Ann Intern Med* 88: 366-372.
- Dubos R (1965) Man adapting. Yale University Press, New Haven.
- Dunlop S, Coyte PC & McIsaac W (2000) Socio-economic status and the utilisation of physicians' services: results from the Canadian National Population Health Survey. *Soc Sci Med* 51: 123-133.
- Ell K (1996) Social networks, social support and coping with serious illness: the family connection. *Soc Sci Med* 42: 173-183.
- Engel GL (1977) The need for a new medical model: A challenge for biomedicine. *Science* 196: 129-136.
- Escobar JI, Golding JM, Hough RL, Karno M, Burnham MA & Wells KB (1987) Somatization in the community: Relationship to disability and use of services. *Am J Public Health* 77: 837-840.
- Escobar JI, Waitzkin H, Silver RC, Gara M & Holman A (1998) Abridged somatization: A study in primary care. *Psychosom Med* 60: 466-472.
- Evashwick C, Rowe G, Diehr P & Branch L (1984) Factors explaining the use of health care services by the elderly. *Health Serv Res* 19: 357-382.
- Eve SB (1988) A longitudinal study of use of health care services among older women. *J Gerontol* 43: M31-39.
- Fenstermacher J (1984) Families of frequent users of health care services. *Psychotherapy in Priv Pract* 2: 35-37.
- Fink P (1992) The use of hospitalizations by persistent somatizing patients. *Psychol Med* 22: 173-180.
- Fink P, Jensen J, Borgquist L, Brevik JI, Dalgard OS, Sandager I, Engberg M, Hansson L, Holm M, Joukamaa M, Karlsson H, Lehtinen V, Nettelblad P, Nordström G, Stefansson CG, Sörensen L & Munk-Jørgensen P (1995) Psychiatric morbidity in primary public health care: a Nordic

- multicentre investigation. Part I: method and prevalence of psychiatric morbidity. *Acta Psychiat Scand* 92: 409-418.
- Fink P, Sörensen L, Engberg M, Holm M & Munk-Jørgensen P (1999) Somatization in primary care. Prevalence, health care utilization, and general practitioner recognition. *Psychosomatics* 40: 330-338.
- Ford CV (1992) Illness as a lifestyle. The role of somatization in medical practice. *Spine* 17: 338-343.
- Franklin LM (1971) The thick-file case. *New Zeal Med J* 74: 253-255.
- Freeborn DK, Pope CR, Mullooly JP & McFarland BH (1990) Consistently high users of medical care among the elderly. *Med Care* 28: 527-540.
- Freer CB, Boyle P & Ryan MP (1985) A study of attendance patterns in general practice over three years. *Health Bull* 44: 75-80.
- Freyberger H (1977) Supportive psychotherapeutic techniques in primary and secondary alexithymia. *Psychother Psychosom* 28: 337-342.
- Fry J (1986) Economics, politics and society. In: Fry, J & Hasler, JC (eds) *Primary Health Care 2000*, pp. 28-42. Churchill Livingstone, New York.
- Garcia Lavandera LJ, Alonso Fernandez M, Salvadores Rubio J, Alonso, Arias PS, Munoz Baragano P & Blanco Suarez AM (1996) Comparative study of normal and over-users of a health center. [Spanish]. *Atencion Primaria* 18: 484-489.
- Gill D, Dawes M, Sharpe M & Mayou R (1998) GP frequent consulters: their prevalence, natural history, and contribution to rising workload. *Br J Gen Pract* 48: 1856-1857.
- Gill D & Sharpe M (1999) Frequent consulters in general practice: a systematic review of studies of prevalence, associations and outcome. *J Psychosom Res* 47: 115-130.
- Goodridge DMG (1982) An analysis of fat folders. *J R Coll Gen Pract* 32: 239-241.
- Gortmaker SL, Eckenrode J & Gore S (1982) Stress and the utilization of health services: A time series and cross-sectional analysis. *J Health Soc Behav* 23: 25-38.
- Groves JE (1978) Taking care of the hateful patient. *N Engl J Med* 883-887.
- Groje O, Simon GE, Ustun TB & Goldberg DP (1997) Somatization in cross-cultural perspective: a World Health Organization study in primary care. *Am J Psychiatry* 154: 989-995.
- Hagman E (1981) Avohoidon sairauspanoraama. *Suom Lääkäril* 36: 735-739.
- Hansagi H, Allebeck P, Edhag O & Magnusson G (1990) Frequency of emergency department attendances as a predictor of mortality: nine-year follow-up of a population-based cohort. *J Public Health Med* 12: 39-44.
- Hansen BWL (1994) Acute illnesses in children. A description and analysis of parents' perception of illness threat. *Scand J Prim Health Care* 12: 15-19.
- Hansson L, Persson KB & Borgquist L (1997) Patients with mental illness in primary health care. A long term follow-up of health care utilization and contact patterns with psychiatric care. *Scand J Prim Health Care* 15: 129-133.
- Heistaro S, Helakorpi S, Uutela A & Puska P (1997) Suomalaisen aikuisväestön koettu terveys vuosina 1979-95. *Suom Lääkäril* 52: 535-542.
- Hernandez J & Kellner R (1992) Hypochondriacal concerns and attitudes toward illness in males and females. *Int J Psychiatry Med* 22: 251-263.
- Heywood PL, Blackie GC, Cameron IH & Dowell AC (1998) An assessment of the attributes of frequent attenders to general practice. *Fam Pract* 15: 198-204.
- Hibbard JH & Pope CR (1986) Age differences in the use of medical care in an HMO. An application of the behavioral model. *Med Care* 24: 52-66.
- Hill R (1970) Methodological issues in family development research. In: Ackerman, NW, (ed) *Family process*, Basic Books, New York.
- Hinkle LE, Jr. (1973) The concept of "stress" in the biological and social sciences. *Science, Medicine, & Man* 1: 31-48.
- Hitchcock PB & Mathews A (1992) Interpretation of bodily symptoms in hypochondriasis. *Behav Res Ther* 30: 223-234.
- Holahan CJ & Moos R (1981) Social support and psychological distress: a longitudinal analysis. *J Abnorm Psychol* 90: 265-270.

- Holi MM, Sammallahti PR & Aalberg VA (1998) A Finnish validation study of the SCL-90. *Acta Psychiatr Scand* 97: 42-46.
- Holmes T & Rahe R (1967) The social readjustment rating scale. *J Psychosom Res* 11: 213-218.
- Honkalampi K, Hintikka J, Tanskanen A, Lehtonen J & Viinamaki H (2000) Depression is strongly associated with alexithymia in the general population. *J Psychosom Res* 48: 99-104.
- Hood JE & Farmer RDT (1974) A comparative study of frequent and infrequent attenders at a general practice. *Int J Nurs Stud* 11: 147-153.
- Horwitz AV, McLaughlin J & White HR (1998) How the negative and positive aspects of partner relationships affect the mental health of young married people. *J Health Soc Behav* 39: 124-136.
- Hunt SM, McEwen J & McKenna SP (1985) Measuring health status: a new tool for clinicians and epidemiologists. *J R Coll Gen Pract* 35: 185-188.
- Huttunen MO (1981) Stressin olemus. *Duodecim* 97: 1722-1727.
- Huygen FJA (1978) *Family Medicine: The medical life histories of families*. Brunner/Mazel, New York.
- Hyypä MT & Kronholm E (1994) Kyselylomake tutkimusvälineenä - esimerkkinä Kansaneläkelaitoksen unikyselylomake. *Duodecim* 110: 1581-1587.
- Häkkinen U (1991) Terveysten ja terveyspalveluiden tarpeenmukaisen käytön tasa-arvo Suomessa (Equality in health and the delivery of health care in Finland) [English summary]. *Sosiaalilääket Aikakausl* 28: 283-297.
- ICPC Working Party (1987) *ICPC International Classification of Primary Care*. Oxford University Press, Oxford.
- International Classification of Diseases 9th revision (1986) *Tautiluokitus ICD-9*. Valtion Painatuskeskus, Helsinki.
- International Classification of Diseases 10th revision (1995) *Tautiluokitus ICD-10*. Stakes, Helsinki.
- Israel B (1982) Social networks and health status: linking theory, research and practice. *Patient Couns and Health Educ* 4: 65-79.
- Janz NK & Becker MH (1984) The Health Belief Model: a decade later. *Health Educ Q* 11: 1-47.
- Johnstone A & Goldberg D (1976) Psychiatric screening in general practice. *Lancet* 3: 605-620.
- Joukamaa M, Karlsson H, Sohlman B & Lehtinen V (1996) Alexithymia and psychological distress among frequent attendance patients in health care. *Psychother Psychosom* 65: 199-202.
- Joukamaa M, Lehtinen V & Karlsson H (1995) The ability of general practitioners to detect mental disorders in primary health care. *Acta Psychiatr Scand* 91: 52-56.
- Joukamaa M, Lehtinen V, Karlsson H & Rouhe E (1991) Perusterveydenhuollon potilaiden psykiatrinen sairastavuus. *Suom Lääkäril* 46: 3040-3044.
- Joukamaa M, Lehtinen V, Karlsson H & Rouhe E (1994) SCL-25 and recognition of mental disorders reported by primary health care physicians. *Acta Psychiatr Scand* 89: 320-323.
- Joukamaa M & Lepola U (1994) Alexithymic features in patients with panic disorder. *Nord J Psychiatr* 48: 33-36.
- Joukamaa M, Saarijärvi S, Muuriaisniemi ML & Salokangas RK (1996) Alexithymia in a normal elderly population. *Compr Psychiatry* 37: 144-147.
- Joukamaa M, Miettunen J, Kokkonen P, Koskinen M, Julkunen J, Kauhanen J, Jokelainen J, Veijola J, Lämsy K & Järvelin M-R (2001) Psychometric properties of the Finnish 20-item Toronto Alexithymia Scale. *Nord J Psychiatr* 55: 123-127.
- Jørgensen CK, Fink P & Olesen F (2000a) Psychological distress among patients with musculoskeletal illness in general practice. *Psychosomatics* 41: 321-329.
- Jørgensen CK, Fink P & Olesen F (2000b) Psychological distress and somatisation as prognostic factors in patients with musculoskeletal illness in general practice. *Br J Gen Pract* 50: 537-541.
- Kai J (1996) What worries parents when their preschool children are acutely ill, and why: a qualitative study. *BMJ* 313: 983-986.
- Kaplan BH, Cassel JC & Gore S (1977) Social support and health. *Med Care* 15: 47-58.
- Karlsson H (1996) Oireiden ulottuvuuksia. Psykiatrinen tutkimus terveyspalvelujen suurykäyttäjistä (Symptoms and their dimensions. A psychiatric study of frequent attender patients) [English summary]. *Stakes Tutkimuksia* 67. Stakes, Jyväskylä.

- Karlsson H, Joukamaa M, Lahti I, Lehtinen V & Kokki-Saarinen T (1997) Frequent attender profiles - different clinical subgroups among frequent attender patients in primary care. *J Psychosom Res* 42: 157-166.
- Karlsson H, Lehtinen V & Joukamaa M (1994) Frequent attenders of Finnish public primary health care: Sociodemographic Characteristics and Physical Morbidity. *Fam Pract* 11: 424-430.
- Karlsson H, Lehtinen V & Joukamaa M (1995a) Are frequent attenders of primary health care distressed? *Scand J Prim Health Care* 13: 32-38.
- Karlsson H, Lehtinen V & Joukamaa M (1995b) Psychiatric morbidity among frequent attender patients in primary care. *Gen Hosp Psychiatry* 17: 19-25.
- Kasteler J, Kane RL, Olsen DM & Thetford C (1976) Issues underlying prevalence of "doctor shopping" behavior. *J Health Soc Behav* 17: 328-339.
- Katon W (1987) The epidemiology of depression in medical care. *Int J Psychiatry Med* 17: 93-111.
- Katon W, Lin E, Von Korff M, Russo J, Lipscomb P & Bush T (1991) Somatization: a spectrum of severity. *Am J Psychiatry* 148: 34-40.
- Katon W & Russo J (1989) Somatic symptoms and depression. *J Fam Pract* 29: 65-69.
- Katon W, Von Korff M, Lin E, Lipscomb P, Russo J, Wagner E & Polk E (1990) Distressed high utilizers of medical care. DSM-III-R diagnoses and treatment needs. *Gen Hosp Psychiatry* 12: 355-362.
- Kauhanen J (1993) Dealing with emotions and health: A population study of alexithymia in middle-aged men. Kuopio University Publications D. Medical Sciences 25. Kuopio University Printing Office, Kuopio.
- Kauhanen J, Julkunen J & Salonen JT (1991) Alexithymia and perceived symptoms: criterion validity of the Toronto Alexithymia Scale. *Psychother Psychosom* 56: 247-252.
- Kauhanen J, Julkunen J & Salonen JT (1992) Coping with inner feelings and stress: heavy alcohol use in the context of alexithymia. *Behavioral Medicine* 18: 121-126.
- Kauhanen J, Kaplan GA, Julkunen J, Wilson TW & Salonen JT (1993) Social factors in alexithymia. *Compr Psychiatry* 34: 1-5.
- Kekki P (1983) Lääkäriissäkäyntien syyt terveystieteissä. *Suom Lääkäril* 38: 3050-3056.
- Kellner R (1985) Functional somatic symptoms and hypochondriasis. *Arch Gen Psychiatry* 42: 821-833.
- Kemp R (1963) The familiar face. *Lancet* 1:1223-1226.
- Kessel WIN (1960) Psychiatric morbidity in a London general practice. *Br J Prev Soc Med* 14: 16-22.
- Kessler LG, Burns BJ, Shapiro S, Tischler GL, George LK, Hough RL, Robinson D & Miller RH (1987) Psychiatric diagnoses of medical service users: evidence from the epidemiologic catchment area program. *Am J Public Health* 77: 18-24.
- Kinnunen O, Niemi P & Järvikoski A (1975) Aviollisen vuorovaikutuksen laatuun vaikuttavista tekijöistä (The factors influencing marital interaction) [Finnish]. Turun yliopiston psykologian laitoksen julkaisuja 17. Turku University, Turku.
- Kirmayer LJ & Robbins JM (1991) Three forms of somatization in primary care. Prevalence, co-occurrence, and sociodemographic characteristics. *J Nerv Ment Dis* 179: 647-655.
- Kisely S, Goldberg D & Simon G (1997) A comparison between somatic symptoms with and without clear organic cause: results of an international study. *Psychol Med* 27: 1011-1019.
- Kivelä S-L & Lammi U-K (1985) Työikäisten terveystieteidenkäyttöminen Hämeen läänin viidessä maalaiskunnassa vuonna 1982. *Suom Lääkäril* 40: 567-572.
- Kivelä S-L, Pakkala K & Laippala P (1988) Prevalence of depression in Finnish population. *Acta Psychiatr Scand* 78: 401-413.
- Koivukangas P, Ohinmaa A & Koivukangas J (1995) Nottingham Health Profilen (NHP) suomalainen versio. Stakes, Saarijärvi.
- Kokko S (1988) Tauti ja sairaus - työikäiset terveystieteidenlääkärin vastaanotolla (Disease and illness - working-aged at doctors' surgeries in a health center) [English summary]. Kuopion Yliopiston julkaisuja, Kansanterveystiede, Alkuperäistutkimuksia 1/1988. Kuopion Yliopisto, Kuopio.

- Kokko S (1990) Long term patterns of general practice consulting behavior: a qualitative 9-year analysis of general practice histories of a working middle-aged rural Finnish population. *Soc Sci Med* 30: 509-515.
- Koskinen S (1995) Terveystien eriarvoisuus - haaste terveydenhuollolle. *Suom Lääkäril* 50: 3097-3102.
- Kouzis AC & Eaton WW (1998) Absence of social networks, social support and health services utilization. *Psychol Med* 28: 1301-1310.
- Krakau I (1991) Perception of health and use of health services in a Swedish primary care district. A ten year's perspective. *Scand J Prim Health Care* 9: 103-108.
- Kroenke K & Spitzer RL (1998) Gender differences in the reporting of physical and somatoform symptoms. *Psychosom Med* 60: 150-155.
- Kroenke K, Spitzer RL, deGruy FV3rd, Hahn SR, Linzer M, Williams JB, Brody D & Davies M (1997) Multisomatoform disorder. An alternative to undifferentiated somatoform disorder for the somatizing patient in primary care. *Arch Gen Psychiatry* 54: 352-358.
- Kronenfeld JJ (1980) Sources of ambulatory care and utilization models. *Health Serv Res* 15: 3-20.
- Lahelma E, Huuhka M, Manderbacka K & Rahkonen O (1995) Suomalaisten terveydentila yhteiskunnallisen murroksen oloissa - Vuosien 1986 ja 1994 elinolotutkimukset. *Suom Lääkäril* 50: 1621-1628.
- Lamberts H, Wood M & Hofmans-Okkes IM (1992) International Primary Care Classifications: the effect of fifteen years of evolution. *Fam Pract* 9: 330-339.
- Larivaara P (1987) Terveystien suurkäyttäjät (Frequent attenders at doctors' surgeries in a Finnish health care centre) [English summary]. *Acta Universitatis Ouluensis Series D Medica*. 164. Oulu University, Oulu.
- Larivaara P, Väisänen E & Wynne LC (1996) Developing a family systems approach to rural healthcare: dealing with the "heavy-user" problem. *Families, Systems & Health* 14: 291-302.
- Leavitt F (1979) The health belief model and utilization of ambulatory care services. *Soc Sci Med* 13A: 105-112.
- Lehtinen V (1988) Paraneeko suomalaisten mielenterveys? *Suom Lääkäril* 43: 1713-1719.
- Lehtinen V (1991) Perusterveydenhuolto - vajaakäyttöinen voimavara mielenterveystyössä. *Suom Lääkäril* 46: 3027.
- Lehtinen V (1995) Depression epidemiologiaa. In: *Depressio - tunnistaminen ja hoito*. Suomen Akatemian julkaisuja 1/95: 23-35. Suomen Akatemia, Suomalainen Lääkäriseura Duodecim, Helsinki.
- Lehtinen V, Joukamaa M, Jyrkinen T, Lahtela K, Raitasalo R, Maatela J & Aromaa A (1991) Suomalaisten aikuisten mielenterveys ja mielenterveyden häiriöt. Kansaneläkelaitoksen julkaisuja AL:33. Kansaneläkelaitos, Turku ja Helsinki.
- Lehtinen V, Joukamaa M, Lahtela K, Raitasalo R, Jyrkinen E, Maatela, J & Aromaa A (1990) Prevalence of mental disorders among adults in Finland: basic results from the Mini Finland Health Survey. *Acta Psychiat Scand* 81: 418-425.
- Lehtinen V, Toivola J-M, Kourula K & Prinssi V-P (1984) Terveystienpotilaiden mielenterveysongelmat. *Suom Lääkäril* 39: 1506-1510.
- Lehtinen V, Veijola J, Lindholm T, Väisänen E, Moring J & Puukka P (1993) Mielenterveyden pysyvyys ja muutokset suomalaisilla aikuisilla. UKKI-tutkimuksen 16-vuotis seurannan päätulokset. Kansaneläkelaitoksen julkaisuja AL:36. Kansaneläkelaitos, Turku.
- Lin EH, Katon W, Von Korff M, Bush T, Lipscomb P, Russo J & Wagner E (1991) Frustrating patients: Physician and patient perspectives among distressed high-users of medical services. *J Gen Intern Med* 1: 241-246.
- Lindholm H & Gockel M (2000) Stressin elinvaikutusten mittaaminen. *Duodecim* 116: 2259-2265.
- Lipowski ZJ (1988) Somatization: The concept and its clinical application. *Am J Psychiatry* 145: 1358-1368.
- Lumley MA, Stettner L & Wehmer F (1996) How are alexithymia and physical illness linked? A review and critique of pathways. *J Psychosom Res* 41: 505-518.
- Lumley MA, Tomakowsky J & Torosian T (1997) The relationship of alexithymia to subjective and biomedical measures of disease. *Psychosomatics* 38: 497-502.

- Lönnqvist J & Niskanen P (1972) Yleislääkäriin potilailla esiintyvät psyykkiset häiriöt. *Suom Lääkäril* 27: 3471-3476.
- Manning WG & Wells KB (1992) The effects of psychological distress and psychological well-being on use of medical services. *Med Care* 30: 541-553.
- Manton JR (1985) Frequent attenders in general practice. *J R Coll Gen Pract* 35: 493-494.
- Margo KL & Margo GM (1994) The problem of somatization in family practice. *Am Fam Physician* 49: 1873-1879.
- Mayou R, Hawton K & Feldman E (1988) What happens to medical patients with psychiatric disorder? *J Psychosom Res* 32: 541-549.
- McArdle C, Alexander WD & Boyle CM (1974) Frequent attenders at a health centre. *Practitioner* 213: 696-702.
- McCormick JS (1972) Familiar faces - the constant attender. *Proc R Soc Med* 65: 507-509.
- McDaniel SH, Campbell TL & Seaburn DB (1990) Family-oriented primary care. A manual for medical providers. Springer-Verlag, New York.
- McDowell I & Newell C (1987) Measuring health: a guide to rating scales and questionnaires. Oxford University Press, New York.
- McFarland BH, Freeborn DK, Mullooly JP & Pope CR (1985) Utilization patterns among long-term enrollees in a prepaid group practice health maintenance organization. *Med Care* 23: 1221-1233.
- McKinlay JB (1972) Some approaches and problems in the study of the use of services - An overview. *J Health Soc Behav* 13: 115-124.
- Mechanic D (1976) Sex, illness behavior, and the use of health services. *J Human Stress* 2: 29-40.
- Mechanic D (1978) Effects of psychological distress on perceptions of physical health and use of medical and psychiatric facilities. *J Human Stress* 4: 26-32.
- Mechanic D (1979) Correlates of physician utilization: why do major multivariate studies of physician utilization find trivial psychosocial and organizational effects? *J Health Soc Behav* 20: 387-396.
- Mechanic D (1992) Health and illness behavior and patient-practitioner relationships. *Soc Sci Med* 34: 1345-1350.
- Mechanic D, Cleary PD & Greenley JR (1982) Distress syndromes, illness behavior, access to care and medical utilization in a defined population. *Med Care* 20: 361-372.
- Medalie JH (1979) The family life cycle and its implications for family practice. *J Fam Pract* 9: 47-56.
- Minuchin S, Baker L, Rosman BL, Liebman R, Milman L & Todd T (1975) A conceptual model of psychosomatic illness in children. *Arch Gen Psychiatry* 32: 1031-1038.
- Montgomery SA (1990) Anxiety and depression. Wrigshston Biomedical Publishing Ltd, Petersfield.
- Morgan M (1980) Marital status, health, illness and service use. *Soc Sci Med* 14A: 633-643.
- Morris JK, Cook DG, Walker M & Shaper AG (1992) Non-consulters and high consulters in general practice: cardio-respiratory health and risk factors. *J Publ Health Med* 14: 131-137.
- Mäntyselkä P (1998) Kipupotilas terveystieteissä (Patient pain in general practice) [English summary]. *Kuopion yliopiston julkaisuja D. Lääketiede*. 165. Kuopion yliopisto, Kuopio.
- Nathanson CA (1977) Sex, illness, and medical care - A review of data, theory, and method. *Soc Sci Med* 11: 13-25.
- Neal R, Dowell A, Heywood P & Morley S (1996) Frequent attenders: Who needs treatment? *Br J Gen Pract* 46: 131-132.
- Neal RD, Heywood PL, Morley S, Clayden AD & Dowell AC (1998) Frequency of patients' consulting in general practice and workload generated by frequent attenders: comparisons between practices. *Br J Gen Pract* 48: 895-898.
- Nemiah JC, Freyberger H & Sifneos PE (1976) Alexithymia: a view of the psychosomatic process. In: Hill, OW (ed) *Modern trends in psychosomatic medicine*, pp. 430-439. Butterworths, London.
- Newacheck PW & Halfon N (1986) The association between mother's and children's use of physician services. *Med Care* 24: 30-38.
- Newby NM (1996) Chronic illness and the family life-cycle. *J Adv Nurs* 23: 786-791.

- Nighswander TS (1984) High utilizers of ambulatory care services: 6 year followup at Alaska Native Medical Center. *Publ Health Rep* 99: 400-404.
- Noyes R, Jr., Holt CS & Kathol RG (1995) Somatization. Diagnosis and management. *Arch Fam Med* 4: 790-795.
- Nyman K (1982) Aikuisten terveystalvelusten käyttö. In: Kalimo E, Nyman K, Klaukka T Tuomikoski H & Savolainen E (eds) Terveystalvelusten tarve, käyttö ja kustannukset 1964-1976. Kansaneläkelaitoksen julkaisuja A:18: 102-229, Kansaneläkelaitos, Helsinki.
- Olbrisch ME (1977) Psychotherapeutic interventions in physical health. Effectiveness and economic efficiency. *Am Psychol* 32: 761-777.
- O'Reilly P (1988) Methodological issues in social support and social network research. *Soc Sci Med* 26: 863-873.
- O'Dowd TC (1988) Five years of heartsink patients in general practice. *BMJ* 297: 528-530.
- Ormel J, Van den Brink W, Koeter MW, Giel R, Van Der Meer K, Van De Willige G & Wilmink FW (1990) Recognition, management and outcome of psychological disorders in primary care: a naturalistic follow-up study. *Psychol Med* 20: 909-923.
- Parker JDA, Bagby RM, Taylor GJ, Endler NS & Schmitz P (1993) Factorial validity of the 20-item Toronto Alexithymia Scale. *Eur J Pers* 7: 221-232.
- Parkerson GR, Michener JL, Wu LR, Finch JN, Muhlbaier LM, Magruder-Habib K, Kertesz JW, Clapp-Channing N, Morrow DS, Chen AL-T & Jokerst E (1989) Associations among family support, family stress, and personal functional health status. *J Clin Epidemiol* 42: 217-229.
- Paulsen VM & Shaver JL (1991) Stress, support, psychological states and sleep. *Social Science and Medicine* 32: 1237-1243.
- Paykel ES (1994) Life events, social support and depression. *Acta Psychiat Scand Suppl* 377: 50-58.
- Paykel ES & Priest RG (1992) Recognition and management of depression in general practice: consensus statement. *BMJ* 305: 1198-1202.
- Payne RL & Jones JG (1987) Measurement and methodological issues in social support. John Wiley & Sons, New York.
- Pekkanen J, Tuomilehto J, Uutela A, Vartiainen E & Nissinen A (1995) Social class, health behaviour, and mortality among men and women in eastern Finland. *BMJ* 311: 589-593.
- Phillips KA, Morrison KR, Andersen R & Aday LA (1998) Understanding the context of healthcare utilization: assessing environmental and provider-related variables in the behavioral model of utilization. *Health Serv Res* 33: 571-596.
- Picken B & Ireland G (1969) Family patterns of medical care utilization. *J Chronic Dis* 22: 181-191.
- Pilowsky I (1967) Dimensions of hypochondriasis. *Br J Psychiatry* 113: 89-93.
- Pilowsky I (1970) Primary and secondary hypochondriasis. *Acta Psychiat Scand* 46: 273-285.
- Polliack MR (1971) The relationship between Cornell Medical Index scores and attendance rates. *J R Coll Gen Pract* 21: 453-459.
- Portegijs PJ, van der Horst FG, Proot IM, Kraan HF, Gunther NC & Knottnerus JA (1996) Somatization in frequent attenders of general practice. *Soc Psychiatry Psychiatr Epidemiol* 31: 29-37.
- Poutanen O (1996) Depressio terveystalveluskeskustalvelulla (Depression among patients in health centre) [English summary]. *Acta Universitatis Tamperensis ser A. vol 474*. Tampere University, Tampere.
- Pratt L (1976) Family structure and effective health behavior. The energized family. Houghton Mifflin Company, Boston.
- Preville M, Potvin L & Boyer R (1998) Psychological distress and use of ambulatory medical services in the Quebec Medicare system. *Health Serv Res* 33: 275-286.
- Purola T (1971) Terveystalvelusten käyttö yhteiskuntatieteellisen tutkimuksen kohteena. *Sosiaalilääket Aikakausl* 9: 293-299.
- Purola T (1972) A systems approach to health and health policy. *Med Care* 10: 373-379.
- Pålsson N (1988) Functional somatic symptoms and hypochondriasis among general practice patients: a pilot study. *Acta Psychiat Scand* 78: 191-197.
- Quill TE (1985) Somatization disorder. One of medicine's blind spots. *JAMA* 254: 3075-3079.

- Rahe RH, Meyer M, Smith M, Kjaer G & Holmes TH (1964) Social stress and illness onset. *J Psychosom Res* 8: 35
- Rajala U (1997) Depressive symptoms and non-insulin-dependent diabetes mellitus among middle-aged. *Acta Universitatis Ouluensis Series D Medica* 408. Oulu University, Oulu.
- Rajala U, Keinänen-Kiukaanniemi S, Uusimäki A & Kivelä S-L (1995) Musculoskeletal pains and depression in a middle-aged Finnish population. *Pain* 61: 451-457.
- Renne KS (1971) Health and marital experience in an urban population. *J Marriage Fam* 33: 338-350.
- Rittelmeyer LF, Jr. (1985) Coping with the chronic complainer. *Am Fam Physician* 31: 211-215.
- Robinson JO & Granfield AJ (1986) The frequent consulter in primary medical care. *J Psychosom Res* 30: 589-600.
- Rodrigo G, Lusiardo M & Normey L (1989) Alexithymia: reliability and validity of the Spanish version of the Toronto Alexithymia Scale. *Psychother Psychosom* 51: 162-168.
- Rogers MP, Weinshenker NJ, Warshaw MG, Goisman RM, Rodriguez-Villa FJ, Fierman EJ & Keller MB (1996) Prevalence of somatoform disorders in a large sample of patients with anxiety disorders. *Psychosomatics* 37: 17-22.
- Rokstad K, Straand J & Sandvik H (1997) Pasientkontakter i allmennpraksis. En epidemiologisk undersøkelse i Møre og Romsdal (Patient encounters in general practice. An epidemiological survey in Møre and Romsdal). [English summary]. *Tidsskr Nor Laegeforen* 117: 659-664.
- Rolland JS (1987) Chronic illness and the life cycle: a conceptual framework. *Fam Process* 26: 203-221.
- Rosen G, Kleinman A & Katon W (1982) Somatization in family practice: a biopsychosocial approach. *J Fam Pract* 14: 493-502.
- Roy-Byrne PP (1996) Generalized anxiety and mixed anxiety-depression: association with disability and health care utilization. *J Clin Psychiatry* 57 Suppl 7: 86-91.
- Ruoff GE (1996) Depression in the patient with chronic pain. *J Fam Pract* 43: S25-33.
- Saarijärvi S, Rytökoski U & Karppi S-L (1990) Marital satisfaction and distress in chronic low-back pain patients and their spouses. *Clin J Pain* 6: 148-152.
- Saarijärvi S, Salminen JK, Tamminen T & Äärelä E (1993) Alexithymia in psychiatric consultation-liaison patients. *Gen Hosp Psychiatry* 15: 330-333.
- Salminen JK, Saarijärvi S, Äärelä E & Kauhanen J (1999a) Sanat, tunteet ja terveys. *Duodecim* 115: 1988-1992.
- Salminen JK, Saarijärvi S, Äärelä E & Tamminen T (1994) Alexithymia - state or trait? One-year follow-up study of general hospital psychiatric consultation out-patients. *J Psychosom Res* 38: 681-685.
- Salminen JK, Saarijärvi S, Äärelä E, Toikka T & Kauhanen J (1999b) Prevalence of alexithymia and its association with sociodemographic variables in the general population of Finland. *J Psychosom Res* 46: 75-82.
- Salmon P, Peters S & Stanley I (1999) Patients, perceptions of medical explanations for somatization disorders: qualitative analysis. *BMJ* 318: 372-376.
- Salokangas RKR, Poutanen O, Stengård E, Jähi R & Palo-oja T (1996) Prevalence of depression among patients seen in community health centers and community mental health centers. *Acta Psychiatr Scand* 93: 427-433.
- Sato T, Takeichi M, Shirahama M, Fukui T & Gude JK (1995) Doctor-shopping patients and users of alternative medicine among Japanese primary care patients. *Gen Hosp Psychiatry* 17: 115-125.
- Savonius B (1988) Palvelujen suorkäyttö Espoon terveystakesuksessa. *Suom Lääkäril* 43: 1718-1720.
- Schreier HA & Libow JA (1994) Münchhausen by proxy syndrome: a modern pediatric challenge. *J Pediatr* 125: S110-S115
- Schrire S (1986) Frequent attenders - a review. *Fam Pract* 3: 272-275.
- Semence A (1969) Chronic high users in a general practice. *J Roy Coll Gen Pract* 17: 304-310.
- Sensky T, MacLeod AK & Rigby MF (1996) Causal attributions about common somatic sensations among frequent general practice attenders. *Psychol Med* 26: 641-646.

- Sherbourne CD, Wells KB, Meredith LS, Jackson CA & Camp P (1996) Comorbid anxiety disorder and the functioning and well-being of chronically ill patients of general medical providers. *Arch Gen Psychiatry* 53: 889-895.
- Siegel JM (1990) Stressful life events and use of physician services among the elderly: the moderating role of pet ownership. *J Pers Soc Psychol* 58: 1081-1086.
- Sifneos PE (1973) The prevalence of alexithymic characteristics in psychosomatic patients. *Psychother Psychosom* 22: 255-262.
- Simon GE (1992) Psychiatric disorder and functional somatic symptoms as predictors of health care use. *Psychiatric Medicine* 10: 49-59.
- Simon GE & VonKorff M (1991) Somatization and psychiatric disorder in the NIMH Epidemiologic Catchment Area Study. *Am J Psychiatry* 148: 1494-1500.
- Smedby B (1974) Storkonsumenter av läkavård (High consumers of medical care) [Swedish]. *Socialmed Tidskrift* 51: 462-468.
- Smith GRJ, Monson RA & Ray DC (1986) Patients with multiple unexplained symptoms. Their characteristics, functional health and health care utilization. *Arch Intern Med* 146: 69-72.
- Spanier GB (1979) The measurement of marital quality. *J Sex Marital Ther* 5: 288-300.
- Speckens AE, Spinhoven P, Sloekers PPA, Bolk JH & Van Hemert AM (1996) A validation study of the Whitely Index, Illness Attitude Scales and Somatosensory Amplification Scale in general medical and general practice patients. *J Psychosom Res* 40: 95-104.
- Stansfeld SA, Bosma H, Hemingway H & Marmot MG (1998) Psychosocial work characteristics and social support as predictors of SF-36 health functioning: the Whitehall II study. *Psychosom Med* 60: 247-255.
- Švab I & Zaletel-Krakelj L (1993) Frequent attenders in general practice: a study from Slovenia. *Scand J Prim Health Care* 11: 38-43.
- Tansella CZ (1995) Illness and family functioning: theoretical and practical considerations from the primary care point of view. *Fam Pract* 12: 214-220.
- Taylor GJ (1984) Alexithymia: concept, measurement, and implications for treatment. *Am J Psychiatry* 141: 725-732.
- Taylor GJ, Bagby RM & Parker JDA (1991) The alexithymia construct: a potential paradigm for psychosomatic medicine. *Psychosomatics* 32: 153-164.
- Taylor GJ, Bagby RM & Parker JDA (1997) Disorders of affect regulation. Alexithymia in medical and psychiatric illness. Cambridge University Press, Cambridge.
- Taylor GJ, Parker JD, Bagby RM & Acklin MW (1992) Alexithymia and somatic complaints in psychiatric out-patients. *J Psychosom Res* 36: 417-424.
- Tessler R & Mechanic D (1978) Factors affecting children's use of physician services in a prepaid group practice. *Med Care* 16: 33-46.
- Tessler R, Mechanic D & Dimond M (1976) The effect of psychological distress on physician utilization: a prospective study. *J Health Soc Behav* 17: 353-364.
- Thoits PA (1995) Stress, coping, and social support processes: where are we? What next?. *J Health Soc Behav Spec No*: 53-79.
- Tolkki-Nikkonen M (1985) Kun ei odota ei kärsi, kun ei vaadi ei paljon pety [Finnish]. *Acta Universitatis Tamperensis Ser A*. vol 191. Tampere University, Tampere.
- Toomey TC, Haggerty Jr JJ, Raft D & Strogatz DS (1982) The frequent clinic attender: Relative contributions of illness severity, psychological and social issues. *Psychiatric Forum* 11: 1-5.
- Vedsted P & Olesen F (1999a) Effect of a reorganized after-hours family practice service on frequent attenders. *Fam Med* 31: 270-275.
- Vedsted P & Olesen F (1999b) Frequent attenders in out-of-hours general practice care: attendance prognosis. *Fam Pract* 16: 283-288.
- Videman T, Heikkilä J & Venesmaa P (1976) Lääkäripalvelujen käytön kasautumisen ongelma. *Suom Lääkäril* 31: 2426-2430.
- Viinamäki H, Hintikka J, Kontula O, Niskanen L & Koskela K (2000) Mental health at population level during an economic recession in Finland. *Nord J Psychiat* 54: 177-182.
- Viinamäki H, Niskanen L & Koskela K (1997) Factors predicting health behavior. *Nord J Psychiat* 51: 431-438.

- Vohlonen I, Ylänkö V, Heinonen O, Savonius B & Pekurinen M (1991) Terveyspalvelujen käytön ja kustannusten suhde Kanadassa ja Suomessa. *Suom Lääkäril* 46: 1724-1727.
- Von Bertalanffy L (1968) *General Systems Theory*. Braziller, New York.
- Von Korff M, Ormel J, Katon W & Lin EHB (1992) Disability and depression among high utilizers of health care. A longitudinal analysis. *Arch Gen Psychiatry* 49: 91-100.
- Vuori I, Miilunpalo U, Urponen H, Oja P & Tamminen P (1983) Avoterveydenhuollon lääkärisäkäynnit kolmessa Kainuun kunnassa. *Suom Lääkäril* 38: 1579-1589.
- Väisänen E (1975) Mielenterveyden häiriöt Suomessa. Erityisesti maantieteellisiin ja sosiaalisiin tekijöihin kohdistuva vertaileva tutkimus. Kansaneläkelaitoksen julkaisuja AL: 2. Kansaneläkelaitos, Helsinki.
- Wagner PJ & Hendrich JE (1993) Physician views on frequent medical use: patient beliefs and demographic and diagnostic correlates. *J Fam Pract* 36: 417-422.
- Wagner PJ, Phillips W, Radford M & Hornsby JL (1995) Frequent use of medical services. Patients reports of intentions to seek care. *Arch Fam Med* 4: 594-599.
- Wamoscher Z (1966) The returning patient. A survey of patients with high attendance rate. *J Coll Gen Practit* 11: 166-173.
- Wan TTH (1982) *Stressful life events. Social-support networks and gerontological health*. Lexington Books, Lexington, Massachusetts.
- Ward AM, Underwood P, Fatovich B & Wood A (1994) Stability of attendance in general practice. *Fam Pract* 11: 431-437.
- Warnes H (1986) Alexithymia, clinical and therapeutic aspects. *Psychother Psychosom* 46: 96-104.
- Webster's Encyclopedic Unabridged Dictionary of the English language. (1996) Gramercy Books, New York.
- Weimer SR, Hatcher C & Gould E (1983) Family characteristics in high and low health care utilization. *Gen Hosp Psychiatry* 5: 55-61.
- Wells KB, Rogers W, Burnam A, Greenfield S & Ware JE (1991) How the medical comorbidity of depressed patients differ across health care settings: results from the medical outcomes study. *Am J Psychiatry* 148: 1688-1696.
- Westhead J (1985) Frequent attenders in general practice: medical, psychological and social characteristics. *J Roy Coll Gen Pract* 35: 337-340.
- Wilson JL (1977) Family utilization of a medical center. *J Fam Pract* 5: 991-996.
- Winblad I, Isohanni M, Nieminen P, Larivaara P, Eskelinen J, Jyväskylä A, Lappalainen S, Penttilä A-K, Päiväranta T, Sevtsenko P, Vätjus H, Visuri M & Spalding M (1994) Mielenterveysongelmat terveyskeskuslääkärille tulon aiheina. *Suom Lääkäril* 49: 3069-3072.
- Wirsching M & Stierlin H (1982) *Krankheit und Familie. Konzepte-Forschungsergebnisse - Therapie*. Ernst Klett Verlage GmbH u. Co.K., Stuttgart.
- Worrall A, Rea JN & Ben-Shlomo Y (1997) Counting the costs of social disadvantage in primary care: retrospective analysis of patient data. *BMJ* 314: 38-42.
- Wynne LC (1981) Current concepts about schizophrenia and family relationships. *J Nerv Ment Dis* 169: 82-89.
- Wyshak G, Barsky AJ & Klerman GL (1991) Comparison of psychiatric screening tests in a general medical setting using ROC analysis. *Med Care* 29: 775-785.
- Zoccolillo MS & Cloninger CR (1986) Excess medical care of women with somatization disorder. *Southern Med J* 79: 532-535.

Appendix

APPENDIX 1**Hill's classification of the phases of family life cycle (Hill 1970)**

1. family established under three years ago – no children
2. family established over three years ago – no children
3. new parents family – family with one or more child / children under three years old
4. preschool family – family with oldest child 3-6 years old
5. school age family – family with oldest child 7-12 years old
6. family with adolescent – family with oldest child 13-19 years old
7. family with young adults – family with oldest child from 20 years old until someone of the children leaves home
8. family as a launching centre – family with children leaving home
9. postparental family – family after children have left home until the main breadwinner of the family is retired
10. aging family – family after the main breadwinner of the family is retired
11. none of the alternatives