

MEASURING ASPECTS OF MENTAL HEALTH

Korkeila, Jyrki JA

ISBN 951-33-1041-8
ISSN 1235-4775
National Research and Development Centre
for Welfare and Health, Helsinki 2000

The project received financial support from the European Commission.

Neither the European Commission nor any person acting on its behalf is liable for any use made of the following information.



Date of publication 02.11.2000

Authors Jyrki Korkeila		Publisher STAKES	
Title MEASURING ASPECTS OF MENTAL HEALTH			
Publication series and number Themes 6/2000			
Abstract <p>This presentation is a review of current scientific literature seeking associations between mental health, psychological distress and mental disorders on the one hand and different individual, social, economic, ecological and service-related characteristics on the other. The focus of this paper is on the appraisal of mental health at population level, giving special weight to an assessment useful for mental health promotion. This has naturally influenced the selection of the reviewed literature as emphasis has been put on large-scale outcomes and correlations (between determinants and mental health) instead of assessment of individual psychopathology. This review has neither concentrated on the care system outside the viewpoint of service use. Substance abuse and organic disorders are not dealt with in this review, as the project itself does not focus on these phenomena.</p> <p>The present review is conducted as the background work for developing a set of mental health indicators as part of a comprehensive health monitoring system in Europe. A two-year action project to establish the indicators for mental health monitoring in Europe, coordinated by Stakes, started in the beginning of 1999 under the EC Health Monitoring Programme. A common indicator set for mental health monitoring will enable establishment of joint efforts in the field of mental health, comparison of policies and activities in different Member States as well as evaluation and dissemination of good practices.</p> <p>An abundance of scientific literature exists on the subjects dealt with here. The focus is here primarily on some of the older key investigations and on data accumulated during the last five to six years. Literature searches were conducted through the MEDLINE, PSYCHLIT and SOCIOLOGICAL ABSTRACTS databases. Available reviews and textbooks were also made use of. Attention has been paid to the relevance of the domains of mental health indicators from two points, mental health policies and practical purposes. The latter point means that the indicators should 1) provide a measure of variability between countries, 2) be sensitive to changes over time and 3) have relevance for the aims of the activities (promotion of mental health, prevention and treatment of mental ill-health) followed.</p> <p>The research findings cited herein outline specific areas as key starting points in establishing a set of mental health indicators. Such indicator areas have been provisionally grouped in the following manner: Sociodemographic; Social Networks; Positive Mental Health; Subjective Experience of the Individual; Services and their Supply, Use and Demand; Morbidity and Disability; and Mortality.</p>			
Keywords Mental health, measurement, population, indicator			
Other information (e.g. online publication or Internet address)			
ISSN 1235-4775		ISBN 951-33-1041 -8	
No. of pages 135		Language English	Price FIM 127 (incl. VAT)
Distribution and sale STAKES, P.O.Box 220, 00531 Helsinki, Finland, tel +358 9 3967 2190 and +358 9 3967 2308, telefax +358 9 3967 2450			

Foreword	4
Executive summary	5
List of abbreviations appearing in text	6
Preamble	8
Summary of the review	10
1. Aims and definitions	15
1.1. Health and mental health.....	15
1.1.1. Mental ill-health, psychological distress and mental disorders.....	17
1.1.2. Models of mental disorders	17
1.1.3. The challenge set by mental-ill-health	18
1.2. Definitions of health needs.....	19
1.2.1. The need, perceived need and demand for care and the use of care	19
1.2.2. Mental health needs.....	19
1.2.3. Perceived welfare and needs.....	20
1.3. Levels and methods of analysis.....	21
1.3.1. Indicators as measures of health and health care.....	21
1.4. Aims and domains of mental health indicators.....	23
1.5. Methods to assess mental health needs.....	24
1.5.1. Needs index models	26
2. Indicator domains	27
2.1. Sociodemographic correlates of health and mental health	27
2.1.1. Socio-economic status and health.....	28
2.1.2. Socioeconomic status and mental health.....	30
2.1.3. Neighbourhoods, urbanicity and mental health	31
2.1.4. Migration and mental health	32
2.1.1.5. Other sociodemographic factors and mental health.....	32
2.2. Social networks and stressful events, health and mental health	34
2.2.1. Social support	34
2.2.1.1. <i>Measuring social support</i>	35
2.2.1.2. <i>Determinants of social support</i>	36
2.2.1.3. <i>Effects of social support</i>	37
2.2.2. Family relations, health and mental health	39
2.2.3. Marital quality, health and mental health.....	40
2.2.4. Life events and mental health	41
2.2.4.1. <i>Definition of life events</i>	41
2.2.4.2. <i>Measurement of life events</i>	42
2.2.4.3. <i>Effects of life events</i>	43
2.2.4.4. <i>Minor events and worries</i>	46
2.2.5. Living conditions, social capital and health	47
2.2.5.1. <i>Stress at work and health</i>	47
2.2.5.2. <i>Unemployment and health</i>	48
2.2.5.3. <i>Social capital and health</i>	48
2.3. Positive mental health.....	50
2.3.1. Measures and definitions	50
2.3.2. Affect, happiness and life satisfaction.....	51
2.3.3. Subjective well-being and psychological distress	52
2.3.4. Sense of personal control.....	53
2.3.4.1. <i>Definitions of personal control</i>	53
2.3.4.2. <i>Measurement of personal control</i>	54
2.3.4.3. <i>Effects of sense of personal control</i>	54
2.3.5. Personality characteristics associated with positive mental health.....	55
2.3.5.1. <i>Personality, temperament and character</i>	55
2.3.5.2. <i>Temperament, personality characteristics and health</i>	57
2.3.6. Resilience, hardiness and coping.....	59
2.3.6.1. <i>Resilience and hardiness</i>	59
2.3.6.1.1. Features and determinants of resilience.....	59
2.3.6.1.2. Resilience and family	60

2.3.6.2. Coping with stress.....	61
2.3.6.2.1. Effects and characteristics of successful coping.....	61
2.3.7. Sense of coherence.....	63
2.3.7.1. Definition of sense of coherence.....	63
2.3.7.2. Measurement of SOC.....	63
2.3.7.3. SOC and other measures.....	64
2.3.7.4. Correlates of SOC.....	64
2.3.7.5. SOC and mental health.....	65
2.3.8. Expectation of future as a resource.....	66
2.3.8.1. Definitions of central concepts.....	66
2.3.8.2. Measurement of optimism and hopefulness.....	67
2.3.8.3. Effects of future expectations.....	67
2.3.9. Empowerment.....	69
2.4. Self-perceived aspects of health and mental health.....	69
2.4.1. Self-perceived health.....	70
2.4.2. Quality of Life.....	71
2.4.2.1. Definition of quality of life.....	71
2.4.2.2. Measurement of quality of life.....	72
2.4.2.3. Determinants of QOL.....	73
2.5. Measures based on use of and demand for services.....	74
2.5.1. Use of utilisation data.....	74
2.6. Measuring and describing morbidity and disability.....	77
2.6.1. Epidemiology of mental disorders.....	77
2.6.2.1. Genes as risk factors for mental illness.....	81
2.6.3. Psychological distress and general population.....	82
2.6.4. Disability.....	84
2.6.5. Psychiatric comorbidity.....	86
2.6.6. Somatic comorbidity of psychiatric disorders.....	87
2.6.7. Mental health expectancies.....	88
2.6.8. Morbidity and consumption of drugs.....	89
2.7. Mortality and mental health.....	90
2.7.1. Mortality and psychiatric disorders.....	90
2.7.2. Psychosocial factors, personality and mortality.....	92
3. Conclusions.....	94
3.1. Data for the review.....	94
3.2. Measures of mental health at population level.....	94
3.2.2. Sociodemographic indicators.....	95
3.2.3. Social networks and stressful events.....	96
3.2.4. Positive mental health.....	97
3.2.5. Indicators of the subjective experience of the individual.....	97
3.2.6. Measures based on use of and demand for services.....	98
3.2.7. Disability, morbidity and mental health.....	99
3.2.8. Mortality and mental health.....	100
3.3. Implications of the review.....	100
3.4. Core issues concerning the indicators.....	101
3.5. Added value of monitoring system.....	102
REFERENCES.....	103
Appendix 1. Scales assessing needs.....	126
Appendix 2: Index of needs models.....	126
Appendix 3: Scales measuring “Social support” or “social health”.....	128
Appendix 4. Scales measuring life events.....	128
Appendix 5: Scales measuring positive mental health.....	129
Appendix 6. Scales measuring QOL pertinent to mental health.....	130
Appendix 7. Structured psychiatric interview methods for epidemiological studies.....	131
Appendix 8. Measures of non-specific psychological distress.....	131

Foreword

Disability due to psychiatric disorder has received increasing attention since the Global Burden of Disease report, launched jointly by the World Bank and WHO. A quarter of all morbidity was attributed to psychiatric illnesses and major depression as cause of disability was ranked fifth. Mental morbidity comprises thus a major public health concern.

A two-year action project to establish the indicators for mental health monitoring in Europe, coordinated by STAKES, The Finnish National Research and Development Centre for Welfare and Health, started in the beginning of 1999 under the EC Health Monitoring Programme. The main objectives of the Project have been to 1) collect information about existing relevant databases, information systems and indicators; 2) propose a set of specified indicators for European mental health monitoring; 3) establish unambiguous definitions for these indicators; 4) give recommendations concerning data collection; and 5) assess the feasibility and usefulness of the indicators selected.

This work has involved collection of relevant information on mental health indicators and databases from different sources including the scientific literature, national information systems, international organisations and various research and development programmes. The mental health indicators are to be incorporated into a comprehensive European health monitoring system. A comprehensive application of the proposed set of mental health indicators enables the satisfactory follow-up of the mental health situation of the populations within the EU. The present literature review, drafted by Jyrki Korkeila (project coordinator), provides up to date background information for the selection of relevant domains of indicators and individual indicators.

The review covers the areas in need of indicators: the state of mental health, predisposing factors, precipitating factors, social interaction, individual resources and individual experiences. Also factors related to the use of health-care have been considered valuable. Special emphasis is given in the review on assessment useful for mental health promotion.

I would like to thank Jyrki Korkeila for his valuable work. My gratitude is also expressed to the group of Active Partners of the mental health indicator project (Rob Bijl, Odd Steffen Dalgard, Viviane Kovess, Hans Joachim Salize, and Antony Morgan), who have actively commented the review and given constructive criticism when needed.

Ville Lehtinen
Research Professor, STAKES
Project leader

Executive summary

This paper reviews the previous literature on the measurement of mental health and factors influencing the state of mental health. The focus is on the appraisal of mental health at population level giving special weight to an assessment that could be useful for mental health promotion. The review is conducted as the background work for developing a set of mental health indicator as part of a comprehensive health monitoring system in Europe. A definition of mental health, which is considered as a component of general health, is presented. Mental ill-health encompasses a continuum, extending from the most severe mental disorders to a range of symptoms of different intensity and duration that result in a variety of consequences.

Aspects of health can be measured by various indicators that is, by measures that summarise the information relevant to a particular phenomenon or by a reasonable proxy for such a measure. A good quality indicator should measure what it is supposed to measure, provide the same answer if measured by different people in similar circumstances, and be able to measure change and reflect changes only in the situation concerned. A mental health indicator should reflect an aspect that is relevant to a chosen target. It measures the state of mental health and related needs. It should inform its users whether the targets set are being achieved or not.

The review presents some findings from research seeking associations between mental health, psychological distress and mental disorders on the one hand and different individual, social, economic, ecological and service-related characteristics on the other. Following the lines of the mental health definitions, these research findings outline specific areas as key starting points in establishing a set of mental health indicators. We can provisionally divide such indicator areas into seven categories: Sociodemographic; Social Networks and Stressful Events; Positive Mental Health; Subjective Experience of the Individual; Services and their Supply, Use and Demand; Morbidity and Disability; and Mortality. The following looks briefly at these categories and at needs index models of mental disorders. Methods to measure factors important in each area and examples of results of studies in each group are presented. There are currently four methods to estimate these factors at population level: the survey method, analysis of utilisation data, analysis of socio-economic factors and a combination of techniques.

The aim of the whole project has been to create a set of a few good (valid and reliable) indicators to monitor mental health. Monitoring mental health is defined here as systematic, repeated measures of matters related to the mental health of the population. The topic of mental health is, however, very complex as most mental disorders are multifactorial in their aetiology, a multitude of risk factors may influence the onset course and restitution of one disorder and a risk factor may be common for many forms of ill-health, both somatic and mental illnesses. There is a growing volume of data to show that some users of care do not satisfy the diagnostic criteria and that others, who satisfy the criteria, do not receive the care they need. The chronic nature of mental disorders increases their prevalence figures, as the incidence figures are quite low. For promotion and prevention purposes it is important to have information on factors predicting and affecting the course of mental ill-health. Functional disabilities seem to be more important than diagnoses as such and therefore interest should not be restricted to diagnostic groups alone.

Ultimately the system would be there to help decision-making. It could be used in estimating how the targets set for policies are met, and whether there has been a measurable decrease in disability, suffering and disease. The indicators could offer tools for the adequate allocation of resources for interventions, policies and programmes. This information could also be used in evaluating the mental health impact of other policies.

List of abbreviations appearing in text

ADL = Activities of daily living
 ADM = alcohol, drug abuse and mental disorder services
 APA = American Psychiatric Association
 BZD = Benzodiazepine
 CAN = Camberwell assessment of need
 CES-D = Centre for epidemiological studies – depression scale
 CHD = Coronary heart disease
 CHLC = Chance health locus of control
 CIDI = Composite international diagnostic interview
 CIS = Clinical Interview Schedule
 CIS-R = Comprehensive Interview Schedule - revised
 CSA = Childhood sexual abuse
 DemFle = Dementia free life-expectancy
 DepFle = Depression free life-expectancy
 DIS = Diagnostic interview schedule
 DSM = Diagnostic and statistical manual of mental disorders
 DSQ = Defence style questionnaire
 ECA = Epidemiological catchment area study
 EE = Expressed emotion
 ESEMeD = Epidemiological study of mental disorders (WHO)
 Euro-REVES = European Network for the Calculation of Health Expectancies
 FFM = Five factor model
 GAF = Global assessment of functioning
 GHQ = General health questionnaire
 GPH = Global personal hopefulness
 HFA = Health for All
 HIEMS = Health Indicator Exchange and Monitoring System
 IADL = Instrumental activities of daily living (ability to use instruments)
 ICD = International Classification of Diseases
 I-E Scale = Internal-External Scale
 IHCL = Internal health locus of control
 IQ = Intelligence quota
 LEDS = Bedford College life events and difficulties schedule
 LOT = Life orientation test
 LOT-R = Life orientation test-revised
 LTE = List of Threatening Events
 MHI-5 = Five item mental health dimension in SF-36
 MHLC = Multidimensional health locus of control scale
 MMPI = Minnesota Multiphasic Personality Inventory
 MSHS = Multidimensional sense of humour scale
 NEMESIS = The Netherlands Mental Health Survey and Incidence Study
 NCS = National comorbidity study
 NFCAS = Need for care assessment schedule
 NFCAS-C = Need for care assessment schedule, community version
 NHS = National Health Service (UK)

PERI = Psychiatric epidemiology research interview
PHLC = Powerful others health locus of control
PSE = Present state examination
PSM = MMPI Optimism-Pessimism Scale
QOL = Quality of life
RA = Rheumatoid Arthritis
SCAN = Schedules for clinical assessment in neuropsychiatry
SCL = Symptom checklist
SES = Socio-economic status
SF-36 = Short form 36 survey questionnaire
SFM = Seven factor model
SOC = Sense of coherence
SWB = Subjective well-being
UPA = Underprivileged area
WHO = World Health Organisation
UK = United Kingdom

Preamble

The 1990s have witnessed an increase in the attention paid to mental health issues across Europe and indeed the whole world. One reason for this is that mental ill-health has become a major public health concern. Another is the growing awareness that the resources of mental health services are not necessarily being distributed in accordance with the need for care. One of the barriers to progress in the field of mental health is the lack of a common system of ideas, concepts, definitions and indicators for monitoring the state of mental health and related needs at population or group level.

A two-year action project to establish the indicators for mental health monitoring in Europe, coordinated by Stakes, started in the beginning of 1999 under the EC Health Monitoring Programme. A common indicator set for mental health monitoring will enable establishment of joint efforts in the field of mental health, comparison of policies and activities in different Member States as well as evaluation and dissemination of good practices. The present review is conducted as the background work for developing a set of mental health indicators as part of a comprehensive health monitoring system in Europe.

The focus of this paper is on the appraisal of mental health at population level, giving special weight to an assessment useful for mental health promotion. This has naturally influenced the selection of the reviewed literature as emphasis has been put on large-scale outcomes and correlations (between determinants and mental health) instead of, say, assessment of individual psychopathology. This review has neither concentrated on the care system outside the viewpoint of service use. Substance abuse and organic disorders are not dealt with in this review, as the project itself does not focus on these phenomena.

A conceptual model of mental health drafted by the project is presented. Mental health is considered as a component of general health. Mental ill-health encompasses a

continuum extending from the most severe mental disorders to a range of symptoms of different intensity and duration that result in a variety of consequences. The aim of the whole project has been to create a set of a few good (valid and reliable) indicators to monitor mental health. Monitoring mental health is defined here as systematic, repeated measures of matters related to the mental health of the population. The topic of mental health is, however, very complex as most mental disorders are multifactorial in their aetiology, a multitude of risk factors may influence the onset course and restitution of one disorder and a risk factor may be common for many forms of ill-health, both somatic and mental illnesses.

Aspects of health may be measured by various indicators that is, by measures that summarise information relevant to a particular phenomenon or a reasonable proxy for such a measure. A good quality indicator should measure what it is supposed to measure, provide the same answer if measured by different people in similar circumstances, and be able to measure change and reflect changes only in the situation concerned. A mental health indicator should reflect an aspect that is relevant to a chosen target. It should inform its users whether the targets set are being achieved or not. The selection of indicators is consequently restricted by the targets that may realistically be set for mental health and by the measures that are available. A mental health indicator may be a survey measure of or a proxy for factors central to its definition or it may be a survey measure of or a proxy for predisposing, precipitating or protecting factors. The overall target of mental health work is to reduce morbidity and mortality and increase positive mental health outcomes.

The review presents some findings from research seeking associations between mental health, psychological distress and mental disorders on the one hand and different individual, social, economic, ecological and service-related characteristics on the other. Following the lines of the mental health definitions, these research findings outline specific areas as key starting points in establishing a set of mental health indicators. Such indicator areas have been provisionally grouped here in the following manner: Sociodemographic; Social Networks; Positive Mental Health; Subjective Experience of the Individual; Services and their Supply, Use and Demand; Morbidity and Disability; and Mortality.

Summary of the review

An abundance of scientific literature exists on the subjects dealt with here. This review has, however, focused primarily on some of the older key investigations and on data accumulated during the last five to six years. Literature searches were conducted through the MEDLINE, PSYCHLIT and SOCIOLOGICAL ABSTRACTS databases. Available reviews and textbooks were also made use of.

Assessment of mental health needs and needs index models

The need for mental health care can be defined in terms of problems for which “state-of-the-art” solutions exist. Mental ill-health is associated with multiple needs that have physical, social and psychological aspects. The WHO, assigns these needs to three groups: those associated with impairment, those associated with disabilities and those associated with handicaps. Four concepts can be outlined: the need for care, the perceived need for care, the demand for care and the use of care. Mental health needs can be assessed at either the individual or population level. There are currently four methods to estimate needs at population level: the survey method, analysis of utilisation data, analysis of socio-economic factors and a combination of techniques.

Many studies over the world indicate that needs for intervention due to mental ill-health are not being met in a satisfactory manner. New, valid and reliable instruments (NFCAS, CAN) have, therefore, been developed to assess mental health needs. This is done either from the viewpoint of the need for state-of-the-art-solutions (NFCAS) or from that of the staff and the user of services (CAN). Both instruments were designed to study needs in an epidemiological or clinical setting. They are extensive and would be difficult to incorporate into a monitoring system.

Modelling needs for mental health services has become a common approach to the assessment of needs at population level. Statistical models relate psychiatric hospital admission rates to census characteristics in a given area to give an idea of the relative challenge facing mental health services. The approach has mostly been used to estimate the expected need for beds. This process combines the above-mentioned methods. It has, however, been used in regions within a nation, not between nations.

Sociodemographic indicators

Epidemiological studies have pinpointed several demographic variables that correlate with mental ill-health. Crucial ones are sex, age, marital status, education, ethnicity or race, domicile and urbanicity. Having a lower social class has been shown to accrue worse health outcomes than higher social class. An ongoing subject of debate is the extent to which mental ill-health

has social causes and the extent to which it has social consequences. The causal direction may vary between ill-health and social factors in different disorders, as was demonstrated by Dohrenwend et al. (1992).

Several studies have correlated living alone and unemployment with mental ill-health. Existing information indicates strongly that demographic and social stress factors are of use in estimating mental health risks and the possible need for intervention at population level. Such data are commonly collected as a statistical routine but their comparability at international level is questionable.

Indicators of social networks and stressful events

There is evidence that social support, especially perceived social support, has an effect on mental health, particularly when the individual experiences stress. Negative pressure from or interaction with social networks may, conversely, have negative effects on the health of an individual. Despite the fact that the level of social support received is related to personality features, coping styles and socio-economic factors, lack of social support is associated with an increased risk of mental ill-health and ill-health in general, demonstrating its usefulness as an indicator for a mental health monitoring system.

Adverse life events have been studied widely as risk factors for depression. There is clearcut evidence for an association between major adverse life events and subsequent depression. Life events seem to be more common prior to the first episode than do recurrent episodes. However, adverse life events seem to be only weakly related to the pattern of symptoms in depression. Nowadays, semi-structured interviews are increasingly in use as they avoid the methodological problems encountered in the checklist method. Nevertheless, Brugha et al. (1985) devised a list (List of Threatening Events, LTE) of 12 life event categories with considerable long-term contextual threat. In its very brevity, the list is designed to overcome difficulties of clinical application.

Indicators of positive mental health

The terms positive mental health, psychological well-being and subjective well-being have been used here to refer the emotional, affective aspects of well-being (affect balance, happiness, certain aspects of life satisfaction) and cognitive aspects (e.g. coping, optimism, certain features of life satisfaction). Some characteristics of temperament and personality are associated with higher levels of emotional well-being and more effective coping strategies. Antonovsky's sense of coherence (SOC) is mentioned in this review as an indicator of positive mental health, as it is a measure of the resources of health, both emotional and cognitive. Other terms used in the literature to connote resistance to illness and coping with adversities are resilience and hardiness. Due to the abundance of terms for and definitions of the various aspects of positive

mental health, it is difficult to compare not only the individual aspects, but also the studies conducted and the results obtained, particularly as the methods used are so varied.

Nevertheless, certain strategies of coping (e.g. internal locus of control and problem-focused coping) have been shown to be more effective than others and thus to have qualities protecting health and mental health. Emotional well-being and satisfaction with life have also been shown to predict future mental health. Expectations of the future in the form of optimism and hopefulness can be reliably used to estimate the risk of mental ill-health. Antonovsky's SOC is a widely applied concept, but it has been used more often in studies concerning general health expectancies. There is evidence, however, that SOC can also serve as a measure to predict future mental health.

Indicators of the subjective experience of the individual

Measuring self-rated health has been found to be a reliable and valid method for assessing health, and a strong correlation has been found between ratings of self-perceived health and mental health. Poor self-rated health has predicted the future course of depression, and poor self-rated emotional health is a risk factor for depression. Many questionnaires have been developed to evaluate quality of life (QOL). Some of them are for specific illnesses, but efforts have been made to develop generic instruments, e.g. the Nottingham health profile and the Short Form (SF-36) health survey questionnaire. Most of the measures of QOL pertinent to mental health apply certain patient populations and are thus not suitable for monitoring the QOL of the general population. The SF-36, however, which has been designed for generic use, includes questions on mental health and self-perceived health.

Indicators describing services and their supply, use and demand

Utilisation data cannot be used directly to estimate the prevalence and incidence of disorders. The use of mental health services may depend on many other variables besides the clinical condition of the patient, for example, the sociodemographic characteristics of the patient and the intrinsic characteristics of the services. Recent epidemiological studies suggest that only a small proportion of individuals with psychiatric disorders receive treatment. One should therefore be cautious in drawing too far-reaching conclusions from such data alone. Utilisation data may be of more use for serious disorders such as schizophrenia and the more severe cases among this patient population, because a greater proportion of these patients are admitted to hospital than of those suffering from, say, major depression. Registers have been used to evaluate needs at population level: for example, the proportion of long-stay inpatients may indicate the need for supported housing. Descriptive analyses and interpretations of service use data combined with sociodemographic and epidemiological data can be useful for planning intervention strategies.

Indicators of morbidity and disability

Non-specific psychological distress has been considered a dimension of psychopathology that can be measured in the general population in a straightforward and cost-effective manner. Several valid and reliable methods exist for assessing distress symptoms. Elevated scores on these scales indicate that something is wrong, but they were not developed to yield specific diagnoses. The mental disorders usually found at community level comprise anxiety and depression-related distress, thus indicating the usefulness of the psychological distress approach to mental health monitoring at general population level. Furthermore, psychological distress seems to express more accurately the urgency with which treatment is needed, whereas diagnoses give information about help that eventually will be needed. An epidemiological study yielding reliable psychiatric diagnoses would not be cost effective in mental health monitoring.

Indicators of mortality

Many studies have shown that mortality is higher among those suffering from mental ill-health, both among those with psychological distress and those with diagnosable disorders, than in the general population. Adverse life events, e.g. loss of spouse, have been linked to increased mortality. Over 90 % of those who commit suicide suffer from a mental disorder. The negative impact of mental ill-health on survival has even been noted in community samples. Psychiatric disorders have been associated with increased levels of mortality from natural and violent causes. The mortality rate of discharged patients has been found to be increased compared with that in the general population. Psychiatric patients suffering from chronic disorders have relatively high rates of physical illnesses.

Conclusions

For mental health monitoring, it is of the utmost importance to consider, which questions require an answer and what information is to be collected at the population level. We can start with the following questions: 1) what are the needs in the general population, 2) how can we address these needs, 3) are the needs being met in a satisfactory manner, and 4) what further actions are needed? Answers to these questions will shed light on the scale of mental health problems, on the sub-populations with special mental health problems, on the significance of regional differences, if such exist, and on the reasons for these differences. There is an increasing volume of data demonstrating the complexity of the relationship between psychiatric diagnoses and the use of mental health care. Some users of care do not satisfy the diagnostic criteria and others, who satisfy the criteria, do not receive the care they need. The chronic nature of mental disorders increases their prevalence figures, as the incidence figures are quite low. For promotion and prevention purposes it is important to have information on factors predicting and affecting the course of mental ill-health. Functional disabilities seem to be more important than diagnoses as such and therefore interest should not be restricted to diagnostic groups alone.

Attention has been paid to the relevance of the domains of mental health indicators from two points, mental health policies and practical purposes. The latter point means that the indicators should 1) provide a measure of variability between countries, 2) be sensitive to changes over time and 3) have relevance for the aims of the activities (promotion of mental health, prevention and treatment of mental ill-health) followed. The indicators themselves should be: specific, reliable, valid, cost effective and ethical. In practice, however, hardly any indicator will meet all the criteria at the same time. Additionally, it is important to consider, what an indicator measures, as various things may affect one indicator. Mental health indicator is defined as measure on the state of mental health; it is a variable that has been related to mental health and indicates a priority or a problem. These may be items in health surveys, statistical data gathered etc. and are often repeated measures.

Ultimately the system would be there to help decision-making. It could be used in estimating how the targets set for policies are met, and whether there has been a measurable decrease in disability, suffering and disease. The indicators could offer tools for the adequate allocation of the resources for interventions, policies and programmes. This information could also be used in evaluating the mental health impact of other policies.

1. Aims and definitions

1.1. Health and mental health

This paper reviews the literature on the measurement of mental health and its determinants focusing on an appraisal of mental health at population level and factors useful for the promotion of mental health, it provides background information for the development of a set of mental health indicators as part of a comprehensive health monitoring system in Europe. Although specific mental disorders tend to be well defined today, the concepts “mental health” or “mental disorder” do not have clearly delineated boundaries. Mental disorders have been defined using different notions (e.g. dyscontrol, disability, syndrome pattern) that are not equivalent to the concept of “mental disorder” (APA 1994). Likewise, a growing body of literature indicates that the “somatic” and “mental” are closely intertwined.

According to the WHO, “health is a complete state of physical, mental and social well-being and not merely the absence of disease” (WHO 1947). The European Network on Mental Health Policy has defined health as “a state of equilibrium between the individual and the environment. Mental health is an essential element of general health, as there is no health without mental health” (Lahtinen et al. 1999). The conceptualisation outlined by the project to establish mental health indicators in the European Union is presented in the following:

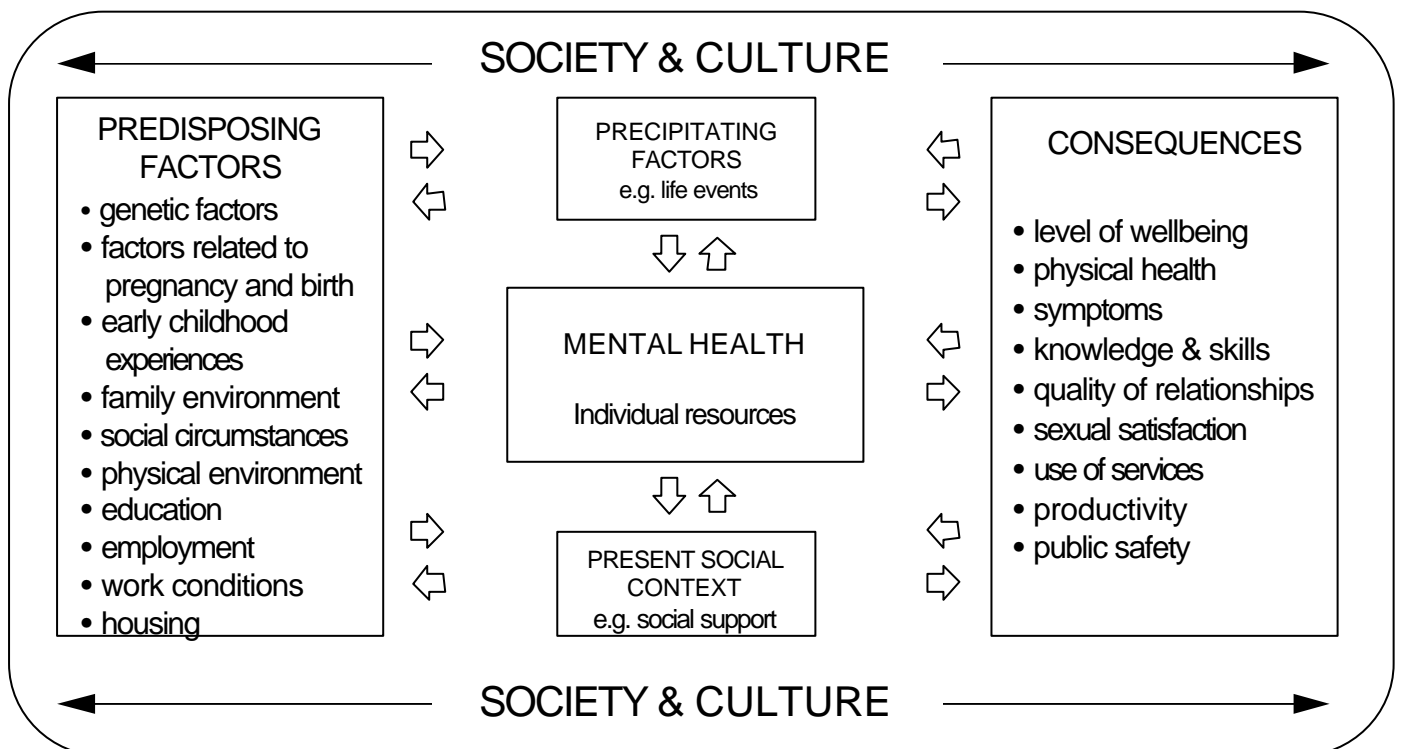
The concept of mental health has two dimensions, the positive and the negative.

Positive mental health is a value in itself. Individuals with positive mental health usually demonstrate positive affect and positive personality traits, which are considered as resources. They have high levels of self-esteem, sense of mastery, sense of coherence (life experienced as meaningful and manageable) and self-efficacy. It can be conceptualised as a person’s ability to cope with adversity, and avoid breakdown or diverse health problems when confronted with adverse experiences. **Negative mental health** is concerned with mental disorders, symptoms and problems. In the current diagnostic classifications mental disorders are defined by the existence of specific

clusters of symptoms. Symptoms of mental disorder and mental health problems also exist without the criteria for clinical disorders being fulfilled. These subclinical conditions as well as general psychological distress are often a consequence of persistent or temporary adversities. They can be a heavy burden and often lead to consultations with primary health care or other professionals.

Mental health, as an indivisible part of general health, reflects the equilibrium between the individual and the environment. It is influenced by: 1) individual psychological and biological factors; 2) social interactions; 3) societal structures and resources; and 4) cultural values. In this context, mental health is a central part of a process that comprises predisposing, actual precipitating and supporting factors as well as various consequences and outcomes.

Figure 1. The functional model of mental health



1.1.1. Mental ill-health, psychological distress and mental disorders

Mental ill-health encompasses a continuum extending from the most severe mental disorders to a range of symptoms of different intensity and duration that result in a variety of consequences. Much mental ill-health is experienced as part of normal life. Such everyday mental problems are correlates of personal distress (Lahtinen et al. 1999). Psychological distress is a non-specific syndrome that covers constructs such as anxiety, depression, cognitive problems, irritability, anger and obsession-compulsion. Depression and anxiety are usually recognised as core distress syndromes with psychological and somatic components (Goldberg and Huxley 1992, McDowell and Newell 1996, Massé et al. 1998). According to McDowell and Newell (1996), measures of psychological distress have been used as a strategy to evaluate psychological well-being although the best state they may distinguish is the absence of distress. Dohrenwend et al. (1980) have suggested that scales measuring psychological distress indicate, on a general level, that something is wrong, comparable to elevated body temperature, but not what is wrong.

The DSM-IV defines mental disorder as “a clinically significant behavioural or psychological syndrome or pattern that occurs in an individual and that is associated with present distress or disability or with significantly increased risk of suffering death, pain, disability or an important loss of freedom” (APA 1994). The WHO defines disorder, likewise, as a “clinically recognisable set of symptoms or behaviour associated in most cases with distress and with interference with personal functions” (WHO 1992). Both classification systems emphasise that social deviance or conflict should not be considered a mental disorder. Subthreshold conditions of mental ill-health, i.e. those not meeting the full diagnostic criteria of DSM or ICD, are prevalent and also associated with significant costs and disability (Pincus et al. 1999).

1.1.2. Models of mental disorders

Various models of mental disorders have been proposed. These models emphasise different aspects of clinical findings, give different interpretations to the findings and propose different causal explanations. Tyrer and Steinberg (1998) have grouped these as: 1) the disease model, 2) psychodynamic model, 3) behavioural model, 4) cognitive

model and 5) social model. According to McGuire and Troisi (1998), conceptual pluralism is a current trademark of psychiatry and each prevailing model falls short of explaining some critical details of disordered behaviour. Due to this conceptual pluralism, we lack accepted methods to test hypotheses. The existence of numerous models for interpreting clinical and research findings may contribute to difficulties in outlining the factors predisposing to and precipitating mental disorders.

It is likely that the aetiology of most mental disorders will involve a complex pattern of interaction between several or many genes and environmental influences (Eaton and Harrison 1998). The aetiology may be analysed at three different levels: group, individual and gene. The environmental generation of risk is dispersed at macro group (societal) and small group (social psychological, behavioural) level. Unequal distribution of the rewards of society influences the degree to which individuals control their environment. The process of interaction and co-ordination among social groups affects the individual's attachment to others. Beliefs, norms and values influence the risk at both small and large group level. Learning, stress, health care and exposure are expressed at the individual level and in the immediate environment of the individual (Eaton and Harrison 1998).

1.1.3. The challenge set by mental-ill-health

The 1990's witnessed increasing interest in mental health issues. Mental ill-health has become a major public health concern mainly for two reasons: 1) Epidemiological studies have shown that up to one fifth or a quarter of the general population suffer from some sort of mental disorder at a given time and that 2) up to half of the population may be at risk of having a mental disorder at some point during their lifetime (Weyerer and Dilling 1984, Madianos et al. 1985, Vázquez-Barquero et al. 1987, Regier et al. 1988, Bland et al. 1988a & b, Lehtinen et al. 1990, 1991, Meltzer et al. 1995, Bijl 1998a and b). One of the barriers to progress in the field of mental health is the lack of a common system of ideas, concepts, definitions and indicators for monitoring the state of mental health and related needs at population or group level.

1.2. Definitions of health needs

1.2.1. The need, perceived need and demand for care and the use of care

Perceptions of health needs include value judgements and are not objective (Lehtinen 1985, Fryers and Greatorex 1992). Health knowledge, previous experience of health care, risk-taking propensity, the balance of short-term and long-term views of benefits and disadvantages, the importance of autonomy, and various other personal and cultural factors affect the perceptions. Personal and professional assessments tend to differ from one another (Fryers and Greatorex 1992).

Four concepts can be outlined here: the need, the perceived need, and demand for care and the use of care (Matthew 1971, Lehtinen 1985, Lewis 1999). According to Lewis (1999), the need for health or social care exists when a person will benefit from a medical or social care intervention. Needs are often defined in terms of the “ability to benefit from health care” (Stevens and Raftery 1994). The perceived need for care can be defined as a situation in which the existence of the need for care is perceived by individuals themselves or by their immediate social environment and in which they furthermore consider some form of health care may possibly be beneficial. The demand for care exists when a person experiences the need and also expresses it (Matthew 1971, Lehtinen 1985). Utilisation occurs when an individual actually receives care. “Need is not necessarily expressed as demand, and demand is not necessarily followed by utilisation, while on the other hand, there can be demand and utilisation without real underlying need for the particular service used” (Matthew 1971).

1.2.2. Mental health needs

Mental ill-health is associated with multiple needs, physical, social and psychological (Slade and Thornicroft 1995). If care or promotion of mental health is to be based on needs, agreement must be reached as to what constitutes a need, how it should be assessed, and how and when it should be addressed. Earlier symptom-based definitions

of need have been refined in terms of disabilities as consequences of psychopathology, largely due to the fact that symptoms as such lack validity in predicting service requirements (Slade and Thornicroft 1995). According to the WHO, three levels can be differentiated in the needs of individuals with mental ill-health: 1) primary needs associated with psychopathology or impairment, 2) secondary needs due to disabilities involving restrictions on personal activities that may be directly caused by the impairments, and 3) needs concerning social consequences of the illnesses or handicaps affecting interactions with the environment of an individual (WHO 1980).

Brewin and Wing (Wing et al. 1992) have defined the need for mental health care in terms of problems for which “state-of-the-art” solutions exist. It is, however, important not to define need by the care, agent or setting already in place, thus, perpetuating the status quo (Wing et al. 1992). Needs are primary and methods of treatment secondary. Slade (1994) points out that “need” is not a fixed concept that can be measured objectively. Needs are dynamic by nature and influenced by contextual factors. Therefore, the assessment of needs should include both the perceptions of both staff and service users.

1.2.3. Perceived welfare and needs

In the above definitions need refers mostly to the need for treatment, and they are thus somewhat restricted in character. The promotion of mental health, including the prevention of mental ill-health, is conditioned by needs of some kind. The majority of mental health programmes are motivated by the needs of a specific group or the general population. Perceived welfare can also be defined in relation to needs and resources. From the social sciences perspective, the needs of an individual are classified as material needs, social needs and needs related to self-fulfilment (Allardt 1975). Experiences of welfare arise when needs are being met and, in terms of resources, out of the feeling of the ability of individuals to control their central resources. Welfare has been outlined as a composite term for life satisfaction and happiness (Suominen 1993).

1.3. Levels and methods of analysis

Mental health needs can be assessed at either individual or population level. Each clinical assessment can be thought of as a judgement of individual needs (Lehtinen 1985, Lewis 1999). Clinical appraisal is distinguished here from the population level evaluation of needs. Several questions of a conceptual and practical nature have to be answered in the assessment of needs at population level, e.g. 1) what are the mental health needs in a population, 2) how can we quantify and measure them, and 3) how can we carry out the assessment in a cost-effective and sufficiently comprehensive manner? The assessment cannot be delineated for a selected group, but must represent the whole population at risk (Fryers and Grotorex 1992). This calls for epidemiological studies, which are, however, expensive and time-consuming ways to estimate the mental health needs of a population.

Miller et al. (1986) divide the study designs for assessing needs at population level into four types: 1) Survey techniques (These involve population surveys as in epidemiological studies, surveys of those in contact with services, use of 'key community informants' and agency surveys); 2) analyses of utilisation data (These are problematic because they may very well tell us more about the resources and service capacity of the mental health sector than about the real needs of the population); 3) analyses of socio-economic indicators (These are based on the fact that certain socio-economic and demographic variables correlate highly with the demand for mental health services); 4) and a combination of the three designs (This type of design seeks to exploit the strengths and minimise the weaknesses of the other three designs; this type is gaining increasing currency).

1.3.1. Indicators as measures of health and health care

Epidemiological assessments are usually special studies carried out for special purposes and, if repeated, are done so with long intervals. Their utility for continuous monitoring of the mental health of populations as such is low. However, health and health care may be measured by various indicators, that is, by measures that summarise information

pertinent to a particular phenomenon or by a reasonable proxy for such a measure (Jenkins 1992). A good quality indicator should measure what it is supposed to measure, provide the same answer if measured by different people in similar circumstances, and be able to measure change and reflect changes only in the situation concerned. The criteria are hard to meet and at best an indicator is a partial or indirect measure of a complex situation. An indicator of health reflects the state of health in a community and a health-care indicator reflects different aspects of the health care provided in a community (Jenkins 1992).

The health expectancy index has provided a very popular way to summarise the health status of a population. The conventional life expectancy index measures only the quantity of life, but the health expectancy index includes measures of QOL. Computation of the health expectancy index requires data from health surveys, long-term care utilisation and vital statistics, whereas the life expectancy index is calculated by constructing a life table using mortality statistics. These indexes are usually presented for the whole population or certain age groups. Assessment of the mental health status of a population has not been so well developed (Young 1998). In 1994, the European Network for the Calculation of Health Expectancies (Euro-REVES) was established, one of its aims being to develop the measurement of mental health expectancies (Jagger et al. 1998). According to the project, mental health expectancies can contribute to population health monitoring by indicating the consequences of disease, showing health trends over time and permitting international comparisons.

The WHO Regional Office for Europe has drawn up lists of Health for All Statistical Indicators that focus on the 38 WHO HFA targets (Health for All 1996). These indicators are divided into three categories: 1) data that are expected to be routinely collected and available in most countries on an annual basis; 2) indicators that can only be, or are most conveniently, measured by health interview surveys; data on these indicators will be collected every 3 years; 3) indicators that are rarely measured or only in special research studies; these data will be collected once every 6 years. The Mental Health Division of the WHO-Euro in Copenhagen has further drawn up a list of five crude indicators that have been implemented in Eastern Europe and Caucasia. These are based on data on service use and on suicides committed. The list includes: number of

psychiatric beds; mortality from suicide and self-inflicted injury; number of patients in mental hospitals; length of stay >365 days (for psychiatric patients); and new (serious) cases of mental disorders admitted to psychiatric hospitals (Rutz, oral communication).

1.4. Aims and domains of mental health indicators

A mental health indicator should reflect an aspect or determinant of mental health that is important for a chosen target. An indicator should inform its users of changes related to the targets, and whether the targets are being achieved or not. The targets that may realistically be set for mental health and the measures that are in practice available restrict selection of indicators. A mental health indicator may be a survey measure or a proxy for factors central to its definition or it may be a survey measure or a proxy for predisposing, precipitating or protecting factors. Some of the key predisposing factors (e.g. genetic predisposition), however, still lack, and look like doing so in the near future, the corresponding measures at population level. The overall target for mental health work is to reduce morbidity and mortality, and increase positive mental health.

Most mental health indicators refer to mental health services and describe their structure, processes, quality and outcome. Suicide has been used as an indicator of mental health when it in fact indicates lack of survival. Several direct measures of positive mental health have been developed. There are instruments to assess self-perceived health, QOL and unmet needs (Jenkins 1992). This review presents some findings from studies seeking associations between mental health, psychological distress and mental disorders on the one hand and different individual, social, economic, ecological and service-related characteristics on the other. These research findings could outline specific areas as key starting points in establishing a set of mental health indicators. Such indicator areas could provisionally be divided into the categories set out in Table 1, including the future structure of the HIEMS system for health monitoring in Europe. These categories and the needs index models of mental disorders will be examined briefly in the following. Methods to measure factors important in each area and examples of results of studies in each group are presented.

Table 1.

List of indicator domains and description of the HIEMS system
The domains included in this review are: sociodemographic; social networks and stressful events; positive mental health; subjective experience of the individual; services and their supply, use and demand; morbidity and disability; and mortality
HIEMS system: sociodemographic factors; health status; determinants of health; health systems

1.5. Methods to assess mental health needs

Proxy measures of social deprivation have been used as indicators of need at population level especially in “needs index models”. These are dealt with in section 1.5.1.. In clinical and research work, two main tools, the Needs for Care Assessment Schedule (NFCAS) and the Camberwell Assessment of Need (CAN), are often used to measure needs (see Appendix 1.). The NFCAS links need to interventions by defining need as occurring when the level of clinical or social function falls below a specified point due to a remediable cause (Brewin et al. 1987). The inter-rater reliability and clinical relevance of the NFCAS have been found good (van Haaster et al. 1994b). There is also a reliable and valid (Lesage et al. 1996) community version of the NFCAS (NFCAS-C) that measures treatment needs in the general population (Bebbington et al. 1996). The CAN assesses needs separately from intervention and includes a wide range of health and social needs while giving equal consideration to patient and staff (Phelan et al. 1994a). The reliability and validity measures of the CAN have been found highly acceptable (Slade and Thornicroft 1995).

There are studies presenting population level data on mental health needs. Some examples are provided here. In the Mini Finland Health Survey Lehtinen et al. (1990) found that the need for specialist treatment assessed by the interviewers (9%) was at a lower level than the total level of clinically assessed needs (17%). The subjects estimated their level of needs even lower (1.5% had “definite needs”, 7.3% had “definite or probable needs”). Approximately 14% of subjects had an unmet need. Fulfilling diagnostic criteria was signified as having treatment needs in the study. Needs were further defined according to the interviewers’ judgement of treatment need.

Another study (Ciarlo et al. 1992) of mental health needs at population level found that 27% of the general population in Colorado was in need of services to treat alcohol, drug abuse and mental disorders (ADM) according to at least one measure. The mean prevalence rates of needs were 16% for diagnosable disorders, 11% for everyday dysfunction, and 11% for demoralisation (roughly the same as “lack of psychological well-being”). The measures used assessed basically independent domains of need. Of interest was that a diagnosable disorder alone was unrelated to the respondents' use of ADM speciality services: combinations of two or more need measures were more typical. The variation in need prevalence across the areas studied was substantial.

The Camberwell Needs for Care Survey (Bebbington et al. 1997) focused on needs for psychiatric treatment in the general population. A random sample of a population in inner London was screened by the GHQ-28, and all those exceeding the cutpoint and half of the remainders were invited to participate in the second stage of the study, which used structured diagnostic instruments, a social role performance scale, a life events and difficulties scale and a treatment inventory. The NFCAS-C was also rated. At interview, nearly 10% of subjects were identified as having a treatment need due to a psychiatric condition. Less than half of all potentially satisfiable needs were met. There was a particular overlap between diagnosis and an adjudged need for treatment. The majority of people with mental health problems did not receive proper treatment.

Associations between mental disorders, self-rated mental health and the perceived need for care and the use of outpatient services have been studied with the aid of the National Comorbidity Survey (NCS) and Ontario Health Survey samples (Katz et al. 1997) (See Table 2. for results). When perceived need was controlled for, most of the differences in use of services between the USA and Canada disappeared. The researchers explained the higher use of mental health services in the USA than in Ontario by a combination of a higher prevalence of morbidity and of perceived need for care among persons with low mental morbidity in the USA.

Table 2. Predictors of service use in US and Ontario

Measure	Odds for service use in USA	Odds for service use in Ontario
Affective disorder	3.1	11.0
Fair or poor self-rated mental health	2.7	5.0
Mental health related disability	3.0	1.5

A study is currently under way in Montreal, Canada, to implement a direct multimethod strategy for assessing community mental health needs (Fournier et al. 1999). This study consists of a telephone survey, using a modified version of the DIS, random sample screening for common disorders in the general population, selection of a sub-sample on the basis of the potential need for care or services, and a questionnaire sent to a sub-sample of caregivers. The need for care is assessed using the NFCAS.

A growing body of literature exists on needs assessment among special patient populations, especially the severely mentally ill (Brewin et al. 1987, Phelan et al. 1994a, van Haaster et al. 1994a and b, Salize et al. 1999). Van Haaster et al. (1994a) found that the clinical needs (83%) of patients were met more often than their social needs (70%) in a population of severely mentally ill persons. Salize et al. (1999) found that despite differing service utilisation patterns in Granada, Spain, and Mannheim, Germany, there were no difference in symptoms or behaviour problems between the regions, but there were significantly more unmet needs in the area of skills and abilities in Granada, were patients received fewer interventions. The findings of studies on special patient populations generally underline that needs assessment should guide clinical practice and service provision (Slade and Thronicroft 1995). In addition to the needs of psychiatric patients, the needs of caregivers are increasingly recognised, as care in the community will increase the impact on caregivers (Brown et al. 1998, Magliano et al. 1998).

1.5.1. Needs index models

According to Lewis (1999), modelling the need for mental health services has become a common approach in efforts to assess service needs at population level. Statistical models relate psychiatric hospital admission rates to census characteristics in a given area to give an idea of the relative challenge facing mental health services. Modelling has mostly been used to estimate the expected need for beds (See Appendix 6.).

Jarman (1983, 1984) originally established the UPA (underprivileged area) scores by surveying one in ten general practitioners in the UK to obtain their opinions on the factors that most likely increase the workload or pressure on services in their area. Jarman later calculated also statistical models to predict district psychiatric morbidity using actual and expected service utilisation rates as outcomes (Jarman et al. 1992). Other authors (Thornicroft 1991, Harrison et al. 1995, Smith et al. 1996, Glover et al. 1998) have likewise presented models using census data of sociodemographic factors combined with routinely gathered data on service use. These models have most often used psychiatric hospitalisation to provide the dependent variable, as it is the only event recorded sufficiently widely and in enough detail (Glover et al. 1998). The study by Lesage et al. (1996a) combined an epidemiological morbidity survey of a random sample with actual service utilisation data and with social indicators available in the census-tract data of Statistics Canada. The census data seem to indicate groups of people at high risk of psychiatric admissions (Thornicroft 1991).

Wilson et al. (1999) used, the Townsend index in the context of a large epidemiological study to identify older persons at risk of developing depression. The index consists of four deprivation measures: car ownership, home ownership, unemployment and overcrowding. High scores on the Townsend index were associated with an increased prevalence and incidence of depression and organic disorders (dementia and confusional states).

2. Indicator domains

2.1. Sociodemographic correlates of health and mental health

Several sociodemographic variables correlate with mental ill-health. Socio-economic status (SES) as indicated by education, income and occupation or a combination of these has been consistently and inversely related to the prevalence of mental disorders and psychological distress (Dohrenwend 1990). Crucial demographic factors correlating with mental health are sex, age, and ethnicity or race (Robins et al. 1984, Madianos et

al. 1985, Regier et al. 1988, Lehtinen et al. 1990, Kessler et al. 1994a, Bijl et al. 1998b, Steinhausen et al. 1998).

2.1.1. Socio-economic status and health

Contemporary scientific literature reveals consistently that health status varies according to socioeconomic status (SES), irrespective of whether SES is measured by occupational class or by asset-based measures such as income, housing tenure and car ownership (Carroll et al. 1997). Poverty and socioeconomic deprivation have also been shown to be significant background factors for mental ill-health (Brucey et al. 1991, Dooley et al. 1994, Viinamäki et al. 1995, Weich and Lewis 1998, Dohrenwend and Schwartz 1995). The relationship between SES and health is currently explained in two ways: 1) Health influences SES as people with diseases or disorders drift down into or fail to rise out of lower status (social selection) and 2) SES influences health because greater adversities and stress are connected with lower SES (social causation) (Mackenbach et al. 1994a, Dohrenwend and Schwartz 1995).

In line with the social causation theory, certain risk factors for ill-health accumulate in lower social classes (Mackenbach et al. 1994a). These risk factors may be further divided into aspects related to: 1) health behaviour, 2) psychosocial stress, and 3) environmental/structural causes. The distribution of the risk factors is dependent on childhood environment, and cultural and psychological factors. Low income may affect health through inadequate housing and sanitation, through socially disintegrated neighbourhoods and the promotion of behaviour and psychosocial characteristics that are detrimental to health (Lynch et al. 1997a, Lynch et al. 1997b, Carroll et al. 1997).

Bosma et al. (1999) found a higher prevalence of negative personality profiles and adverse coping styles in subjects who had grown up in lower social classes. These psychological attributes were related to self-rated poor health. The Black Report published in the UK (cited by Brunner 1997) stated that behavioural factors with biological effects, such as smoking or diet, contribute to, but do not fully explain, inequalities in health. Current research links psychosocial stressors, such as perceived

financial strain, job insecurity, low control and monotony at work, stressful life events and poor social networks with low SES (Brunner 1997). Chronic stress associated with social position may lead to modified neuroendocrine and physiological functioning, which may have delayed consequences for susceptibility to disease, particularly coronary heart disease (CHD) and morbidity associated with reduced immunity. Although much of the disease process of a somatic illness itself is biological, diseases and their course are not independent of the environment and social factors. Biological and social explanations for say CHD are not opposites or alternatives, but rather represent different phases of a causal chain of events and complement each other (Armstrong 1994).

2.1.1.1. Socioeconomic status and mortality

Socioeconomic status has been linked to mortality. Lynch et al. (2000) divide the interpretation of an association between income inequality and mortality into three categories: 1) the individual income interpretation (aggregate level associations between income inequality and health reflect only the individual level association between income and health; the relation is therefore sufficient to produce health differences); 2) psychosocial environment interpretation (psychosocial factors are paramount in understanding the health effects of income inequality; perceptions of social rank have negative health consequences); and 3) the neo-material interpretation (health inequalities result from differential accumulation of exposures and experiences that have sources in the material world; a combination of negative exposures and lack of resources in use by individuals, along with underinvestment in human, physical and social resources, is conducive to ill-health).

Lynch et al. (2000) found a significant positive correlation ($r=0.51$, $P=0.003$) between average life expectancy and gross domestic product per person in 155 countries. They concluded that a combination of individual income and neo-material interpretations was best able to explain the available evidence on income inequality and health.

Furthermore, Ross et al. (2000) found that income inequality was a significant explanatory variable of mortality for all except elderly people. The effect was most

marked among working age populations. There were indications that the effects were not linear and were possibly dependent on stratification of social and economic resources.

2.1.2. Socioeconomic status and mental health

The association between SES and mental disorder is best documented for schizophrenia. Lower SES confers a 2 to 3-fold relative risk of the condition, correlates with longer episodes of illness, poorer treatment, worse outcome of treatment and disproportionate use of services (Thornicroft 1991). Poverty and low SES moreover confer a risk of depression (Mazure 1998). Low educational attainment and low social class were significantly associated with an overall category of common mental disorders in a household survey conducted in the UK (Lewis et al. 1998). As well as social class, financial and physical assets and organisational control have been associated with common mental disorders (Muntaner et al. (1998). In a study among the Finnish general population, 37% of those in difficulty paying their debts had a mental disorder, as measured by GHQ-12 (Hintikka et al. 1998). Among those who have attempted suicide, people seriously in debt have been found to have less hopefulness and to harbour serious thoughts about death than those not in trouble with debts (Hatcher 1994).

Owing to the lack of prospective studies on the subject, it is difficult to say whether low SES or standard of living increases the duration or the incidence of the disorder or both. In a prospective cohort study on poverty, unemployment and common mental disorders, financial strain at baseline was associated with both the onset and maintenance of common mental disorders after adjusting for objective measures of standard of living (Weich and Lewis 1998). Cohort data from a Swiss study indicate that social selection too, should be taken into account when considering the relationship between poverty and mental illness (Andrade 2000).

Sustained economic hardship has been found to have a cumulative impact on physical, cognitive, psychological and social functioning (Lynch et al. 1997b). Persons defined as poor suffered significantly more often from depressive symptoms or clinical depression,

were significantly more often cynically hostile and were significantly less optimistic than those without economic hardship. The researchers found no evidence of reverse causation. The role of SES may differ between categories of mental disorders. In a quasi-experimental study, Dohrenwend et al. (1992) found support for the social selection theory regarding schizophrenia and for the social causation theory regarding major depression in women and antisocial personality and substance (including alcohol) abuse in men. Weyerer (1995) discovered a link between economic factors and suicide in Germany between 1881 and 1989. Economic growth, average real income, unemployment and the frequency of bankruptcy influenced the rates of suicides in both sexes.

2.1.3. Neighbourhoods, urbanicity and mental health

Researchers have found differences in the prevalence figures for mental disorders between urban neighbourhoods. According to Halpern (1995) these studies, being cross-sectional, are open to multiple interpretations. In the longitudinal study of Halpern (1995), a neighbourhood with an initially poor atmosphere, was the target of a developmental intervention involving the residents that sought to strengthen their social networks and increase their optimism. In the course of the intervention, the levels of anxiety and depression were significantly reduced. A study by Dalgard (1986) noted differences in the prevalence of psychiatric disorders between neighbourhoods in Oslo, Norway. In another longitudinal study based on the same sample, Dalgard and Tambs (1997) found a substantial improvement in mental health in a neighbourhood that was the target of a development programme to enhance the social environment. However, a field survey in French Canada discovered lower rates of depression in rural than in urban areas but no evidence to support the hypothesis of less communal support in urban than in the rural areas (Kovess et al. 1987).

In an interesting study, Van Os et al. (2000) found that the neighbourhood environment modified the individual risk of schizophrenia. The proportion of divorced and single persons in a neighbourhood increased the risk of schizophrenia irrespectively of individual-level marital status. The effect was greater in neighbourhoods with fewer

single-person households. The researchers concluded that their results supported a true environmental effect. Premorbid vulnerability may lead to a disease process more likely in an environment with high-perceived social isolation.

Likewise, other collective features of a society may not be reducible to the attributes of individuals living in it. In the UK, hospital wards with patients suffering from above-average deprivation had more new cases of psychosis and a much higher admission prevalence than would be expected from a linear model of the relationship between deprivation and mental health (van Os 2000). Neighbourhood level indicators of deprivation accounted for 18% of the variability in the incidence of non-psychotic disorders in the Netherlands (van Os 2000). It is, nevertheless, unclear how the neighbourhood affects its members. The associations may be mediated by “social capital” (see below in section 2.2.5.3.).

2.1.4. Migration and mental health

A study in the UK found support for the role of migration in mental health. Harrison et al. (1997) and Bhugra et al. (1997) reported increased rates of schizophrenia among Afro-Caribbean immigrants in London. Bhugra et al. (1996) suggest that immigration or potential risk factors associated with immigration might be behind the increased rates. Nevertheless, high rates of psychoses among European ethnic minority groups still need further study and no conclusions about the mechanisms underlying this phenomenon can yet be drawn (Van Os 2000). The rate of schizophrenia has been found to be exacerbated in inner London by the movement of people with schizophrenia from outer to inner London (Jeffreys et al. 1997, McNaught et al. 1997).

2.1.1.5. Other sociodemographic factors and mental health

Many surveys have found that women are at higher risk of developing depression and anxiety disorders than men (Katschnig 1999). Women are also more likely to report significant levels of psychological distress in community surveys (Kessler 1995). In the NCS, the lifetime prevalence of major depression was 21% for women and 13% for

men (Kessler et al. 1994a). This difference between the sexes is present from adolescence through adulthood to old age. Moreover, from 25% to 35% of women suffer from a depressed mood during pregnancy, and 10% of women suffer from postnatal depression (Llewellyn et al. 1997). Female sex has been found to be a risk factor for comorbid depression category (Chen et al. for more, see below in section on life events). Conversely, among Chinese-Americans living in Los Angeles, Takeuchi et al. (1998) found lower depression rates than in the NCS and no sex differences. The greater the acculturation, the higher were the rates of depression and the greater the differences between the sexes.

Traumatic events in childhood, such as disturbances in the mother-child relationship and loss, have been reported to have a more severe impact on women than men as factors predisposing to later depression (Veijola et al. 1998). In some instances, risk factors for major depression may differ for men and women. A Canadian survey found that traumatic events in childhood or young adulthood were associated with a higher risk for women but not for men. For both sexes, chronic strain, recent adverse life events, lack of closeness and low self-esteem increased the odds for depression (Beaudet 1996). Age does not usually show the same striking contrast as sex, although in most surveys the prevalence is highest among later middle-age groups. The elevated levels of distress reported among elderly people in recent decades may be due to loss events and diminished resources (Kessler 1995).

The Medical Outcome Study found that demographic factors had relatively little impact on the course of depression after controlling for symptom severity and functional status. Men had a higher incidence of major depression and non-Caucasians a higher rate of remission. The researchers concluded that a broad definition of severity was needed before conclusions could be made about the unique effects of demographic factors on depression outcomes (Wells et al. 1992). According to a study by Zlotnick et al. (1996), despite differential prevalence rates of major depression for men and women, findings did not support a different process in the outcome of illness for men and women. In the USA, Afro-Americans report higher levels of psychological distress than the Caucasians. However, Afro-Americans usually have a lower SES than Caucasians and this may have a confounding effect on the reported distress. Additionally, group

solidarity among minorities may have significant stress-buffering effects (Kessler 1995).

Sociodemographic factors combined with personality characteristics may influence not only the onset of a disorder but also its course, restitution and relapse. Goldberg et al. (1990) studied the social and personality characteristics that co-vary with onset (destabilisation) and loss (restitution) of symptoms of common mental disorders over time. They found that different variables were associated with restitution than with destabilisation and that the relationships between the variables and the symptom dimensions of anxiety and depression were not the same. Rutter (1999) has emphasised the need to study psychosocial risk factors for persistence and recurrence of disorders rather than to conduct life-event studies. Psychological mechanisms may mediate the effects of social risk factors. Bosma et al. (1999) found that external locus of control, neuroticism and absence of active problem-focused coping explained ca. 50% of the correlation between childhood social class and self-rated poor health.

2.2. Social networks and stressful events, health and mental health

The associations between mental health and social networks have long been a focus of study. Social networks can act as risk or protective factors for the onset and recurrence of mental ill-health and may affect the course of an episode of illness. Social networks can be viewed as the structure through which the function of social support is provided. Social support is generally defined as the availability of people whom the individual trusts and who make one feel cared for and valued as a person (McDowell and Newell 1996). Social embeddedness and social climate can be viewed as antecedents of social support (Langford 1997).

2.2.1. Social support

Three types of attributes of social support have been identified: 1) emotional, 2) instrumental, and 3) informational and appraisal (Langford 1997, Cooper et al. 1999). The aspects of support may act in concert or individually by moderating the

consequences of stress, and by acting directly on health or health related behaviour. Social support has structural (scope of social network, quantitative aspects) and functional features (quality of relationships). The key issue in terms of health effects is whether social support is “received” in some form (e.g. having someone to listen to one’s troubles) or “perceived” by the individual to exist (e.g. the belief that in times of trouble support could be expectable) (Cooper et al. 1999). There is, though, a lack of data on the personal meanings that relationships have for individuals (Thoits 1995, Cooper et al. 1999).

2.2.1.1. Measuring social support

Social support is most often studied in surveys with the aid of personal interviews or self-administered rating scales (see Appendix 2). Most of the instruments reviewed by McDowell and Newell (1996) were found to be reliable and valid measures of social support, social health, social functioning or social adjustment. Methods to assess social support, nonetheless, tend to vary from study to study making it cumbersome to compare the results. As, moreover, many researchers have used case-control studies, methodological problems obscure causal interpretation of the results (Kessler 1995). Lack of social support has been associated with depression, but it is hard to rule out the possibility of predisposition: persons vulnerable to depression may be less likely to form close relationships with others. Rutter (1985) has pointed out that some of the variables used in studies of social support and life events overlap conceptually. Divorce is treated as a stressor but a good marital relationship as a support although they are different aspects of the same variable.

Although perceived social support is a subjective measure, overall ratings for social support seem to be mostly (79%) in agreement with the ratings by a member of one’s social network (Antonucci and Israel 1986). Feelings of closeness, but not life satisfaction, were significantly related to this agreement. Only a few empirical studies deal directly with the relationship between social support and coping, but social support as a resource and as an aspect dependent on the behaviour of the patient appears to play a role in clarifying the above interactions (Schreurs and de Ridder 1997). According to Thoits (1995), the mechanisms through which perceived social support influences

health need further elaboration and testing. Promising new directions of research on social support include the negative effects of social relationships and support giving, mutual coping and support-giving dynamics, and matches between individuals' needs and the support received.

2.2.1.2. Determinants of social support

Not everyone receives the social support they might need; moreover, not everyone desires the same level of social support. Many factors determine the level of social support received. These can be divided into two groups: those related to the receivers of support and those related to the providers of support (Sarafino 1994a). Sociability affects the amount of support a person receives, whilst assertiveness determines the extent to which a person can ask for help. Some may feel uncomfortable confiding in others or they have beliefs that hinder them from asking for help. The structure of the social network also affects the social support one receives. The size of the network, the frequency with which contact is made, and the intimacy and composition (friends, family, etc.) of the contacts all determine the amount of social support available (Sarafino 1994a). Needs for, resources of and the ability to provide social support change throughout the person's lifespan. Research has found that the more diverse the social network, the greater is the likelihood of a person having functional relationships and, further, the more potential health benefits are likely to accrue (Cooper et al. 1999). Women and married persons tend to report higher levels of social support than men and single people (Turner and Marino 1994, Cooper et al. 1999).

Social support should not be treated solely as an environmental measure. Through genetically influenced traits such as temperament, individuals play a major role in creating their own social environments. In their genetic-epidemiological analysis, Kendler and Karkowski-Schuman (1997) concluded that heritable factors have marked aetiological importance for social support as measured at personal interview. Scourfield et al. (1999) found support for a considerable genetic influence (heritability of 70 %) on social cognitive skills in the population. There were also significant differences between the sexes, with men showing poorer social cognition. Social cognitive skills enable understanding of social situations. There is evidence of impairment of social cognitive

skills in autism, schizophrenia and depressive disorders and in externalising disorders in children.

2.2.1.3. Effects of social support

Epidemiological research has tended to give priority to social support as a factor providing protection from adverse health and mental health outcomes (Brown et al. 1975, Cobb 1976, Viinamäki et al. 1993, Avison 1996, McDowell and Newell 1996). According to Langford (1997), a positive correlation between social support and health is generally accepted. Social support has been especially linked to low mortality in the general population and to a better outcome of illness among clinical samples than among those lacking social support (Wills 1997). Berkman (1995) states that social support has health promoting effects that are particularly evident in studies on survival after myocardial infarction. The protective effects of the availability of social support have been replicated across study samples in various nations, and they seem to be comparable across causes of mortality, too (Wills 1997).

Many studies have assigned lack of social support a mediating or moderating role in psychological distress, but others find a link between diagnosable disorders and social support (Avison 1996). Levels of “perceived” support are especially important for mental health when a person is under stress. The effects of stress include low self-esteem, feelings of powerlessness and lack of personal control, which in turn may lead to depression, lack of self-care and increased susceptibility to illness (Cooper et al. 1999). Support can intervene in multiple ways, by reducing loneliness, enhancing coping, increasing feelings of self-worth, helping to reassess and change ways of coming to terms with the stressor, and restoring a sense of mastery.

There are two models of the relationship between depression and social support. The one that a lack of social support directly increases the risk of depression and the other that the risk of depression increases if social support is not there to provide a buffer against the effects of stress (Mazure 1998). Most studies have supported the notion of the direct effect of social support on depression, but not that of the buffering effect (Paykel and Cooper 1992). Likewise, the Whitehall II study found no support for the

buffering effect of social support (Stansfeld et al. 1998) but there was evidence for the direct effect. Emotional support was predictive of good mental health in men, but the negative aspects of close relations predicted poor mental health in both men and women. Fuhrer et al. (1999) found no support for the buffering effect of social support on the mortality of depressed older adults.

Kessler et al. (1994b and c) reported that individuals with low levels of social support were at a significant risk of major depression. Availability of support seemed to lead to cognitive appraisals less threatening to mental health and, thus, social support simply, according to the authors, promoted better mental health. In a study by Turner and Marino (1994), people reporting high levels of social support from relatives and co-workers were significantly less likely to have suffered an episode of depression than those with lower levels of social support. In their study of patients with unipolar depression, Flaherty et al. (1983) found that social support had a reasonably high correlation with outcome measures. Patients with a higher level of social support were significantly better off than those with a lower level of social support. In a 50-year prospective study, Vaillant et al. (1998) found that social support played a significant role in maintaining well-being in late life, but that much of the association between poor social support and mortality might be mediated by alcoholism, smoking and premorbid psychopathology. Rutter (1985) emphasised that it is the satisfaction associated with social relations rather than the availability, extent and number of relations that is important. Further, continued dependence on family and friends during stressful times may elicit bitterness and hostility as well as love and trust.

The Lundby project, a prospective, longitudinal study on mental health conducted in Sweden, comprised 590 subjects investigated over the course of more than 40 years. The researchers found that social support was significantly associated with positive mental health and lower frequencies of some mental disorders (Cederblad et al. 1995a). In a study of subjective well-being and psychosocial variables, Lu (1995) discovered that extraversion and social support were related to better mental health and happiness but that neuroticism and stress were related to poor mental health and unhappiness. Achat et al. (1998) reported a strong association between levels of social networks and quality of life as measured by SF-36 (see below), particularly in high stress situations.

Socially isolated women were at an increased risk of limitation in role-emotional functioning. According to a study by Ystgaard et al. (1999) lack of support from peers resulted in greater negative effects on life events in boys than girls. In addition, the quality of early relationships can be seen as forming the basis for psychological development and well-being (Stern 1985, Zeanah et al. 1997).

Social isolation has been proposed as a mediator between sociodemographic factors and mental morbidity. Hare (1956) concluded from his studies that social isolation acts as a causal factor in incident cases of mental disorders and that affected individuals tend to isolate themselves from the community. Lack of social support or problems in interpersonal relations have been investigated as risk factors for the development or relapse of depressive disorders, puerperal depression and schizophrenia (Paykel et al. 1980, Lewis 1998, Bebbington and Kuipers 1994a).

2.2.2. Family relations, health and mental health

Family relations can have both protective and harmful effects on health and mental health. Ideally, these relations function as a source of significant social support. Nevertheless, in their review of families and health, Burg and Seeman (1994) found that social interaction in the form of family ties can act as a significant source of stress and dysfunctional coping and thus contribute to negative health outcomes. The impact of expressed emotion (EE; over-involvement, criticism and hostility) as a risk factor for relapse in schizophrenia has been widely investigated (Bebbington and Kuipers 1994a and b). In their review of 25 studies, the authors state that high levels of EE strongly predict relapse of schizophrenia across cultures and geographical locations. Depression and other mental health problems have been associated with the experience of childhood adversities (parental indifference, family violence or sexual abuse) (Brems 1995, Cronkite and Moos 1995, Lizardi et al. 1995, Veijola 1996, Rutter 1999).

Persons with psychotic disorders tend to have very tight-knit kin-based networks and those with less severe disorders loose and sparse networks compared with controls. These structures of networks may be causally implicated, but they may also be the result

of the disorders (Kessler 1995). Horwitz and Reinhard (1994) reported that mothers played an important supportive role for patients. People with severe mental disorders have, however, also been found to increase the burden on their families and thus to create needs for the next of kin (Smith et al. 1993, Brown and Birtwistle 1998). The severely mentally disturbed often experience unmet needs in the areas of social relationships other than those with relatives (van Haaster et al. 1994a Wiersma et al. 1998). Family networks may also be important in recovery from depression (Burns et al. 1995, Lewis 1998).

Parental mental disorder has been mentioned as the penultimate family stressor (Rutter 1985). The risk of psychiatric disorders in the children of such parents stems from the possibility of associated family discord. However, in the general population the effect of family discord on the risk of psychiatric disorders is smaller than among high-risk groups. Genetic studies of psychiatric disorders rarely find evidence for an aetiological contribution of family environment (Kendler et al. 2000). Nevertheless, Tienari (1992) found in his adoption study that a healthy family environment seemed to protect from schizophrenia spectrum psychosis even in the presence of a clear genetic vulnerability factor. However, as Tsuang (2000) reminds us, the individual-specific environment is made up of factors that affect siblings in a different manner in the same family.

Research on the psychobiology of attachment has indicated that the formation and disruption of close social relationships have important physiological consequences, too. The physiological processes generally observed to change in primates include body temperature, heart rate, endocrine and immune function, body weight and sleep patterns. Likewise, certain attachment behaviour patterns indicating insecurity and avoidance in human children are associated with higher levels of salivary cortisol (Scheidt et al. 2000). The findings suggest that insecure attachment is a covariate of the psychophysiological response to stress and could be a risk factor for physical illness.

2.2.3. Marital quality, health and mental health

Unsatisfactory marital quality and marital disruption have been shown to be associated with depression. Generally, being married seems to be a protective factor for men and a

risk factor for women (Bowling 1987). According to a study by Menaghan (1985) depression appeared to be more likely the result of marital disruption than marital termination appeared to be a consequence of evolving depression. Marital disruption is known to be a powerful sociodemographic predictor of stress-related physical illnesses and health service use (Somers 1979).

Likewise, in a study by Kiecolt-Glaser (1987), separated women had higher levels of depression and lower levels of immune function than married women. However, the New Haven study of depressed women found disturbances in marital relationships at the time of depression in almost every aspect studied (Weissman and Paykel 1974). These all tended to improve when the symptoms of depression were alleviated. There is consequently evidence that depression may both result from and lead to marital problems. However, it would be too sweeping a conclusion to assume that divorce is always linked to mental ill-health (Cooper et al. 1999).

2.2.4. Life events and mental health

2.2.4.1. Definition of life events

Life events can be defined as major occurrences in a person's life that require psychological adjustment to some degree (Sarafino 1994b). Previous studies have investigated major life events judged as undesirable, uncontrollable or life threatening as risk factors for mental ill-health. There are four basic models for the association between life events and possible outcomes: the victimisation model (sufficiently severe or numerous events cause illness), the stress-diathesis model (interacting background factors moderate the outcome of the event), additive burden model (independent background variable moderates the outcome of the event) and proneness model (illness causes life events that in turn cause relapses) (Mazure 1998).

The experience of life events has been linked to heritable factors (Kendler and Karkowski-Schuman 1997). Furthermore, Kendler et al. (1999) discovered a substantial causal relationship between stressful life events and the onset of an episode of major

depression, but one third of the association between these phenomena was non-causal, as stressful life events also depend on a person's own behaviour. A study on sibpairs, life events and familiarity of depression (Farmer et al. 2000), however, found no evidence for a common factor influencing both depression and life events. Although depression was strongly familial, the familial effects of life events were largely explained by shared experiences.

2.2.4.2. Measurement of life events

It is not easy to document the causal effects of life events on mental illness as the mere association between events and illness may reflect the influence of the illness on the event as well as the converse. However, studies on the effects of job loss due to plant closures have demonstrated causal effects (Kessler 1995). Several self-rating scales have been devised to study the occurrence and impact of life events (see Appendix 3.). Early research by Holmes and Rahe (1967) considered life events in terms of an objective stress load that did not take into account the subjective experience of the individual or the contribution of that experience to the pattern of life events reported. More recent research (Brown and Harris 1978, Paykel et al. 1971, Paykel 1983, Mazure 1998) emphasises the role of perception and individual vulnerability.

The checklist method used in self-rating scales has limitations as it assesses a particular finite set of items, and the items themselves are not precise descriptions of the possible events. Nevertheless, Brugha et al. (1985) devised a list (List of Threatening Events, LTE) of 12 life event categories with considerable long-term contextual threat. In its very brevity, the list is designed to overcome difficulties of clinical application. A study of concurrent validity (Brugha and Cragg 1990) indicated that, compared with the LEDS, the LTE-Q (questionnaire version) gave evidence for a high level of specificity and sensitivity. Use of the semi-structured interview as a method has increased in recent years. The interview method attempts to screen all possible events and assess the context in which they emerged, but it includes neither the individual's assessment of the magnitude of the event nor his or her personal reaction to the event. Subjective ratings of events have been found to confound estimates of life events, as the personal meaning

of the event affects the perception of its objective severity and the assessment of stressor severity may depend on other risk factors (Mazure 1998).

2.2.4.3. Effects of life events

Life events have been studied in detail for their contribution to the onset of depression. The study of Brown et al. (1975), sometimes considered a classic, is one of the early investigations of causal links between life events and depression, and factors influencing vulnerability to life events. The researchers found that life event rates did not explain different illness rates as such. They created a vulnerability model that included the absence of a confiding relationship with the spouse, unemployment, loss of the mother before age 11 and the presence of three or more children at home. According to Brown et al. (1975), the presence of a vulnerability factor aggravated the association between life events and illness. A log-linear analysis by Tennant and Bebbington (1978, cited by Bebbington 1980) of the same data failed to support the conclusions reached by Brown and Harris (1978).

Evidence nonetheless does exist for the role of life events in the onset of depression, as Paykel (1978) found a 6-fold relative risk of depression in persons exposed to an adverse life event compared with controls. Cooke (1986) presented an approximation of the population attributable risk as a percentage, and estimated that from 29% to 69% of cases of depression were due to adverse life events. According to Shrout et al. (1989), likelihood of having experienced an adverse life event is 2.5 times as high in those who have developed depression as in controls. In the twin study of Kendler et al. (1995), life events predicted the onset of depression with an odds ratio greater than 10. In studies of stressful events, women appear to be more vulnerable than men to the effects of these events. This greater vulnerability has been associated with events that affect people close to them. Likewise, women are more ready than men to provide support to others, which may easily create more stress, as their concern is expressed to a greater number of people (Kessler 1995).

However, Rabkin (1993) has argued that correlations between stress and depression are not strong, and that life events account for only a small proportion of cases. Monroe and Depue (1991) pointed out that the correlation tends to be low due to the relatively low incidence of the disorder and also to the fact that the correlation coefficient is not the best measure of the association between depression and stressors. Analogically, almost all cases of lung cancer are related to smoking, but not all smokers develop lung cancer. Consequently, only a small proportion of the variance in outcome is explained by smoking if we use correlation coefficient to assess the effect. The combination of adverse life events and family history has been tentatively linked to psychosis with affective features (Van Os et al. 1998). Likewise, a lengthy follow-up study has assigned a causal role to adverse life events and family history in the onset of depression (Cui and Vaillant 1996).

Many individuals who have been exposed to adverse life events do not develop depression, and not all persons with depression have experienced adverse life events. The review of studies of life events by Mazure (1998) indicates that major life events had only a small effect on the symptom pattern, but that life events are more common before the first episode of depression than recurrent ones. Endogenous and non-endogenous symptoms would therefore be determined by factors other than life events. Conversely, Brown et al. (1994) suggested that patients with melancholic and psychotic depression, with a prior onset, have usually had fewer adverse life events before depression than other patients with depression. The number of such patients may have varied between studies, thus, causing variability between results. In addition, Frank et al. (1994) found that patients meeting the criteria for the endogenous subtype of unipolar depression differed from those with the non-endogenous type, the former having fewer life events before the onset of depressive episode. Survival analysis revealed a close temporal association between a severe life event and depression onset among those with the non-endogenous features of depression.

In a recent study by Goodyer et al. (2000), onset of the first major depression in adolescents was preceded by negative mood and feelings and alterations in adrenal steroid function. There was evidence that the variation in hormone status was related to more distal origins than recent life events or ongoing difficulties. Moreover, girls

experienced life events as more threatening than did boys. The researchers concluded that “environmental risks and higher self-reported depression scores are necessary but insufficient factors to explain subsequent depressive onsets”. Another recent population-based study (Chen et al. 2000) on depression categories (major depression, dysthymia, depressive syndrome and a comorbid depression condition) and symptoms, course and risk factors found that the risk factors had distinct profiles. Stressful life events were most strongly associated with depressive syndrome, whereas family history was associated with major depression and depressive syndrome. Transitions between categories occurred over the 13-year follow-up. Evidence indicated that depression categories are genetically homogeneous, but environmentally heterogeneous.

In a 50-year prospective study, Cui et al. (1997) divided life events into two groups: those dependent on subjects’ behaviour and those independent of their behaviour. They found support for their hypothesis that persons with affective disorders have a tendency to generate more self-dependent negative life events, which contribute to the chronicity of the disorder. Although adverse life events predict depression, their effect is not independent of the individual’s personality (Mazure et al. 2000). Event types and personality types seem to interact. The event type may, moreover, influence the outcome of depression. Adverse interpersonal events rather than adverse achievement events have been related to a better outcome. Adverse childhood experiences may, likewise, predispose to less satisfactory living conditions through poor coping strategies and result in more stressful adult life experiences (Rutter 1985). The effect of adverse childhood events is further dependent on their timing, as the extent to which a child can assign meaning to events and incorporate them into a set of self-concepts is a result of the developmental process.

Psychosocial stressors rarely occur in isolation, tending rather to co-exist. Chronic family adversities (marital discord, parental mental disorder, overcrowding etc.) have been shown to affect the psychiatric risk of children when they occur together, but not when they appear in isolation (Rutter 1985, 1999). Adversities might best be conceptualised as part of a development rather than as a single blow. They may be influential not due to fixed effects, but because they set in motion a chain of events that predisposes to later disorders. The effect of the separation of small children from a

parent may depend on the parent-child interaction after reunion, the ongoing pattern of family relationships, the availability of other secure relationships and the existence of other mediating factors (Rutter 1985, 1999).

2.2.4.4. *Minor events and worries*

Not all the stress people experience during their life stems from major events. Lesser events such as giving a speech, having too much to do and worrying situations arising from ordinary life routines also determine the level of stress. These are termed “daily hassles” (Sarafino 1994b). The “Hassles Scale” lists 117 events ranging from minor events to major problems. Some of the most commonly scored items are listed in Table 3. It has been suggested that desirable events would make hassles more bearable and thus mitigate, their health impact. These are measured by the “Uplifts Scale”, which describes 135 events that bring joy, peacefulness and satisfaction (Sarafino 1994b). Studies generally support the contribution of hassles and uplifts to health. Although people differ in the amount of stress they can bear, certain levels of stress appear to be generally more beneficial for quality of functioning than lower or higher levels of arousal.

Table 3. Common daily hassles in the “Hassles Scale”

Frequently experienced daily hassles
Health of a family member; Home maintenance; Too much to do; Misplacing or losing things; Concerns about weight; Rising price of common goods

Having worries can be seen as subjective reactions to environmental events. According to the conceptualisation of Boehnke et al. (1998), worries have two facets: the object of a worry (e.g., self, close others, society, the world) and the domain of a worry (the field of life with which it is concerned). Boehnke et al. (1998) introduced a valid instrument with which to study worries and suggest that the object of a worry is more important than its domain in determining the impact of worries on mental health. They divided the objects of worries into two categories: 1) worries concerned with self and close others (micro worries), and 2) worries about society or the entire world (macro worries). Their

study across samples made a valid distinction between micro and macro worries. Micro worries were strongly related to poor mental health, whereas macro worries were unrelated to mental health or related marginally to positive well-being.

2.2.5. Living conditions, social capital and health

2.2.5.1. *Stress at work and health*

The consequences of stress in the workplace have become major issues today. Many studies have related adverse work conditions to a variety of health problems in the modern work environment. The focus of studies has been on work organisation, the ability to control one's job, support from fellow workers and various health outcomes. Whitehall II, a prospective cohort study conducted in the UK (Bosma et al. 1998a), examined the role of personality characteristics in the association between job control and CHD. During the follow-up men and women with poor job control had higher risks of new heart disease. The psychological attributes measured affected this association very little. The researchers concluded that by improving job control the risk of CHD could, in principle, be lowered. In another analysis (Bosma et al. 1998b) of the same sample, the researchers found that it was not the high demands and/or strain that were associated with an increased risk of CHD, but specifically low job control.

The imbalance between personal efforts and rewards was also associated with an increased risk of CHD, although these two factors had independent effects on the risk of CHD. Inability to control the workload has been shown to be a risk factor for depression (Link et al. 1993). A Canadian survey (Wilkins and Beaudet 1998) found that among men job strain was associated with migraine and psychological distress and among women to work injury. Low support from co-workers was associated with migraine among men and to work injury and psychological distress among women. High physical demands were related to work injury among both sexes.

2.2.5.2. *Unemployment and health*

Psychological distress, frequent use of health services and increased mortality have been reported to be associated with unemployment (Weich and Lewis 1998, Leino-Arjas et al. 1999). Unemployment may be linked to mental and general ill-health in a variety of ways. Ill-health itself may lead to low status on job markets, and job loss may cause ill-health or these processes may be combined (Bartley 1994). Leino-Arjas et al. (1999) found evidence for a health-based selection in long-term unemployment among Finnish construction workers. Smoking and alcohol intake preceded unemployment. Likewise, stress predicted unemployment, which in turn increased the stress. The effects of unemployment may thus differ between the sexes, among age groups and among members with different SES. If the unemployment rate is low, individual factors may predict unemployment to a greater extent than if the rate is high (Martikainen and Valkonen 1996). Furthermore, short-term unemployment may be predicted to only a minor extent (Leino-Arjas et al. 1999). Unemployment is mostly determined by economic hardship.

Lynd-Stevenson (1996) noted a role of hopelessness in the onset of depression. Hopelessness was found to mediate between negative outcomes such as unemployment and depression. Depressive symptoms are more common among unemployed middle-aged men (Isometsä 1997). In a recent study conducted in Wales, unemployment was related not to the onset of major depression but to the course of the disorder (Weich and Lewis 1998). According to a study by Hansson et al. (1994), psychosocial stressors such as unemployment, loneliness, social isolation and the state of personal finances increased the risk of having a chronic course of depression in primary care patients.

2.2.5.3. *Social capital and health*

The concept of “social capital” theorised by James Coleman and used by Robert Putnam refers to trust between people, mutual interaction and civic activities based on voluntary networks and associations. There is, at the present time, no firm agreement on the

components of social capital, but it has been “measured in terms of the social, collective, economic, and cultural resources available to a family, neighbourhood or community” (Cooper et al. 1999). In the 19th century, Durkheim proposed that social integration (the degree to which members of society are bound together in social networks) and social regulation (the behaviours and aspirations of individuals bound by norms and customs) affect the suicide rate. This conceptualisation resembles the social capital of the 20th century (Lester 1999).

According to Putnam (1995), “social capital” refers to “features of social life such as networks, norms, and social trust that facilitate co-ordination and co-operation for mutual benefit”. The most commonly used measures of social capital are civic participation (e.g. memberships of community organisations) and social trust. Socially disintegrated communities and societies often have above-average rates of unemployment, poverty, drug and alcohol abuse, divorce, child abuse, suicides and mental health disturbances.

A community survey carried out in the Chicago area (Sampson et al. 1997) found that collective efficacy, defined as social cohesion between neighbours, yielded high between-neighbourhood reliability and was negatively associated with violence when other factors were controlled for. Recent survey data published in the USA indicate a positive correlation between low levels of social capital and mortality. Income inequality is thought to break down social cohesion and lead to lack of social support within a community, which in turn leads to social isolation and, in the end, an increase in mortality (Kawachi and Kennedy 1997, Cooper et al. 1999). However, according to Lynch et al. (2000) social capital correlates more strongly with gross domestic product per person than income inequality indicating that absolute material standards are more significant than relative ones. Three indicators of social integration (birth rate, marriage rate and divorce rate) accounted for 57% of the variation in the suicide rate among imprisoned men and for 88% among all men in Finland between 1969 and 1992 (Lester 1999). Divorce had a strong positive correlation with an increase in the suicide rate.

2.3. Positive mental health

2.3.1. Measures and definitions

The theme of positive mental health can be traced through the work of Jahoda (1958) back to the WHO definition of health (1948). Earlier research considered positive mental health largely from the viewpoint of life satisfaction (McDowell and Newell 1996). Life satisfaction refers generally to a personal assessment of one's condition comparing it to an external reference standard or to one's own aspirations. A second approach records affective reactions to daily experiences and a third screens for psychological distress (McDowell and Newell 1996). Numerous instruments exist for measuring "psychological well-being", "subjective well-being" or "positive mental health" (see Appendix 4. for scales measuring these concepts). Attempts have been made to distinguish between what is meant by "psychological", "emotional" and "mental", but they have not been very successful (McDowell and Newell 1996). The psychological literature has focused mainly on negative emotional states and disordered thinking and behaviour. Martin Seligman points out that during the last 30 years the word "depression" has occurred in over 54 000 abstracts and the word "anxiety" in over 41 000, but the word "joy" in a mere 400 or so (Wellner and Adox 2000).

The principal components of positive mental health can be grouped in several ways. According to Diener (1994) well-being should be defined and measured using multiple cognitive and affective components. The definition by Horley (1984) and Okun and Stock (1987) has three major components: life satisfaction, morale and happiness. Kendler et al. (2000), who have conducted a twin study of mental health in women, defined "mental health wellness" using six dimensions: perceived physical health, nonconflictual interpersonal relationships, anxious-depressive symptoms, substance use, social support and self-esteem. Tsuang (2000) notes that the constructs of wellness and resilience differ from each other. Wellness is purely descriptive, and assesses the level of healthy functioning without regard to constitutional vulnerability to mental illness or exposure to risk factors. Resilience refers to the achievement of healthy levels of functioning despite the presence of risk factors. Tsuang states, furthermore, that, by

definition, all resilient people are mentally healthy, whereas some, but not all, mentally healthy people are also resilient.

2.3.2. Affect, happiness and life satisfaction

If the construct of subjective well-being includes measures of global or long-term satisfaction with life, individuals can report a high level of well-being while currently experiencing great situational distress (Diener 1994, Massé et al. 1998). Some authors have referred to happiness as a short-term, transient feeling in response to daily events (McDowell and Praught 1982) and thus the current affective state does not provide a very reliable assessment of satisfaction with life. According to Yardley and Rice (1991) subjective well-being is influenced by transient events although it shows stability over time. Some personality characteristics and life conditions are more stable than others are. Self-reported distress seems to be more clearly delimited than well-being.

Happiness has been studied with the aid of definitions and components similar to those found crucial in studies of positive mental health. Cognitive components are global judgements that people make when they consider their life as a whole. Happiness also has affective, hedonic components (Veenhoven 1984, Diener 1994, Massé et al. 1998). Bradburn (1969) viewed happiness as the result of an individual's position on two hypothetically independent dimensions termed the positive and the negative affect. There is an ongoing debate as to whether happiness should be regarded as a fixed trait of individuals, rooted in their temperamental disposition, in cognitive inclination or whether it is an acquired disposition (Massé et al. 1998). However, if defined as global satisfaction with life and, thus, influenced by living conditions, happiness does not seem to be an immutable feature (Veenhoven 1994, Massé et al. 1998). Diener et al. found that absolute income level was a better predictor of subjective well-being than relative income (Diener et al. 1995). However, the correlation between well-being and social class appears not to be very strong.

A low level of life satisfaction has been significantly associated with mental health impairment among retired people (Iwatsubo et al. 1996). A prospective study on the

development of neurotic disorders related low level of life satisfaction to poor mental status assessed two years later (Baruffol et al. 1995). In a study of correlates of life satisfaction among psychiatric patients, Koivumaa-Honkanen et al. (1996) discovered that the strongest correlates for dissatisfaction were depression and poor social support. Self-perceived health and poor financial circumstances were also related to dissatisfaction. Söderqvist and Bäckman (1988) found that high levels of life satisfaction were closely related to high SOC scores.

According to Kendler et al. (2000), “mental health wellness” is a complex phenotype that is influenced by diverse environmental and genetic factors. Genetic factors appeared to be of moderate aetiological significance for all dimensions of mental health. A shared family environment had an important and significant influence only on interpersonal relations, social support and substance use. The structure of nonshared environmental influences was also quite complex. The authors deemed plausible that success in a key life role such as marriage or work could be one source of the nonshared environmental factors that have a positive effect on mental health wellness dimensions.

2.3.3. Subjective well-being and psychological distress

The relationship between psychological distress and well-being has been debated. These components of mental health have been seen either as independent (Bradburn 1969, Goldberg et al. 1982) or as two aspects of a single factor (Dohrenwend et al. 1980). A study of the general population conducted by Massé et al. in Montreal, Canada (1998) found evidence for a concept of mental health that includes two different, though correlated, dimensions of distress and well-being.

Positive mental health is not merely an absence of negative symptoms or reactions such as depression or anxiety (Massé et al. 1998). A low level of distress does not automatically mean a high level of subjective well-being, as neither self-control nor mental balance for instance has a direct counterpart in distress manifestations. The model of psychological well-being created by Massé et al. (1998) included aspects of

control of self and events, happiness, social involvement, self-esteem, mental balance and sociability. Although their conception of well-being includes happiness and life satisfaction, subjective well-being cannot be restricted to these dimensions. The epidemiological assessment of mental health needs to include measures of both negative and positive aspects if it is to fairly portray the mental health of a population. Positive affects, for instance, can be used to differentiate between anxiety and depression and, moreover, to distinguish between individuals scoring minimum or perfect scores on scales of psychological distress (Massé et al. 1998).

2.3.4. Sense of personal control

2.3.4.1. Definitions of personal control

Personal control refers to a sense of control over the events in one's life. Perceived control has an influence on whether an individual will engage in some form of health-related behaviour or not (Wallston 1997). People differ in the actions (e.g. behavioural or cognitive) they prefer to take to achieve their goals. Some people are perceived to have more control over events than others; furthermore, people have different beliefs about the degree to which they have control over their lives (Sarafino 1994a).

The locus of control (Rotter 1966) states that persons who believe that they can themselves influence events in their environment (internal locus of control) cope better with challenging life events than those who explain events by such concepts as "luck" or "chance" or who attribute events to other people (external locus of control). Another relevant aspect of personal control is Bandura's concept of self-efficacy, which refers to the belief that one can succeed in what one desires to do. Decisions to attempt something are based on expectations that proper behaviour can lead to a good outcome and that one can perform the behaviour properly. People with a strong sense of self-efficacy show less psychological and physiological strain in stressful situations. Lack of a sense of control magnifies feelings of helplessness. People may stop striving and end up believing they cannot exert control in situations where success is possible, a termed learned helplessness and described as a feature of depression (Sarafino 1994a). An additional concept of personal control is "sense of mastery" (Pearlin et al. 1981).

Beaudet (1996) found that low sense of mastery was related to depression for women but not for men.

2.3.4.2. Measurement of personal control

Rotter (1966) developed the Internal-External Scale (I-E Scale) to assess individuals on a presumed continuum of internality and externality of control. This unidimensionality has not stood up to further scrutiny (Wallston 1997). Wallston et al. (1978) later developed the Multidimensional Health Locus of Control (MHLC) Scale, which incorporates separate measures of internality (IHLC), powerful others (PHLC) and chance (CHLC) externality. The MHLC consists of 18 statements with ratings ranging from “strongly agree” to “strongly disagree”. The subscales of MHLC are linked to various indices of health behaviours. Winefield et al. (1982) evaluated the validity and reliability of the MHLC, finding that the “internal control of health” and “powerful others control of health” sub-scales were moderately homogeneous and reliable over time, although the latter was affected by age, lower social status and acute illness, but that the “chance control of health” subscale showed little stability over time. According to Wallston (1997), self-efficacy is a more potent predictor of health behaviours than locus of control. Wallston’s modification of the locus of control theory considers health as a moderator variable: internality and self-efficacy interact to predict health behaviour (1997).

2.3.4.3. Effects of sense of personal control

A study by Lachman and Weaver (1998) found that for all income groups, higher perceived mastery and lower perceived constraints were related to better health, greater life satisfaction and fewer depressive symptoms. However, control beliefs played a moderating role. Participants with a high sense of control in the lowest income group showed levels of health and well-being comparable with those in higher income groups. The results provided some evidence that psychosocial variables such as sense of control may be useful in understanding social class differences in health. Dalgard and Lund Håheim (1998) found that when they controlled for sociodemographic and biological factors, low social participation and, to a lesser extent, few close relationships and

external locus of control were associated with increased mortality. They concluded that the effect of social participation and locus of control may indicate that life style and individual psychological resources are at least as important for survival as support from others in stressful life situations.

In a study by Suominen (1993), strong perceived control of life was associated with a good state of health, a high level of social integration, high SES or educational attainment, abundant leisure activities and lower levels of perceived distress at work. Dalgard et al. (1996) found that social support provided protection against the development of depression in the face of adverse life events, but only for those with external locus of control. The Lundby study (Cederblad et al. 1994) found that internal locus of control was a childhood personality disposition associated with adult positive mental health.

2.3.5. Personality characteristics associated with positive mental health

2.3.5.1. *Personality, temperament and character*

The terms “character”, “temperament” and “personality” have often been used more or less interchangeably. However, whereas character has tended to refer to the distinct nature of a person, signifying those personality traits that are shaped by developmental processes and life experiences, temperament has referred more to the biological dispositions of the personality (Gunderson and Phillips 1995) including experiential components (Rutter 1985). Personality, for its part, has been defined variously as a set of learned behaviours, as a set of traits, or as a structure that organises and integrates experience. On a global level, most personality psychologists agree that “personality” refers to “characteristics that are pervasive and enduring and form a central part of the person’s identity” (Costa and McCrae 1995). Some personality traits have been linked to well-being and some to ill-health. Personality trait models have been developed independently of the conventional nomenclature. These are operationalised in psychometrically sound assessment measures. Two well known dimensional personality trait models are the five-factor model (FFM) and Cloninger’s seven-factor model (SFM).

The FFM has been tested among various age groups, and in different cultures and languages, and the data indicate that the model is essentially correct (Costa and McCrae 1995). The five domains in the model are conceptualised as: 1) neuroticism versus emotional stability, 2) extraversion versus introversion, 3) openness versus closedness to experience, 4) agreeableness versus antagonism, and 5) conscientiousness versus negligence. The model was originally developed to provide a model of personality traits and dimensions in the non-clinical population. However, later research found that the FFM also applies to various forms of psychopathology. The structure in FFM is hierarchical, with higher order domains and lower-order facets. The evidence suggests a heritable and biological basis for both higher-order and lower-order traits (Trull 2000). Several scales have been empirically related to the FFM, the best known and most often used being the 60-item Revised NEO Personality Inventory (Costa and McCrae 1995).

In prospective studies, persons who became depressed scored high on neuroticism before the first episode. This suggests that a high level of neuroticism may be an enduring feature of those prone to depression. Some have argued that psychiatric disorders represent extreme forms of personality traits. An especially high score on neuroticism has been mentioned as a predisposition to experience long-term levels of negative affects such as fear, anger, shame and sadness (Costa and McCrae 1995). Neuroticism can also be a risk factor for psychiatric disorders that are not traitlike, e.g. major depression, and somatic ill-health. A high level of neuroticism has furthermore been characterised as an overall proneness to experience psychological distress. A host of studies have linked the FFM constructs to personality disorders.

Cloninger's seven-factor model (SFM) of personality includes dimensions of temperament (heritable biases for information processing by perceptual memory system) and of character (individual differences in self-concepts). The four dimensions of temperament in this model reflect individual differences in the learning response to novelty (novelty seeking), danger or punishment (harm avoidance) and rewards (reward dependence), and also differences in individual perseverance (persistence). Three dimensions of character include the degree to which one sees oneself as an autonomous individual (self-directedness), as an integral part of humanity (cooperativeness) and as an important component of the universe (self-transcendence). Low self-directedness

scores characterise all personality disorders, temperament score patterns mark different personality disorder clusters and unique SFM profiles delineate specific personality disorder categories. Support for this model is mixed, but on the whole studies have accepted the prediction of the presence of personality disorder, and of the temperament and cluster relationship (Trull 2000).

2.3.5.2. Temperament, personality characteristics and health

Many studies have linked personality features, both desirable and undesirable, to mental and general health. Scheier and Bridges (1995) reviewed the research conducted on the relationship between person variables and general health, concluding that personality dispositions affect health more than do transient psychological states. Their study of the literature revealed four clusters of variables implicated in multiple disease outcomes: 1) anger and hostility levels in coronary heart disease (CHD) and related mortality; 2) emotional suppression in CHD and, also, breast cancer in women; 3) depression in post myocardial infarction mortality and progression of AIDS in its early stages; and 4) pessimism and fatalism in the progression of AIDS in early its stages and in peri-operative infarction in cardiac surgery patients. Psychological variables seem to influence the early stages of the disease process, the authors conclude. Likewise, a study by Robbins et al. (1991), found links between undesirable personality traits (anxiety, stress reactivity, anger and alienation) and health complaints. The study indicated particularly that desirable features (most commonly achievement strivings) rather than absence of undesirable ones, were linked to health-related attitudes and behaviours.

In a meta-analysis of 137 personality traits as correlates of subjective well-being, DeNeve and Cooper (1998) found that personality was equally predictive of life satisfaction, happiness and positive affect, but significantly less predictive of negative affect. When personality traits were grouped according to the FFM, a low level of neuroticism was the strongest predictor of life satisfaction and happiness, and of a low level of negative affect. Extraversion and agreeableness predicted positive affect equally well. Morrison (1997) examined the relationships between scores on the FFM personality and four personality dimensions including self-monitoring, locus of control, type-A behaviour and subjective well-being. The scores for subjective well-being and

locus of control were most strongly correlated with the positive pole of neuroticism (emotional stability), conscientiousness and extraversion.

The presence of certain personality features may, according to a number of researchers, increase the likelihood of developing depression (Mazure 1998) especially in the face of particular types of adverse life events. The psychological vulnerability of an individual and the adverse event may match and, as a result, augment the development of a disorder. High dependence needs may contribute to depression if a person is faced by adverse social life events; moreover high performance standards may play a causal role in the development of depression if an event leads to a perceived lack of control. Reactions to these hypotheses have been mixed (Mazure 1998). Recently, Mazure et al. (2000) found that interpersonal dependency and an autonomy factor of need for control were significantly related to the onset of major depression. Dysfunctional features of personality are, however, not resistant to therapeutic intervention (Ekselius and von Knorring 1999).

There are findings that negative affectivity, a pervasive mood disposition, correlates systematically with health complaints (Vassend 1989). Carels et al. (1999) found that emotional responsivity, i.e. a tendency to report large variations in tension levels, was associated with myocardial ischaemia. Further, proneness to repress emotions has been indicated as a health risk. D-type personality, “distressed personality”, is characterised by a tendency to experience negative feelings (e.g. anxiety and depressive affects) and social inhibition (inability or lack of desire to express these feelings in social interaction) (Denollet 1998a). In patients with CHD, D-type personality increases the risk of death 4-fold (Denollet oral communication 1999). In the study conducted by Denollet (1998b) among men with CHD, the cancer rate was higher among those with a D-type personality. Distressed persons characterised by elevated levels of type-A behaviour (excess of time urgency and hostile competitiveness), anger, hostility and life stress and inhibited individuals may be particularly prone to CHD (Denollet 1993). In their study on coping with CHD, van Elderen et al. (1999) found support for the importance of facing and working through the trauma of a cardiac event as a coping strategy. Although unfavourable in the short-term, the effects of the working-through attenuated long-term emotional distress.

2.3.6. Resilience, hardiness and coping

2.3.6.1. *Resilience and hardiness*

Resilience is a term used to refer to resistance to psychiatric disorders in the face of adversities (Rutter 1985). Resilience can be viewed as a process whereby people are able to rebound from adversity and carry on with their lives (Dyer and McGuinness 1996). It is a dynamic process greatly influenced by protective factors. Protective factors are the specific competencies necessary for the resilience process to occur. Competencies are the healthy skills and abilities that the individual can access and that may occur within the individual or the interpersonal or family environment. It is not an absolute concept, as resistance to stress is relative. The degree of resistance to stress varies across time and circumstances having both constitutional and environmental bases (Rutter 1985). SOC, resilience and perceived control are terms describing similar phenomena, all of which have something in common with the notion of personality trait.

A broad array of personality features have been gathered under the term hardiness (a term close to or synonymous with resilience) to differentiate between people who get sick and those who do not get sick under stress (Kobasa and Maddi, cited in Sarafino 1994a). Hardiness has three characteristics: 1) control, or beliefs about one's ability to influence events in their lives, 2) commitment, or one's involvement in activities, events and people in one's lives, and 3) challenge, or the tendency to view changes as opportunities for growth rather than as threats to security.

2.3.6.1.1. Features and determinants of resilience

Protective personal factors are not synonymous with pleasurable experiences, protectiveness being determined by the effect of a factor rather than by its hedonic qualities. Protective factors may in fact be qualities of a person rather than of experiences. Moreover protective factors may not be visible, except at a time of crisis or in the presence of a particular stressor (Rutter 1985). Protective personal factors tend to influence a longitudinal chain of reaction through time. Infancy years are not

determinative (Rutter, 1985, Kagan 1998). Resilient children have been shown by several studies to share important characteristics. They have good social skills, are friendly and are on good terms with peers and adults. Their temperament promotes positive relationships, they have strong self-esteem and they are often high achievers (Sarafino 1994a). Resilient children may often have compensating experiences and circumstances in their lives.

Mirsky and Barasch (1993) identified academic education as a resilience factor for women among immigrants to Israel. In their study, Chambers and Belicki (1998) found that resilient characteristics were only related to measures of social-behavioural functioning, not to well-being. According to the authors some apparently resilient individuals may have good social-behavioural competency while still experiencing psychological pain. In their study on the impact of a disaster on the health of assistance workers, Bartone et al. (1989) found a dose-response effect between exposure measured after the disaster and well-being, symptoms and illness at follow-up. Social supports modulated the effects of exposure on symptoms and well-being, whilst social supports and the personality style of resilience interacted to modulate the effects of exposure on illness.

2.3.6.1.2. Resilience and family

Resilience has previously been viewed as residing within the individual, the family often being dismissed as dysfunctional. Walsh (1996) advances a systemic view of resilience in ecological and developmental contexts and presents the concept of family resilience, paying attention to interactional processes over time that strengthen both individual and family hardiness. The author argues that by extending understanding of normal family functioning, the concept of family resilience offers a useful framework for identifying and fortifying the key processes that enable families to surmount crises and persistent stresses. Relational resilience has many paths, which vary to fit diverse family forms, psychosocial challenges, resources and constraints. Shared beliefs and narratives that foster a sense of coherence, collaboration, competence and confidence are vital in coping and mastery.

2.3.6.2. *Coping with stress*

Sarafino (1994c) describes coping as a “process by which people try to manage the perceived discrepancy between demands and resources they appraise in a stressful situation”. The efforts made to deal with a situation do not necessarily lead to a solution, but they may help to manage the situation. Coping is most often defined as a set of strategies that alter problems directly, reduce the demands or increase the resources to cope with the problem (problem-focused coping) or that contain the emotional responses associated with a stressful situation (emotion-focused coping). Several studies indicate that problem-focused coping in response to stress confers less risk of depression than does emotion-focused coping. Furthermore, under low-stress conditions, personality and support resources seem to predict symptomatology directly, but under high stress these resources predict symptom occurrence indirectly through the mediating effect of adaptive coping strategies (Mazure 1998). Rutter (1985) has questioned the role of specific problem-solving methods as such; more important in his view would be the mere existence of a coping process: the possibility of acting instead of simply reacting

2.3.6.2.1. Effects and characteristics of successful coping

Coping with adversities plays a significant role in protecting persons from unfavourable health and mental health outcomes. Brosschot et al. (1998) found that the perceived uncontrollability of an acute stressor could have negative immuno-modulating effects over and above those of the stressors as such. The Lundby project (Cederblad et al. 1994, 1995b, 1996) used personality dimensions measuring intellectual capacity, activity, impulsivity and sociability to study possible "salutogenic" (i.e. causes of health) effects. High intellectual function, a high activity level and low impulsivity were statistically associated with lower frequencies of certain psychiatric diagnoses and a higher frequency of positive mental health. These variables seemed to augment the capacity to cope with stress. Childhood positive self-esteem, successful coping, internal locus of control and intellectual capacity were dispositions of childhood personality found to be associated with adult positive mental health.

In the light of a study on situational coping of students, Carver and Scheier (1994) pointed out that coping did not predict lower levels of distress and that coping dispositions did not reliably predict emotions after an exam. A disposition to drink alcohol use appeared to be particularly dysfunctional. Coping varies from situation to situation and it would be misleading to assume that it always takes the same form. Three types of negative cognitive responses, denial, self-blame and pessimism, have been found to be associated with an increased risk of depression after severe life events. Minimising negative effects and emphasising positive aspects correlated inversely with the onset of depression. (Bifulco and Brown 1996).

Bifulco et al. (1998) found that negative evaluation of self and negative close relationships were associated with a likelihood of developing depression during the follow-up. Teenage depression associated with childhood neglect and abuse aggravated the risk. Previous psychiatric consultations, being a mother of small children and limited coping skills have, likewise, been described as risk factors for the onset of anxiety and depression (Surtees and Wainwright 1999). Richman and Flaherty (1986) found that perceived dysfunctional early parent-child relations correlate with adult depressive psychopathology. The researchers found only partial support for the role of personal resources mediating this effect.

Caplan (1990) suggests that after the loss of a loved one, a person who is able to work out ways of effective coping may emerge from the experience with heightened competence and resilience. In a community sample of adolescents, Masten et al. (1999) found after follow-up that better intellectual functioning and parenting resources were associated with good outcomes even in the presence of severe and chronic adversity. IQ and parenting appeared to play a specific protective role with respect to antisocial behaviour. Himelein et al. (1996) examined cognitive coping strategies associated with resilience in a non-clinical sample of child sexual abuse (CSA) survivors. The high adjustment group revealed a greater tendency to engage in four types of cognitive strategies: disclosing and discussing CSA, minimisation, positive reframing, and refusing to dwell on the experience.

2.3.7. Sense of coherence

2.3.7.1. *Definition of sense of coherence*

The concept of sense of coherence (SOC) was developed and presented by Antonovsky (1979). The SOC model stresses positive aspects and resources of health rather than symptoms and diseases (“salutogenic model”). According to Antonovsky’s theory, people have both internal and external resistance resources to deal with the day-to-day strain of living. If sufficient, these resources provide protection from damage to health. SOC incorporates an emotional and a cognitive evaluating component in addition to an ability to take measures. The three components are: comprehensibility (ability to find structure in events), manageability (control of environment) and meaningfulness (importance and value inherent in events and in one’s life). A person with a strong SOC is able to choose between the various potential resources available.

2.3.7.2. *Measurement of SOC*

There are two versions of the scale measuring SOC: the 13-item and the 29-item questionnaire (“Orientation to Life”). Both have been found to give comparable results (Callahan and Pincus 1995). According to Frankenhoff (1998), the 29-item questionnaire has measured the SOC of some 10 000 individuals in many countries within a variety of contexts. McSherry and Holm (1994) found support for the validity and utility of the SOC construct by pointing out that low SOC-score subjects experienced more distress and had adverse coping mechanisms. In his review of the feasibility, reliability and validity of the SOC scales, Antonovsky (1993) found that all the studies with normative data, which have been conducted in 20 different countries, showed high levels of internal consistency. Relatively few studies had measured test-retest correlations, but these too, showed considerable consistency. The great majority of correlations for criterion validity were statistically significant.

2.3.7.3. *SOC and other measures*

Reports of the high negative correlation of SOC with negative affectivity have raised doubts that the SOC actually measures the absence of neuroticism (Strumpfer and Viviers 1998). Gibson and Cook (1996) found that the Eysenck Personality Inventory scores on neuroticism correlated highly negatively with SOC scores. Geyer (1997) has criticised the SOC construct and argued that it is an attitude of people who are well educated, are in rather privileged positions in society and have opportunities for decision-making. The author further suggests that the SOC and anxiety or depression scales assess inverse signs of the same phenomenon. According to Smith and Egger (1997), many studies use the SOC as something closer to a personality type than as a mediator between social forces and health. Sammallahti et al. (1996) found that psychodynamic defences as measured by Bond's Defense Style Questionnaire (DSQ) explained 68% of the variance in SOC measures. The SOC was better able to indicate how people manage when they do well, whereas DSQ was more sensitive to how people manage when they do rather poorly.

2.3.7.4. *Correlates of SOC*

A low level of SOC has been associated with ill-health, mental ill-health included. Bowman (1996) found that SOC scores correlated negatively with measures of physical and mental distress across different cultures. Frommberger et al. (1999) conducted a follow-up study to assess patients severely injured in traffic accidents and found that the total SOC score correlated negatively with the development of post-traumatic psychopathology, post-traumatic stress disorder and anxious cognitions. On the basis of a cross-sectional study of patients with irritable bowel syndrome with and without coexisting fibromyalgia, Sperber et al. (1999) suggested that subjects with low SOC might be more likely to express symptoms in terms of psychological distress and increased health care utilisation due to their poor coping skills. George found that high SOC scores were significantly positively correlated with an absence of serious health problems and pain in Afro-American women (1999).

In a study by Schnyder et al. (1999), the SOC score was related to psychosocial effects of health problems in patients with rheumatoid arthritis (RA). SOC seemed to be a mediating factor and it might be useful as a predictor of psychosocial adaptation to illness. The results of Büchi et al. (1998) support this conclusion as they found that SOC might be helpful in identifying individuals with RA at risk of depression. Likewise, Rena et al. (1996) reported that SOC was a significant factor related to disability adjustment both in ill individuals and in their spouses. SOC has moreover been named as a strong independent predictor of quality of life in persons with CHD (Motzer and Stewart 1996).

In a study of male industrial managers, the SOC buffered the subjects from strain almost irrespectively of age, exposure to stress or perceived stress (Kivimäki et al. 1998). In addition, low SOC scores predicted forthcoming absenteeism among employees (Kivimäki et al. 1997). In their quantitative and qualitative study of 2500 Finns, Häggman-Laitila and Pietilä (1998) reported obvious connections between life control, defined as SOC, and health. Harri (1998) noted a positive correlation between a high SOC score and interaction at the working place, enjoyment of work, negative stress, subjective health, evaluation of competence, balance between work and leisure time, etc.

2.3.7.5. SOC and mental health

The SOC score has obvious links to mental health. A low meaningfulness SOC score at admission has predicted suicidal ideation among hospitalised parasuicidal patients. The SOC subscales of manageability and comprehensibility predicted suicidal ideation at follow-up in the same study (Petrie and Brook 1992). In addition to ideation, a low SOC score has correlated positively with suicidal behaviour (Mehlum 1998). The SOC has been suggested to provide a useful framework for conceptualising the basis for the effectiveness of psycho-educational programmes for patients with schizophrenia (Landsverk and Kane 1998). A high SOC score has been associated with less psychological dysfunction among refugees (Ying et al. 1997). Carstens and Spangenberg (1997) suggested that major depression could be viewed as a breakdown

in SOC. In their study, a low score in the meaningfulness aspect best predicted depression scores.

A Swedish study by Lundberg (1997) on childhood conditions, SOC, social class and adult ill-health concluded that childhood conditions and adult SOC appeared to be complementary and additive risk factors for illness in adulthood. Dissension in the childhood family was moderately associated with the effect of SOC. The author suggests further that the SOC might be a factor in shaping class inequalities in health. In the Lundby study referred to above, Cederblad and Hansson (1996) found that the SOC was by far the best correlate of health and mental well-being. It explained 22% of the variance in the 22 combined coping mechanisms (Cederblad et al. 1995). Flannery et al. (1994) found that SOC accounted for as much variance in measures of life events, depression and anxiety as did locus of control and social support measures. They state that the SOC is a useful tool for research into personality characteristics and distressing life events.

2.3.8. Expectation of future as a resource

2.3.8.1. *Definitions of central concepts*

Expectations of the future as a resource is emphasised in two closely aligned concepts: optimism and personal hopefulness. Optimism has been characterised in general as a stable feature of the personality and a prospective predictor of adaptation to stressful encounters (Scheier et al. 1986). It emphasises the cognitive aspects of future expectations whereas hopefulness includes conative (such as desire and volition) aspects (Nunn 1996a). Optimism is, however, affected by life events (Scheier et al. 1994) and economic hardship (Lynch et al. 1997b). Optimistic people believe that things will go their way and tend to have a positive expectancy of the future (Scheier et al. 1994). The perceived future has been noted as an increasingly important factor in the development of new forms of therapy, and as a factor influencing general and mental health (Nunn 1996a). Personal hopefulness can be defined as a tendency to construct and respond to the perceived future positively. A “hopeful person assesses what is desired for the future

so probable or so important as to constrain belief and behaviour to be grounded upon its possibility” (Nunn 1996a). Hopefulness is a multidimensional responsiveness to the future. The state of hopefulness and the presence or absence of positive expectations of the future are closely linked to anxiety and depressive disorders and suicidality (Beck et al. 1985, Brown et al. 1992, Nunn 1996a).

2.3.8.2. Measurement of optimism and hopefulness

The validity of the Life Orientation Test (LOT) developed by Scheier and Carver (1985) to measure optimism has been studied in depth. Due to the criticism it attracted, a refined but shorter version (LOT-R) was later developed, omitting items that could confuse optimism as a personality feature with coping mechanisms. The correlations between the old and the new LOT are quite good (Scheier et al. 1994). Mroczek et al. (1993) found support in their normative ageing study for the construct validity of optimism and pessimism as measured by LOT even after controlling for neuroticism and extroversion. Hopefulness can be quantified in a reliable and valid manner by the Hunter Opinions and Personal Expectations Scale (Nunn et al. 1996b), which is an instrument measuring global personal hopefulness (GPH). The GPH has been found to be a stable personality feature. The GPH score has correlated negatively with GHQ, Beck depression inventory, Impact of Event Scale and global symptom scores. Colligan et al. (1994) describe the development of a bipolar MMPI Optimism-Pessimism (PSM) scale that is based on the results of a technique applied to the MMPI. Reliability and validity indices show that the PSM scale is highly accurate. According to Malinchoc et al. (1996), the PSM provides reliable assessments of explanatory style in adolescents.

2.3.8.3. Effects of future expectations

Optimism has been found to correlate positively with problem-focused coping, seeking social support and emphasising positive aspects of stressful situations (Scheier et al. 1986). The level of optimism has been correlated in many studies with various health measures. An optimistic mechanism for coping has been associated with low levels of depression and anxiety and a good prognosis after myocardial infarction (Julkunen 1996). Optimism has also been found to correlate positively with rapid recovery from

coronary artery bypass surgery (Scheier et al. 1989). Optimism seems to be related to health behaviour associated with better health outcomes (Scheier and Carver 1992, Julkunen 1996).

Optimism is clearly associated with aspects of psychological well-being as measured by better self-esteem, and lower levels of depression and situational anxiety or neuroticism (Hale et al. 1992). Optimistic people tend to see specific situations or events in a positive light whereas pessimists deny and distance themselves from events (Scheier and Carver 1992). According to the Lundby study (Cederblad et al. 1995), optimism was significantly related to positive mental health together with solution-oriented coping mechanisms, social support and SOC score. Among a sample of earthquake victims personal hopefulness predicted future morbidity as strongly as did exposure and threat experiences (Nunn 1996b).

In follow-up to a study on the unemployed by Wanberg et al. (1997), optimism about the likelihood of getting a job was associated with better mental health than was more pessimistic expectancy. Thorson et al. (1997) found that Scores on the Multidimensional Sense of Humour Scale (MSHS) were positively related to a number of factors associated with psychological health such as optimism and self-esteem, and negatively with signs of psychological distress such as depression. Humour, as measured by MSHS, appeared as a multidimensional construct that seemed to be intimately related to quality of life. A sense of humour has been mentioned by Seligman (Wellner and Adox 2000) as an aspect of a positive character trait and by others as a highly developed defence (Vaillant 1993). Cherkas et al. (2000) conducted a twin study on a sense of humour, coming to the conclusion that a shared family environment, but not genetic factors, explained the familial aggregation of a sense of humour.

Unrealistic optimism pertaining to one's own risk of illness may, however, affect health-related behaviour in a negative manner, leading, for instance, to disregard of the dangers of smoking (Marteau et al. 1995). Optimists who smoke do not believe that they will catch the diseases usually caused by smoking (McKenna and Payne 1993). Lack of optimism has predicted alcohol dependence in a study by Prescott et al. (1997).

Research based on Seligman's attributional model (Colligan et al. 1994) indicates that a pessimistic explanatory style predicts increased frequency of depression, poorer physical health, and lower levels of achievement. The data show that persons who have a pessimistic outlook on life are more frequent users of the medical and mental health care delivery systems.

2.3.9. Empowerment

Rappaport (1987) has defined “psychological empowerment” as “the connection between a sense of personal competence, and a desire for and a willingness to take action in the public domain”. Segal et al. (1995) describe empowerment as a process of “gaining control over one’s life and influencing the organisational and societal structure in which one lives”. The term has been widely used, but only a few researchers have attempted to operationalise it. Rogers et al. (1997) developed a 28-item scale to measure the personal construct of empowerment as defined by users of mental health services. The scale, which consists of five factors: self-efficacy – self-esteem, powerlessness, community activism, righteous anger, and optimism-control over the future, has been found both reliable and valid. Empowerment correlated with quality of life and income but not with the demographic variables of age, sex, ethnicity, marital status, education level or employment status. Persons showing higher levels of empowerment seemed to make less use of traditional mental health services and to be more active in the community.

2.4. Self-perceived aspects of health and mental health

Clearly, no review of approaches to the measurement of mental health would be complete without assessments that reflect health as the subjective experience of an individual. Such information can only be collected as part of a health or well-being survey focused on a representative sample of the general population or a specific group. Examples of such indicators are assessments of self-perceived health and mental health problems, and quality of life.

2.4.1. Self-perceived health

Self-perceived general health has been widely studied, especially as a predictor of future health or mortality (Singer et al. 1976, Kaplan and Camacho 1983, Idler and Angel 1990, Mossey and Shapiro 1982, Studnicka et al. 1991, Mackenbach et al. 1994b). Self-perceived health can be evaluated by asking subjects how their health is in general. Measuring self-rated health has been found to be a reliable and valid way of assessing health (Mackenbach et al. 1994b). Estimates of health by more extensive scales such as the Sickness Impact Profile and various sub-scales of the SF-36 correlate strongly with ratings of self-perceived health as do use of health services.

Singer et al. (1976) have suggested that self-perceived health is in fact a composite assessment of physical and mental health. They found a strong correlation between ratings of self-perceived health and mental health. Nevertheless, Kaplan and Camacho (1983) found that after adjusting self-perceived health by anomie, neither depression nor happiness removed the effect of poor self-perceived health on mortality. Self-rated health has been found to be an independent predictor of mortality and to show a dose-response even after controlling for a number of related factors (sociodemographic characteristics, health behaviour and physical health) (Idler and Angel 1990). There were no significant differences between predictions of early mortality or late mortality, indicating that knowledge of the prognosis of one's health condition did not explain the results. Self-perceived health seems to predict the mortality of men better than that of women.

Mackenbach et al. (1994b) found that a very good self-assessed health was strongly associated with the same factors (e.g. education, employment, urbanisation, exercise, housing, life events, weight, alcohol intake and smoking) as was ill-health. They appeared, however, in a mirrored pattern indicating that processes generating excellent health have much in common with those generating ill-health. Söderqvist and Bäckman (1988) found a strong positive correlation between good self-perceived health and high SOC scores. According to a study by Studnicka et al. (1991), unemployment predicted poor self-rated physical and psychological health, and extensive use of health services.

Hansson et al. (1994) found that poor self-perceived health at index contact predicted the likelihood of becoming a chronic case of depression in primary care. Hoff et al. (1997) studied self-rated emotional health as a risk factor for major depression in a community sample (the ECA study sample) and found an age and sex-adjusted relationship between subjective emotional health and depression. The more positive the rating of emotional health, the lower was the risk for depression in the next year. This correlation remained after adjusting for other depression-associated factors. Asking the subjects whether they considered their emotional health was currently excellent, good, fair or poor assessed the state of emotional health.

Elo (1985) found that personality factors played an important role in explaining perceived stress and health status among seafarers as measured by self-inventories developed for Finnish epidemiological studies. The most important factors were pessimism-optimism and ego strength. The quality of interpersonal relations at work did not predict stress or health status. The model explained up to 33% of the variance in perceived health status and stress. McKenna and Payne (1989) found clear differences between the perceived health of unemployed and re-employed men, and note that unemployment seemed to lead to equally poor health both among middle class and working class men.

2.4.2. Quality of Life

2.4.2.1. *Definition of quality of life*

Quality of life (QOL) as a concept refers to the adequacy of material circumstances and to judgements made by people of these circumstances (McDowell and Newell 1987). Assessments of subjective accounts of health in monitoring medical outcomes have gained increasing importance in recent years (Ware and Sherbourne 1992, Jenkinson et al. 1993). As health care interventions can have an effect on a wide range of dimensions, e.g. social life, and emotional and overall well-being, measures of morbidity and mortality appear as constrained measures of benefits of care (Brazier et

al. 1992). QOL approaches occupy, in a sense, an intermediate position between expert-defined assessments of need and client/user-defined demand. QOL has become a valued assessment in branches of medicine dealing with chronic suffering and disability (Maguire and Selby 1989). In the course of years, assessments of QOL have referred to anything beyond symptoms and mortality; it now embodies justified concern for patients as people, not just as cases (Orley et al. 1998).

2.4.2.2. Measurement of quality of life

Researchers have developed many questionnaires to evaluate QOL, some of them for specific illnesses (see Appendix 5). Efforts have also been made to develop generic instruments, e.g. the Nottingham Health Profile and the Short Form (SF-36) health survey questionnaire (Jenkinson et al. 1993). Many QOL instruments use objective assessments of an individual's environment. The WHOQOL emphasises the subjective vantage point and is therefore more analogous to measures of life satisfaction than, say, the Lancashire QOL Profile, a specific measure for QOL in mental ill-health, or SF-36 (Orley et al. 1998). A good assessment would require a combination of both objective and subjective approaches and would include a clarification of the approach used. QOL evaluations often set out to establish whether ill-health affects the experience of quality of life (Jenkinson et al. 1993) or how the social and material world are experienced by the individual affected by a condition. The Life Satisfaction approach, in contrast, focuses on experienced affects reflecting daily living and is more often used in risk factor research (Orley et al. 1998, Koivumaa-Honkanen 1998).

The SF-36 comprises 36 items measuring eight multi-item variables: 1) physical functioning, 2) social functioning, 3) role limitations due to physical problems, 4) role limitations due to emotional problems, 5) mental health, 6) energy and vitality, 7) pain, and 8) the general perception of health. The questionnaire, however, does not contain any variables on sleep. In their study, Jenkinson et al. (1993) used the SF-36 in a large community sample to provide normative data. Internal consistency of the different dimensions of the questionnaire was found high. It is moreover acceptable to patients and gives good test-retest values (Brazier et al. 1992). Garratt et al. (1993) concluded that the SF-36 could be a useful measure of patient outcome in the NHS. Russo et al.

(1998) demonstrated the reliability and validity of the SF-36 as an outcome measure of changes in role function among schizophrenic outpatients. Voruganti et al. (1998) demonstrated that the reports regarding QOL given by people with stable schizophrenia were reliable. Similar subjective and objective measures of psychosocial function were noted in patients with good insight into their illness but not in those with poor insight.

Lehman et al. (1982, 1983) studied QOL in chronic mental patients using a Quality of Life Interview method developed by their own research team. Chronic patients were found to be less satisfied than the general population in eight areas: living situation, family relations, social relations, leisure activities, work, finances, safety and health. One third of the patients had been a victim of crime recently. In his model of global well-being, Lehman (1983) emphasised the interactions of personal characteristics with objective and subjective QOL indicators in life domains. These three factors result in the level of global well-being that, according to his study, is most consistently associated with personal safety, social relations, finances, leisure and health care variables. Zissi et al. (1998) proposed a mediational QOL model that includes dimensions of self-concept and perceived autonomy in addition to the traditional two-part QOL model of objective and subjective indicators. They group developed a Quality of Life Schedule of modifying the instrument by Lehman et al. (1982).

2.4.2.3. Determinants of QOL

Carpiniello et al. (1997) studied QOL among chronic outpatients and found that it was largely unrelated to of standard of living (if needs were satisfied), diagnosis and clinical course of illness. There was no correlation between psychotic symptoms and QOL, but there were significant correlations between self-ratings of depression, depressive cognitive attitudes and QOL. In a study by Sainfort et al. (1996), there were correlates between patients' and providers' ratings of clinical aspects (e.g. symptoms and function), but little or no agreement on social relations and occupational aspects of QOL. According to Browne et al. (2000), shortening the duration of untreated psychosis might have a beneficial effect on the QOL of patients with first episode schizophrenia, as the duration of untreated psychosis correlated with poor QOL. Poor premorbid adjustment and symptoms also influenced QOL.

2.5. Measures based on use of and demand for services

2.5.1. Use of utilisation data

The association between utilisation of services and need for treatment is a complex issue, so much so that utilisation data cannot be used directly to estimate the prevalence and incidence of disorders. Use of mental health services may depend on many variables besides the clinical condition of the patient, for example, the sociodemographic characteristics of the patient and intrinsic characteristics of the services (Ruggeri and Tansella 1995). Geographical factors are also important, in particular in terms of inequities in the need for and access to care, use of health services and health outcomes in relation to mental disorders. Thus, generalisations of morbidity figures from population surveys may lead to misallocation of resources (Holley 1998). In their study of prevalence of mental disorders and care at different levels, Glover et al. (1999) found that severe morbidity was geographically more concentrated than were less severe problems.

According to epidemiological studies, only a small proportion of persons with psychiatric disorders receive treatment. In the Mini Finland Health Survey over a half of those meeting the criteria for caseness were not receiving treatment (Lehtinen et al. 1990). In the Epidemiological Catchment Area (ECA) study conducted in the USA, only 16-20% of the individuals satisfying the criteria for a recent DSM-III diagnosis had used any form of mental health services (Shapiro et al. 1984). The National Comorbidity Study (NCS), also carried out in the USA (Kessler et al. 1994a), reported that over 50% of those with a psychiatric illness at some point in their lives had never received specialised treatment for mental health problems. In the epidemiological study of Isometsä et al., only ca. 50% of those with a major depressive episode or dysthymia reported a self-perceived need for mental health services (Isometsä et al. 1997). In Canada, less than half of the estimated 6% of the general population aged 18 or over, who experienced an episode of major depression during a year reported their symptoms to a health professional. An episode of depression that was not chronic was more likely to be undertreated. Likewise, people in good health and with no negative life events were less likely to have received treatment (Diverty and Beaudet 1997).

Hansson et al. (1994) found that people who became chronically depressed made significantly greater use of ambulatory care services than to those who did not become chronically depressed. However, a prospective controlled study indicated strongly that those patients who missed psychiatric follow-up outpatient appointments were more unwell and functioned more poorly socially than those who attended (Killaspy et al. 2000). Follow-up patients were more unwell than new patients. Considerably high rates of mental disorders have been found among clients of social services. Moreover such persons tend to make less use of the medical services available (Huxley et al. 1993, Kovess et al. 1999).

Patients admitted to hospital constitute a highly selected proportion of all those in the community with psychiatric disorders and may therefore tell us more about the process by which the proportion of those affected was selected than about the nature of the disorders themselves (Goldberg and Huxley 1992). It is clear that a filtering process between the community and psychiatric services selects those with more severe disorders. Furthermore, a considerable proportion of mental health services are provided by the primary health care sector and even the social welfare sector, and statistics rarely record visits to practitioners in these fields by diagnosis. One should therefore be cautious in drawing too far-reaching conclusions from such data alone.

Previous research has revealed a positive correlation between high social class and service use. Education has been a more powerful predictor of service use than has income, suggesting that cultural factors are more important than financial resources. Furthermore, women are more likely to use mental health services than men, even exceeding the effect of the higher prevalence of disorders among women. Research has indicated that women tend to recognise their problems better than men. Additionally, determinants of service use tend to differ from one community to another. Many people may have difficulty knowing when their problems are big enough to warrant professional care. Some researchers have focused on “lay theories” of mental ill-health to account for help-seeking behaviour (Kessler 1995).

Hourani and Khlaf (1986) found support for cognitive factors in the perception of mental health status. People’s concept of mental health influences their perception of

their own mental health and consequently help-seeking behaviour. The higher the educational level, the more often an individual tended to have a more complex model of mental health, viewing it as something more than just health in the sense of lack of disease. Higher educational attainment increased awareness of higher level needs and decreased the mental health status self-rating. Those who scored high on symptoms defined mental health in terms of self-actualisation or self-fulfilment. Likewise, Pill and Stott (1987) found that women who considered their life style salient had a more complex model of illness in general. These women tended to have a higher level of formal education. A cascade of interacting variables (sociodemographic factors, beliefs, attitudes and barriers), however, affect health behaviours, including help-seeking behaviours. Income differences also seem to influence the sector where help will be sought, but the effect differs between countries. In the USA, a high income was associated with treatment received from the speciality sector, in the Netherlands patients in the middle income bracket were less likely to receive treatment from the speciality sector, and in Canada income was unassociated with the sector providing care for patients (Alegria et al. 2000).

Factors acting as barriers to treatment and factors influencing treatment-seeking are not the same although they may interact. A study in Canada (Diverty and Beaudet 1997) found that low educational attainment and inadequate income acted as barriers to the treatment of an episode of major depression. In their study of characteristics and significance of untreated depression, Coryell et al. (1995) conclude that illness characteristics and age determine decisions to seek treatment. Untreated depression was associated with long-standing psychosocial difficulties. The barriers to treatment may also differ between disorders and symptoms; for instance Olfson et al. (2000) found a distinct pattern of treatment barriers for patients with social anxiety. These patients reported financial barriers, uncertainty about where to go for help and fear of what others might think or say more often than did patients without social anxiety.

Mental health matters still bear a stigma, and many people are unwilling to express their experienced mental problems in a demand for professional help for fear of being branded and excluded, for instance, from work or social relationships. The shame

attached to mental problems may also present too high a threshold, one that a person who would like to ask for help is unable to cross. Furthermore, some mental disorders, including the most serious ones, are not recognised by the individuals themselves. In general health care, in surgery in particular, queues are used as a measure of demand, but for the reasons presented above, this is not a very useful indicator in mental health care.

2.6. Measuring and describing morbidity and disability

2.6.1. Epidemiology of mental disorders

Extensive epidemiological population studies carried out by comparable and reliable case-finding methods have customarily been used to estimate morbidity at population level. These studies use structured interview scales, e.g. Present State Examination (PSE), Schedules for Clinical Assessment in Neuropsychiatry (SCAN), Diagnostic Interview Schedule (DIS) and Composite International Diagnostic Interview (CIDI) (see Appendix 7). Use of such instruments requires special training. During recent decades several important epidemiological studies have been carried out in varying parts of the world, though mainly in North America and Europe (for examples see Table 4). These studies usually focus on the occurrence of mental disorders, often in specific age groups and various treatment settings and deal with specific risk factors (Mortensen 1998). There are striking similarities between studies of the prevalence of mental disorders among the general population. In addition, WHO is currently engaged on an epidemiological study of mental disorders, the ESEMeD study, in six European countries using an improved version of the CIDI 2.1.

Wittchen et al. (2000) discuss a 12-item self-report questionnaire, CID-S (Composite International Diagnostic-Screener) that is based on stem questions from the CIDI. These questions aim to establish the presence or absence of core symptoms of a disorder. A negative answer to a stem question leads to an automatic classification of not having the syndrome and the CIDI then moves to the next diagnostic category. The questionnaire was developed on the basis of surveys conducted in Germany and the USA that did not permit lengthy and costly diagnostic interviews. The CID-S has been found to have an overall sensitivity of 85.3% and a negative predictive value of 92%. It has turned out to be a time-efficient diagnostic screening tool for most mental disorders, the exceptions being agoraphobia, somatoform disorders and substance abuse disorders.

Table 4. Epidemiological findings of mental disorders in population

Study	Sample	Method	Overall prevalence of mental disorders
Mini Finland Health Survey (Lehtinen et al. 1991)	8000	PSE	17%
ECA, study USA (Regier et al. 1988)	18 571	DIS	1 month: 15%
Spain (Vázquez-Barquero et al. 1987)	1223	PSE	15%
Bavaria, Germany (Fichter et al. 1988)	1382	SIS, Goldberg interview	21%
NSC survey, USA (Kessler 1994a)	8098	CIDI	Lifetime: ca. 50% 12 month: ca. 30%
NEMESIS, the Netherlands (Bijl et al. 1998a and b)	7076	CIDI	1 month: 16% 12 month: 23% Lifetime: 41.2%
The National Psychiatric Morbidity Surveys of Great Britain (Jenkins et al. 1997; ongoing)	10 108	CIS-R, SCAN	1 week overall: Men: 12% Women: 20%

However, these studies have focused mostly on Axis-I disorders: data on the epidemiology of personality disorders are in short supply compared with the volume available on most other disorders (Lenzenweger et al. 1997). Axis II coverage in the CIDI was originally limited to antisocial disorder. In their study, Lenzenweger et al. (1997) used a two-stage method to screen personality disorders in a non-clinical population. First, university students were screened with the aid of a self-administered Axis II inventory and then interviewed by clinicians using the International Personality Disorder Examination. The estimated point-prevalence of personality disorders among this non-clinical sample was 11.1%. The screen detected all individuals who received a definite diagnosis in the interview. The scales used in the assessment of personality disorders tend to be lengthy. With only 11 items, the Iowa Personality Disorder Screen is an exception and is a promising tool (Langbehn et al. 1999).

Epidemiological studies of mental disorders among homeless people have received increasing attention, and have been conducted in a variety of countries. A French study among the homeless in Paris found rates of mental disorder (lifetime prevalence 58% and 1-year prevalence 29%) that were higher than in the US or Australia except for substance abuse and dependence disorders. Other European studies have reported rather similar rates. Homeless people in Paris had some access to care as, 58% of them reported having received medical attention within the last 6 months and 14% were hospitalised (Kovess and Lazarus 1999).

Epidemiological studies of non-fatal suicide attempts were widely neglected until the 1990s. The first of such studies was the WHO/Euro Multicentre Study on Parasuicide, under way since the late 1980s. The study provides incidence data on parasuicidal patients treated in 20 urban centres in Europe. In another study, conducted in nine countries, the lifetime prevalence of suicidal ideation was found to be between 10% and 18%, and of suicide attempts between 3% and 5%. In the NCS study, the prevalence of ideation was 13.5% and attempts 4.6%. Thirty percent of the suicide ideators admitted having a plan for suicide. Attempts were often made on impulse. The presence of mental disorder and, in particular, comorbidity was the major predictor of suicidal behaviour (Isometsä 2000).

2.6.2. Methodological and other current issues in psychiatric epidemiology

Recently attention has been paid to the lack of uniformity in the methods in epidemiological surveys, e.g. variations in instrument construction and use of lay interviewers, which could account for some of the discrepant findings and some of the high prevalence rates (Regier et al. 1998). More attention should also be paid to the criteria of “clinical significance” when estimating the prevalence of mental disorders and the need for treatment in epidemiological surveys (Regier 1999). According to Regier, use of new scoring algorithms of “clinical significance” has produced lower prevalence rates and higher treatment rates in the ECA and NCS studies. Nevertheless, patients without full diagnostic criteria, but who are receiving treatment, often suffer from disabling symptoms of suicidal ideation, panic or somatisation. Conversely, Spitzer and Wakefield (1999) suggest that the clinical significance criteria are redundant for many disorders, because the symptom criteria are inherently associated with impairment. The significance criteria could facilitate the elimination of false positives for some diagnoses. They conclude that use of the criteria for clinical significance in the DSM-IV should be reconsidered and that thought should be given to raising the threshold of symptom criteria or adding criteria, excluding normal reactions for psychosocial stress.

A key issue in epidemiological research into mental disorders is the extent to which the measured rates of disorders reflect real needs for treatment. Brown et al. (1985) studied depressed women and concluded that there was a significant overlap in the severity of depressive conditions between those seen by a psychiatrist and those defined as cases in population studies. Using data from the Mental Health Supplement to the Ontario Health Survey, Lin et al. (1997) studied the “over-met need” in mental health care. They found that 39% of patients were “treated without CIDI identified disorder”. Of these, more than half had no prior history of a CIDI diagnosis.

According to other investigations, e.g. the NCS study, Lin et al. claim that from one-third to one-half of mental health service users do not meet diagnostic criteria for “caseness”, suggesting that, from the perspective of services, this is a significant issue. Lin et al. further state that nearly one fifth of the “lower need” group are frequent users of services.

The present era for epidemiological research in health has focused on individual risk factors (Susser and Susser 1996), and interest has grown in integrating genetic and environmental risk factors in epidemiological studies of mental disorders. These studies have included genetic epidemiological studies on suspected psychological risk factors for disorders (Kendler and Karkowski-Schuman 1997), and support has been found for the notion of genetic control for environmental exposure. A major theme in risk factor studies has been assessment of the effects of major disasters or serious adverse life events. The studies document, according to a review by Mortensen (1998), the need for psychiatric evaluation and treatment in groups exposed to these events.

2.6.2.1. Genes as risk factors for mental illness

Genetic factors play a considerable role in the expression of the variability of the major psychotic disorders, bipolar illness and schizophrenia in the community. Whereas there is evidence for a considerable heritability factor in most psychiatric disorders, the influence of genes on mental health wellness is relatively slight (Tsuang 2000). There is interplay between environmental and genetic influences, but it is poorly understood. Heritability is also liable to change under environmental influence (Kaprio 2000), as environment influences genetic expression (Kandel 1998). However, most psychiatric phenotypes have complex inheritance. Realistic models will obviously include low penetrance, heterogeneity and a degree of diagnostic uncertainty. A possible method for the future might be the study of genetic associations in populations instead of linkage studies among families. This method could detect genes with a small impact at very close range. The importance of genetic studies and even counselling will increase in the future (McGuffin 1994).

It is moreover important to emphasise the inaccuracy of ascribing individual differences to genetic influences and stress effects to the environment (Rutter 1985). We know that genetic and environmental factors are not independent of each other and do not act in a simple additive fashion (McGuffin 1994). Some authors have argued that social effects are specific and genetic ones non-specific whereas others claim that disorders share the same social origins but genetic influences are specific (Goldberg 1990). Genetic factors may have influence through mediating variables such as personality traits and cognitive style, which then predispose a person to psychiatric illness. In his latest review, Rutter (1999) stresses the necessity of putting aside the absurd brain-mind dualism of the past. Likewise, the purported dualism between environment and gene (nature-nurture) is not supported by present evidence.

2.6.3. Psychological distress and general population

Non-specific psychological distress has been considered a dimension of psychopathology that can be straightforwardly and cost-effectively measured in the general population (Dohrenwend et al. 1980) (see Appendix 8.). The Psychiatric Epidemiology Research Interview (PERI) (Dohrenwend et al. 1980) and the General Health Questionnaire (GHQ) (Goldberg and Hillier 1979) are self-report scales devised and used for this purpose. Elevated scores on these scales indicate that something is wrong, but they were not developed to yield specific diagnoses such as schizophrenia and bipolar disorder (Dohrenwend et al. 1980, McDowell and Newell 1996). In the study of McKenna and Payne comparing the GHQ and Nottingham Health Profile (1989) as measures of perceived health, high correlations were found between the 12-item GHQ and the emotional reactions, sleep and social isolation sections of the Nottingham health profile. The researchers found that the latter gave a broader assessment of perceived health than the GHQ.

The above mentioned scales have proved to be reliable and valid measures of distress. Goldberg and Huxley (1992) have stated that the common mental disorders encountered in the community are less severe than those met at speciality care level. The former usually consist of anxiety and depression-related distress states, many of which may remit without special treatment. In their study of a random sample of the general

population, McCabe et al. (1996) discovered that the five-item mental health dimension (MHI-5) of the SF-36 could be used to measure and compare mental health in certain populations. Scores on MHI-5 and GHQ-12 correlate highly. They conclude that studies using the SF-36 need not use an additional measure of mental health. The MHI-5 has operational advantages over the GHQ-12, as it is shorter and part of a general health measure.

In a sample of the general population, Amiel-Lebigre et al. (1998) reported a significant relationship between the measure of psychiatric symptoms and number of upsetting events. The researchers concluded that a higher frequency of upsetting events was secondary to the previous psychological pattern of the subjects. Sandanger et al. (1999) found that distress measures shown by the Hopkins Symptom Check List 25 expressed rather accurately the urgency with which treatment was needed, but that diagnoses gave information about the help that would eventually be needed. Likewise, Bebbington et al. (1996) concluded that no single measure, including diagnosis, represents an absolute indicator of need. Also, those identified by epidemiological surveys as having a disorder were not necessarily the same as those rated by the clinician as being in need of care (Bebbington et al. 1996).

Power et al. (1985) found that the GHQ score and life stress were correlated with suicidal intent in a sample of patients with suicide attempts. The GHQ, however, accounted for a greater proportion of the variance. Sommerville et al. (1989) studied psychological distress in a 12-year follow-up study as a predictor of mortality using the Health Opinion Survey. The researchers found support for a causal role for distress in subsequent mortality rates even after controlling for confounding and moderating factors. "Stress of daily activities" increased significantly morbidity due to cardiac and respiratory disease in the Finnish twin cohort study (Kaprio et al. 1987a).

2.6.4. Disability

Disability due to psychiatric disorder has received increasing attention since the Global Burden of Disease report (Murray and Lopez 1996) attributed 25% of all morbidity to psychiatric illnesses. Community-based studies on disabilities have employed various measures. Many epidemiological studies of disability with either mental or physical causes measured disability using self-report responses to questions regarding performance in two key areas of function (Neufeld and Mohan 2000): activities of daily living (ADL) and ability to use instruments (IADL) and mobility in the environment. The number of days on sick leave has also been used as a measure of disability. Other measures include the Global Assessment of Functioning (GAF), the Brief Disability Questionnaire and SF-12 (including ADL, mobility and role functioning domains). In a study using professional, consumer and care-giver ratings of the disability nature of 17 conditions in 14 countries, Ustun et al. (1999) found that disability was ranked in much the same overall order as in the Global Burden of Disease report.

Early-onset disorders lead to increase rates of truncated educational attainment (Kessler et al. 1995). Mental disorders are also significantly related to work loss (Kessler and Frank 1997). Work impairment is greatest among those with comorbid disorders. In a prospective 13-year follow-up study, Armenian (1998) found that pre-existing medical conditions predisposed to an incidence of ADL disability. The presence of various mental disorders at baseline likewise predisposed to disability, and major depression was a strong risk factor for later development of disability. The pattern of disability varies from one disorder to another. Persons with personality disorder most frequently endorse the disabled role although they demonstrate little functional limitation on other measures. People with schizophrenia and dementia tend to be disabled on all functional measures (Neufeld and Mohan 2000). Comorbidity of multiple medical or psychiatric conditions is highly associated with disability. Psychopathology has a significant relation to ADL disability.

Bijl and Ravelli (2000) found likewise that psychopathology was associated with increasing levels of disability in social, emotional and physical domains of life. Mood disorders were associated with the poorest level of functioning, and comorbidity strongly aggravated the disability. The study highlighted the need for illness specific measures of disability. The high number of workdays lost due to disability has a significant economic impact. Recovery from functional limitations may be slower than symptomatic remission. In a British study, people with both psychotic and neurotic disorders had very high levels of disability (Jenkins et al. 1998). Comorbid psychiatric disorders seem to increase the number of days absent from work because of illness. Likewise, an increasing number of disorders and the co-occurrence of anxiety disorder result in greater disability. Age, female sex and having only elementary school education have been significantly related to increased disability in other studies as well (Andrade 2000).

Manninen et al. (1997) used the Symptom Check List –90 (SCL-90) as a measure of distress and disability pensions as the outcome variable in their study of psychological distress as a predictor of disability due to common chronic disorders. They found that distress was an independent risk factor for disability. The cause-specific relative risk of disability in depression was 2.5 and in myocardial infarction 2.3 among those within the highest quartile of psychological distress scores. In their study of chronic medical conditions and mental health effects in old age, Ormel et al. (1997) found that it was not the nature of the condition that determined the psychological distress but the severity of disability and the loss of psychological resources due to the condition as well as the psychological characteristics of the patient.

2.6.5. Psychiatric comorbidity

Comorbidity refers to a diagnosis of two or more psychiatric disorders in the same individual. Interest in the study of comorbidity has grown lately. Comorbidity has indeed been suggested as a key-defining feature in psychiatry (Andrade 2000). The NCS (Kessler et al. 1994a), conducted in the USA, was the prime study leading to increased awareness of the importance of comorbidity. It showed that psychiatric disorders were more common than previously thought as nearly 50% of the respondents reported at least one lifetime disorder. However, only 21% of all lifetime disorders occurred in persons with a lifetime history of just one disorder.

According to the NCS, the vast majority (79%) of lifetime disorders were comorbid disorders. An even greater proportion of 12-month disorders occurred in respondents with a lifetime history of comorbidity. The major psychiatric burden was concentrated in a group of highly morbid people, who constituted one sixth of the population in the USA. Furthermore, even among those with a lifetime history of three or more comorbid disorders, the proportion who ever received professional help was less than 50%. The NCS researchers are agreed that comorbidity of mental disorders is the rule rather than the exception in both clinical and epidemiological samples (Andrade 2000).

Comorbidity may result from the fact that one disorder is a risk factor for the other, e.g. anxiety disorder usually precedes substance disorders (Andrade 2000). In addition, two disorders may share common risk factors. Major depression, generalised anxiety disorder, alcohol abuse/dependence and drug abuse/dependence show significant familial aggregation (Kendler and Karkowski-Schuman 1997). Familial transmission is most likely due to underlying vulnerabilities to internalising or externalising disorders. Environmental adversities accounted for little of the observed parent-offspring transmission. There is evidence that early intervention in one disorder may reduce the prevalence of another. Panic disorder patients quite often develop depression later in their lives, but patients with depression seldom develop panic disorder. Panic attacks may arise during depression, but they are then usually a marker for severity (Andrade 2000).

2.6.6. Somatic comorbidity of psychiatric disorders

The presence of psychiatric disorders and somatic diseases simultaneously in the same patient is called somatic comorbidity. Episodes of illness are distributed unevenly in the population; hence some individuals suffer from more disorders than others. Disorders have a tendency to co-occur, because they may be risk factors for each other or they may share determinants. Psychiatric patients are at increased risk of CHD, possibly due to elevated levels of smoking among such patients. It has also been claimed that depression and physical illness have a self-perpetuating and mutually reinforcing relationship. Terms such as “disease proneness” and “general propensity to ill-health” have been used to refer to aetiological overlap between various diseases. The concept of allostatic load may explain the process: stress activates physiological feedback, which has beneficial effects in the short-term but, when sustained, may increase the risk of many disorders. Low SES, perinatal complications, neuroticism and impulsivity have been cited as generic risk factors for disease. In a recent Dutch study (Neeleman et al.), people reporting more somatic disorders were at high risk of more psychiatric disease and vice versa. Neuroticism and low educational attainment were the strongest correlates of clustering of psychiatric and somatic disorders.

In keeping with these findings, Honig et al. (1992) found a relatively high prevalence of physical illnesses (36%) among a sample of chronic psychiatric outpatients. The course of their condition was usually chronic during the follow-up. In their register study on comorbidity of hospital treated psychiatric and physical disorders, Mäkikyrö et al. (1998) found that injuries, poisonings and unspecific symptoms were the most common reasons for hospitalisation due to physical causes among patients with psychiatric disorders. Seventy seven percent of those with a psychiatric diagnosis had at some time been hospitalised due to a physical illness. Men had more hospitalisations for gastric and cardiac diseases and women for pulmonary and gynaecological illnesses than had those without a diagnosis of mental disorder.

Numerous studies have been conducted on the relationship between CHD and depression. One may, nevertheless, ask whether the relationship is not, to some extent, dependent on personality features predisposing to depression or to the hostility and anger associated with depression. These factors have also been implicated in the development of CHD. Major depression has been linked to altered autonomic activity in patients with CHD (Carney et al. 1999). Diminished autonomic control of the heart has been implicated as an important factor in the development of CHD (Sloan et al. 1999, Sheffield et al. 1999). Recent research has highlighted the significance of depression and anxiety as independent risk factors for increased mortality due to CHD (Lane et al. 1999). However, in the study of Bosworth et al. (1999), increased mortality due to CHD was significantly and independently predicted by self-rated health even after adjustment for other risk factors such as depression (for more see section 2.7. on mortality). There is, however, increasing evidence to suggest that depression may be an independent risk factor for the development of CHD (Dinan 1999). A recent review (Schwarz et al. 1999) of epidemiological studies on the effect of insomnia on cardiac events found elevated risk ratios for the events if sleep difficulties were present after adjusting for age and other factors. Smaller effects of treatment with pharmacological agents have been reported among patients with ischaemic heart disease reporting high daily stress (Rutledge et al. 1999).

2.6.7. Mental health expectancies

The Euro-REVES project has outlined a measure of mental health expectancies by combining the age specific prevalence of the population in healthy and unhealthy states and age specific mortality information taken from a period life-table. The measure indicates the number of remaining years at a particular age that an individual can expect to live in a healthy state. The project also carried out a census of European mental health surveys and concluded that depression and dementia were the disorders attracting most concern from European health providers today. The data of the census are available in the SIGMUND database at Montpellier, which may be consulted free of charge on matters dealing with mental health surveys in Europe. On the basis of the census information, the Euro-REVES project outlined dementia-free life expectancy (DemFLE), depression free life expectancy (DepFLE) and life expectancy in good or

poor mental health. As comparable data were not then available from all Member States, the first estimates were of DemFLE for six Member States and of DepFLE for the Netherlands. The general mental health expectancy was calculated for Denmark and Catalonia using the MHI-5 and GHQ-12 as measures of generic mental health (Jagger et al. 1998).

2.6.8. Morbidity and consumption of drugs

Statistical data on use of psychotropic drugs give additional information on the relationship between morbidity and use of care at community level. A field study conducted in Bavaria found (Weyerer and Dilling 1991) that 8% of the sample used psychotropic drugs during seven days before the interview. Women took such drugs three times more often than men. There were no differences between social classes. The consumption rate was highest (29%) for persons suffering from solely psychiatric disorders. Fewer than 5% of healthy respondents took psychotropic medications. Differences in morbidity did not explain the sex differences in drug use. Likewise, the WHO study of prescriptions of psychotropic drugs by primary care physicians in 15 centres world wide found considerable variations between the centres. Non-clinical factors such as age, sex, education and employment seemed to affect psychotropic drug prescription (Linden et al. 1999).

Follow-up of the use of psychotropic drugs might serve to enhance the quality of treatment as there is evidence from psychopharmacology that use of antidepressants is often shorter than expected (Arpino et al. 1995). Although the use of antidepressants has increased heavily Helgason et al. (1999) found that in Iceland the increased use had not affected public health parameters such as admissions to psychiatric hospitals, outpatient consultations or suicides. Joukamaa (1999) pointed out that in Finland the prescribing of anxiolytics has remained high despite the increase in the use of antidepressants at primary care level, which indicates continuing problems in the recognition of mental disorders.

Kan et al. (1997) assessed the prevalence of benzodiazepine (BZD) dependence among patients in primary care, psychiatric outpatient care and self-help groups and discovered high prevalence figures ranging from 40% to 97%. The risk of BZD dependence is high among users. Many studies have correlated the use of psychotropic medicines with various problems in special sub-populations. Fischbach and Herbert (1997) found that domestic violence was significantly associated with chemical dependency and substance abuse among women. Among adolescents, suicidal ideation has been linked to drug use (tobacco, illicit drugs, psychotropic medicine) (Choquet et al. 1993).

2.7. Mortality and mental health

2.7.1. Mortality and psychiatric disorders

Many studies have shown that mortality is higher among psychiatric patients than in the general population (Bruce et al. 1994, Harris and Barraclough 1998, Sohlman and Lehtinen 1999). Over 90% of those who commit suicide suffer from a mental disorder (Robins et al. 1959, Barraclough et al. 1974, Marttunen et al. 1991). Higher age-adjusted mortality has been found among those with major depression, alcohol abuse or dependence and schizophrenia than in the general population (Bruce et al. 1994). Schizophrenia seems to be associated with a marked increase in mortality from suicide and a moderate increase from natural causes (Brown 1997). The standardised mortality ratio of patients discharged from psychiatric hospitals has been found to be as high as four-fold compared with that of the general population (Sohlman and Lehtinen 1999). The proportion of deaths from unnatural causes such as accidents and suicides was considerable. Natural causes of death e.g. cardiovascular disease and tumours, were also more prevalent among discharged patients than the general population. Antipsychotic polypharmacy with high doses and an absence of anticholinergics has been associated with reduced survival among schizophrenic patients over the course of time (Waddington et al. 1998).

The long-term risk of suicide among psychiatric patients of both sexes has been found to be up to 10 times the rate in the general population. The increased risk refers in particular to the diagnostic groups comprising affective disorders, schizophrenia and

personality disorders (Baxter and Appleby 2000). Recent onset of the disorder and a history of hospitalisation also increased the risk of suicide. According to a study by Powell et al. (2000), the rate of suicide among psychiatric inpatients was nearly 14 per 10 000 admissions. They identified planned suicide attempt, an actual suicide attempt, recent bereavement, the presence of delusions, chronic mental illness and a family history of suicide as predictive factors. However, the researchers point out that the clinical utility of their findings is limited by low sensitivity and specificity combined with the rarity of suicide.

According to the WHO (1968), 15% of patients with depression commit suicide. In general, patients with mood disorders have a 20-30% lifetime suicide risk (Klerman 1987). Mortality from natural and unnatural causes has been found to be elevated among patients with all types of affective disorders (Høyer et al. 2000). In the Lundby study of a community sample of men, more than half of those who had completed suicide had had a depressive disorder (Hagnell et al. 1982). In the Finnish psychological autopsy study on all suicide victims, depressive disorders were the most prevalent (59%) (Henriksson et al. 1993). Longstanding depression among elderly people also seems to predict increased mortality (Pulska et al. 1999).

In the Iowa record linkage study of discharged psychiatric patients (Black et al. 1985a & b), the risk of suicide was significant in schizophrenia, affective disorders, and alcohol and other drug abuse for both sexes, in neuroses for men and in depressive neuroses for women. The lifespan was reduced in all diagnostic categories. Mortality ratios were greater for women and young persons than for the general population. In a comprehensive review, Harris and Barraclough (1998) found that whereas there is an increased risk of premature death in all mental disorders, mortality varies between different diagnostic groups. The risk of death from unnatural causes is highest in major depression and schizophrenia; from both natural and unnatural causes it is highest in anorexia and substance abuse. Deaths from natural causes are especially high among persons with organic mental disorders.

Depression has been linked to increased levels of various natural causes of death. Notably CHD, but also breast cancer, has been implied (Scheier and Bridges 1995). Wulsin et al. (1999) assessed critically the literature on mortality due to depression.

They found that many of the studies linking depression to early death had been poorly controlled, but nevertheless implied that depression increases mortality, especially from unnatural causes and cardiovascular disease. In studies of psychiatric samples, suicide accounted for 20% of deaths and in medical and community samples for 1%. The results on depression as a predictor of cancer mortality have been contradictory (Shekelle et al. 1981, Zonderman et al. 1989). However, major depression has been found to be associated with daily smoking (Breslau et al. 1998), which is a risk factor for several forms of ill-health causing increased mortality. Knekt et al (1996) found also that persons with depressed mood were at an elevated risk for lung cancer.

2.7.2. Psychosocial factors, personality and mortality

Different aspects of life events or stressors and personality have also been linked to increased mortality. In a 55-year prospective study, Vaillant (1998) discovered that undistressed men enjoyed much better health than did those found to be distressed. There was a significant increase in mortality among the distressed or depressed compared with the undistressed. Loss of spouse has been found to increase the risk of death from all natural causes two-fold immediately after bereavement (Kaprio et al. 1987b). The mortality increase was, likewise, two-fold for violent causes. Suicide mortality was greater than expected during the first year after loss of spouse. According to a review by Bowling (1987), the widowed are at greater risk of dying than are married people of a similar age. The risk is greater for men up to the first six months of widowhood. Several explanations (stress of bereavement, lack of social support, role change and artefact explanation) have been proposed, but little conclusive information is available on the causes of the elevated mortality rates.

Mortality from CHD, cancer and various unnatural causes, suicide included, is increased by bereavement (Archer 1997). The Finnish twin cohort study (Kaprio et al. 1987a) showed that a high level of "stress of daily activities" significantly increased the risk of mortality from violent causes. In a meta-analysis, Miller et al. (1996) found support for hostility as a risk factor for all-cause mortality. In a large community sample, Romanov et al. (1994) documented an elevated risk of suicide and accidental deaths among those who reported high levels of hostility.

Friedman et al. (1993) studied the relationship between childhood personality and longevity in a seven-decade longitudinal study. They found support for a link between childhood personality feature, conscientiousness and survival. Contrary to their expectations, however, optimism and a sense of humour were inversely related to longevity. People's beliefs have been linked to mortality through a hypothetical psychosomatic process; for example Chinese-Americans born in years considered ill-fated in the Chinese tradition die considerably younger if they have an illness than do Caucasian or other Chinese people (Phillips et al. 1993).

The social aspects of one's life have a marked influence on mortality. In their study of a community sample of men, Welin et al. (1985) found that social activities might have a modifying effect on life stress and risk factors associated with mortality. Hansson et al. (1989) obtained consistent evidence for the effect of social network and social support on mortality among elderly men. In the prospective Tecumseh community health study, House et al. (1982) found that men reporting a high level of social interaction were significantly less likely to die during follow-up than those who reported less interaction. There was no association between the observed mortality and satisfaction with social interaction. The Alameda County study, (Berkman and Syme 1979, Seeman et al. 1987) corroborated the importance of social ties was found as social ties, which were found to be significant predictors of lower 9- and 17-year mortality.

In Eastern Finland (Kaplan et al. 1988), a graded association was noted between extent of social connections and mortality after adjusting for confounding factors. No strong association was found for women. Blane and Drever (1998) studied social inequality and mortality among men using standardised years of potential life lost and discovered a 3.3 ratio of deaths between social class I and V. In Finland, Valkonen (1993) found that socio-economic mortality differences among middle-aged and elderly men increased in Finland during the study period but not for women. The increase was mainly due to the rapid decline of mortality from cardiovascular diseases among upper white-collar employees and men with more than secondary education. Relative socio-economic mortality differences were smaller among women than among men. Valkonen et al. found (1997) also that life expectancy as well as disability-free life expectancy showed a systematic relationship with level of education in Finland: the higher the level of education, the higher the life expectancy and disability-free life expectancy.

2.7.3. Alcohol consumption and mortality

The prospective cohort study by Hart et al. (1998) associated overall alcohol consumption with all cause mortality among men drinking more than 22 units per week. A strong positive relation was seen between the risk of death from stroke and consumption of over 22 units of alcohol a week. In contrast, a meta-analysis conducted by Rimm et al. (1999) suggested that alcohol intake was causally linked to a lower risk of CHD through changes in lipids and haemostatic factors. Romelsjö and Leifman (1999) found a non-significant decrease in mortality from CHD, but a significant increase in overall mortality and a non-significant risk of stroke with increasing alcohol intake. The increase in mortality was due to the association between smoking and drinking.

3. Conclusions

3.1. Data for the review

An abundance of scientific literature exists on the subjects dealt with here. This review has, however, focused primarily on some of the older key investigations and on data accumulated during the last five to six years. Literature searches were conducted through the MEDLINE, PSYCHLIT and SOCIOLOGICAL ABSTRACTS databases. Available reviews and textbooks were also made use of.

3.2. Measures of mental health at population level

3.2.1. Needs and mental health

According to the present review, mental health needs at population level can be measured in two ways by needs index models and by assessments of needs through interviews in epidemiological research. Widely accepted methods to assess mental

health needs in clinical practice are still lacking. Epidemiological studies, although they provide reliable and useful information, are difficult and laborious to employ as repeated measures at international level. Surveys of self-assessed needs might be more appropriate as a basis for the assessment of needs in an international monitoring system. Descriptive analyses and interpretations of service use data, combined with sociodemographic and epidemiological data, can be useful for planning intervention strategies (Fryers and Greatorex 1992). The needs index models discussed here have been in regional use only. However, the Townsend index could, perhaps, provide a useful setting for international comparison as it is simple and includes data already collected at national and international level. The usability and validity of this model between the Member States would, however, have to be tested. We lack data on the reliability and validity of needs index models as such in international use, even though the models are based on factors associated with risks pertaining to mental health.

3.2.2. Sociodemographic indicators

The sociodemographic factors reviewed here have been shown to have clear links to mental health. They affect the onset, course and remission of mental disorders and psychological distress. Several studies have correlated being non-married (single, widowed or divorced) or never having married, living alone, being unemployed, having less education and belonging to a lower social class with estimates of mental ill-health. A current subject of debate concerns the extent to which mental ill-health has social causes and the extent to which it has social consequences. As Dohrenwend et al. (1992) demonstrated, the causal direction may vary between ill-health and social factors in different disorders. More research may be needed, but enough information already exists to demonstrate the usefulness of sociodemographic factors in estimating mental health risks and the need for intervention at population level. Such data are commonly collected as a statistical routine but their comparability at international level may be questionable. They may be useful as background information, but not as tools for measuring changes in mental health of the population.

3.2.3. Social networks and stressful events

Stress can affect health and mental health adversely. There is evidence shows that social support, especially perceived social support, has a positive effect on mental health, particularly when the individual experiences stress. Negative pressure from or interaction with social networks may, conversely, have negative effects on the health of an individual. Moreover, individuals with a genetically higher risk of depression tend to seek out high-stress environments. In contrast, sociability or extrovertedness as features of personality and temperament are related to a decreased risk of mental ill-health, indicating that the level of social support is also dependent on personality factors. Various coping styles are also associated with different effects of social support, as people with an external locus of control seem to derive greater benefit from social support than do those with an internal locus of control. Even though social support has connections with personality features, coping styles and socio-economic factors, lack of it is associated with an increased risk of mental ill-health and ill-health in general, demonstrating its usefulness as an indicator for a health and mental health monitoring system. As shown in Appendix 2, there are numerous scales to estimate social support, which complicates comparison between studies and results.

Adverse life events have been studied widely as risk factors for depression. There is clearcut evidence for an association between major adverse life events and subsequent depression. Life events seem to be more common prior to the first episode than do recurrent episodes. Some studies have found differing rates of adverse events between endogenous and non-endogenous forms of depression, with the latter type of depression having a more conspicuous association than the former. However, adverse life events seem to be only weakly related to the pattern of symptoms in depression. Nowadays, semi-structured interviews, e.g. LEDES, are increasingly in use as they avoid the methodological problems encountered in the checklist method. This method would be cumbersome for assessing life events in a monitoring system as it would require an epidemiological setting.

3.2.4. Positive mental health

The terms positive mental health, psychological well-being and subjective well-being have been used in this review to refer to the emotional, affective aspects (affect balance, happiness, certain aspect of life satisfaction) and the cognitive aspects (e.g. coping, optimism, certain features of life satisfaction) of well-being. According to the widely used FFM, certain features of temperament and personality are associated with higher levels of emotional well-being and more effective coping strategies. Antonovsky's SOC is included in this review as a measure of positive mental health, as it is a measure of the resources of health including both the emotional and the cognitive aspects. Two terms used in the literature to connote resistance to illness and coping with adversities are resilience and hardiness. Comparison of the studies on positive mental health is complicated by the sheer abundance of terms, definitions used and methods in measurements of the various aspects of positive mental health (see Appendix 4).

Nevertheless, certain strategies of coping (e.g. internal locus of control, problem-focused coping) have proved to be more effective than others and thus to have qualities protecting health and mental health. Emotional well-being and satisfaction with life have also been shown to predict future mental health. Expectations of the future in the form of optimism and hopefulness can be reliably used to estimate the risk of mental ill-health. Antonovsky's SOC is a widely used concept, but it has been used more often in studies concerning general health expectancies. There is evidence, however, that the SOC concept can also serve as a measure to predict future mental health.

3.2.5. Indicators of the subjective experience of the individual

Measuring self-rated health is accepted as a reliable and valid method for assessing health. Researchers have found a strong correlation between ratings of self-perceived health and mental health. Poor self-rated health has predicted the future course of depression, and self-rated emotional health has been studied as a risk factor for depression. The more positive the rating of emotional health, the lower was the risk of depression in the next year, as cited above. Simply simply asking subjects whether they would say their emotional health was excellent, good, fair or poor assessed the state of

emotional health. Such cost-effective measures can easily be applied in a mental health monitoring system.

Assessments of subjective accounts of health and the adequacy of material circumstances in the form of QOL research have become increasingly common during the past decade. As health care interventions can have an effect on a wide range of dimensions, e.g. social life and emotional and overall well-being, measures of morbidity and mortality appear as constrained measures of the benefits of care. Researchers have developed many questionnaires to evaluate QOL, some of them for specific illnesses. Efforts to develop generic instruments have produced the Nottingham Health Profile and the Short Form (SF-36) health survey questionnaire (Jenkinson et al. 1993).

The SF-36 could be a useful measure of patient outcome. It could also be used as an outcome measure of changes in, say, role function among schizophrenic outpatients. The survey instrument measures eight multi-item variables: 1) physical functioning, 2) social functioning, 3) role limitations due to physical problems, 4) role limitations due to emotional problems, 5) mental health, 6) energy and vitality, 7) pain, and 8) general perception of health. Most of the measures of QOL pertinent to mental health apply to special patient populations (Appendix 5) and are thus not suitable for monitoring the QOL of the general population. The SF-36, however, has been designed for generic use and it includes aspects of mental health and self perceived health.

3.2.6. Measures based on use of and demand for services

Present knowledge reveals the complexity of the association between utilisation of services and need for treatment. Utilisation data cannot be applied directly to estimate the prevalence and incidence of disorders. Use of mental health services may depend on many variables besides the clinical condition of the patient, for example, the sociodemographic characteristics of the patient and the intrinsic characteristics of the services. Recent epidemiological studies suggest that only a small proportion of individuals with psychiatric disorders receive treatment. Clearly, there is a filtering process between the community and the psychiatric services that leads to the selection

of those with more severe disorders (Goldberg and Huxley 1992). Furthermore, a considerable proportion of mental health services are provided by the primary health care sector and even the social welfare sector, and statistics rarely record visits to practitioners in these fields by diagnosis.

One should therefore be cautious in drawing too far-reaching conclusions from such data alone. The utilisation data may be of more use in serious disorders such as schizophrenia and the more severe cases among this patient population, because a greater proportion of such patients are admitted to hospital than among those suffering from major depression. Registers have been used to evaluate needs at population level; the proportion of long-stay inpatients for instance may indicate the need for supported housing (Fryers and Greatorex 1992).

3.2.7. Disability, morbidity and mental health

Non-specific psychological distress has been considered a dimension of psychopathology that can be measured in a straightforwardly and cost-effectively manner in the general population. Some of the commonly used research instruments found reliable and valid are presented in Appendix 8. Elevated scores on these scales indicate that something is wrong, but they were not developed to yield specific diagnoses. The mental disorders usually found at community level comprise anxiety and depression-related distress, which indicates the usefulness of the psychological distress approach to mental health monitoring at general population level. Furthermore, psychological distress seems to express more accurately the urgency with which treatment is needed, whereas diagnoses give information about the help that will eventually be needed. Psychological distress has been found to predict overall mortality and disability among chronically ill patients. An epidemiological study yielding reliable psychiatric diagnoses would not be a cost effective method in mental health monitoring.

The mental health expectancies outlined by the Euro-REVES project offer a valuable method to assess the impact of mental health at population level. The method requires a combination of standardised mortality data in age groups and the use of a single measure of psychological distress in the general population. For the calculation of disorder specific mental health expectancies, data would be needed to provide the

prevalence figures for the disorders chosen for monitoring. As depression is one of the most prevalent disorders and rates are increasing, and as it is moreover a cause of significant disability to sufferers and of concern to health providers, it should be the primary target for monitoring using the expectancy method.

3.2.8. Mortality and mental health

Many studies have shown that mortality is higher among those suffering from mental ill-health, whether psychological distress or diagnosable disorders, than in the general population. Adverse life events, e.g. loss of spouse, have been linked to increased mortality. Over 90% of those who commit suicide suffer from a mental disorder. The negative impact of mental ill-health on survival has even been noted in community samples. Psychiatric disorders have been associated with increased levels of mortality from natural and violent causes. The mortality ratio of discharged patients has been found to be increased compared with that in the general population. Psychiatric patients suffering from chronic disorders have relatively high rates of physical illnesses. Social aspects of the life of an individual affect mortality. Social isolation, for example, seems to increase mortality. Lack of social cohesion within a community and increased mortality correlate with and are mediated by income inequality.

3.3. Implications of the review

The provisional areas for mental health indicators selected and reviewed here all seem to have importance for mental health and its monitoring. All the rating scales cited were evaluated for reliability and validity in the course of their development. Some of the scales have been used more often than others, which might provide combined with their length (short measures should be preferred for practical purposes), this might provide an additional basis for the selection of individual indicators. As to the data that are routinely collected for statistical and administrative purposes, a selected group of individual indicators along the lines of the needs index models could be useful. Due to the difference in the research methods used for many of the studies, it is difficult to give priority to any particular indicator area.

3.4. Core issues concerning the indicators

The question of the importance of an indicator or indicator domain for the purpose of mental health monitoring is linked to the core issues of the mental health monitoring system that is the use to be made of the system and its ultimate aims (see Table 5.). Answers to the following questions will shed light on the scale of mental health problems, on the sub-populations that have special mental health problems, on the existence of significant regional differences, if any, and on the reasons for these differences.

Table 5. Key questions

Core issues concerning indicators
1) What do we want to know? The indicators are to provide information for the targets that have been chosen as relevant for mental health: what are the mental health needs at population level? How can we address these needs? Are the needs met in a satisfactory manner?
2) How and where do we get the necessary information? The mental health indicators should make maximal use of data already routinely collected. However, certain items will have to be added to national surveys or the European Community and Household Panel.
3) How do we ensure the necessary quality of data (comparability, reliability, and validity)? Surveys should be conducted using only validated and reliable up-to-date instruments. Where routine data are concerned, only those that allow comparisons should be used. To this end, the definitions of individual indicators might have to be coordinated.
4) How do we ensure quality reporting and interpretation of data? Instructions should be provided for the interpretation of indicators. These instructions should be clear and unambiguous.

Attention has been paid here to the relevance of the domains of mental health indicators from two points, mental health policies and practical purposes. The latter point means that the indicators should 1) provide a measure of variability between countries, 2) be sensitive to changes over time and 3) have relevance for the aims of the activities (promotion of mental health, prevention and treatment of mental ill-health) followed. The indicators themselves should be: specific, reliable, valid, cost effective and ethical. In practice, however, hardly any indicator will meet all the criteria at the same time. Additionally, it is important to consider, what an indicator measures, as various things may affect one indicator. Mental health indicator is defined as measure on the state of mental health; it is a variable that has been related to mental health and indicates a priority or a problem. These may be items in health surveys, statistical data gathered etc.

and are often repeated measures. The topic of mental health is, however, very complex as most mental disorders are multifactorial in their aetiology, a multitude of risk factors may influence the onset course and restitution of one disorder and a risk factor may be common for many forms of ill-health, both somatic and mental illnesses.

There is an increasing volume of data demonstrating the complexity of the relationship between diagnoses and use of mental health care. Some users of care do not satisfy the diagnostic criteria and others, who satisfy the criteria, do not receive the care they need. The chronic nature of mental disorders increases their prevalence figures, though incidence figures for mental disorders are quite low. It is therefore important to have information on factors predicting and affecting the course of mental ill-health for promotion and prevention purposes. It should be emphasised that not all persons, who satisfy the diagnostic criteria but are not receiving treatment, automatically present a problem for mental health care, as unmet needs are difficult to conceptualise and measure and also imply value judgements. Functional disabilities seem to be more important than diagnoses as such and therefore interest should not be restricted merely to diagnostic groups. Furthermore, prevalence figures for severe mental disorders are low in the general population, making it difficult to detect them. Whether it is important to detect, say schizophrenia in a monitoring system depends on the ultimate aims of the system.

3.5. Added value of monitoring system

Ultimately the system should help planning and decision-making. It could be used in estimating how the targets set for policies are met, and whether there is a measurable decrease in disability, suffering and disease. The indicators offer tools ensuring the adequate allocation of resources for interventions, policies and programmes. This information could also be used in evaluating the mental health impact of other policies.

REFERENCES

- Achat H, Kawachi I, Levine S et al. Social networks, stress and health-related quality of life. *Qual Life Res* 7: 735-50, 1998
- Alegria, M, Bijl, RV, Lin, E et al. Income differences in persons seeking outpatient treatment for mental disorders. A comparison of the United States with Ontario and the Netherlands. *Arch Gen Psychiatry* 57: 383-391, 2000
- Allardt, E. Dimensions of welfare in comparative Scandinavian study. University of Helsinki, Research Group for Comparative Sociology. Research Reports 9: 1975
- Amiel-Lebigre F, Kovess V, Labarte S et al. Symptom distress and frequency of life events. *Soc Psychiatry Psychiatr Epidemiol* 33: 263-268, 1998
- Andrade, L. Surveys of morbidity and psychiatric comorbidity. *Curr Opin Psychiatry* 13: 201-207, 2000
- Antonucci TC, Israel BA. Veridicality of social support: a comparison of principal and network members' responses. *J Consult Clin Psychol* 54: 432-7, 1986
- Antonovsky A. Health, stress and coping. San Francisco: Jossey-Bass Publishers, 1979.
- Antonovsky, A. The structure and properties of the sense of coherence scale. *Soc Sci Med* 36: 725-33, 1993
- APA. DSM-IV, Diagnostic and Statistical Manual of Mental Disorders. Fourth Edition, American Psychiatric Association, Washington DC, 1994.
- Archer, J. Coping with bereavement. Pp: 83. In: *Cambridge Handbook of Psychology, Health and Medicine*. Eds: Baum, A, Newman, S, Weinman, J. et al. Cambridge University Press, Cambridge, 1997
- Armenian, HK, Pratt, LA, Gallo, J et al. Psychopathology as a predictor of disability: a population-based follow-up study in Baltimore, Maryland. *Am J Epidemiol* 148: 269-75, 1998
- Armstrong, D. Outline of sociology as applied to medicine. Oxford: Butterworth-Heinemann, 1994
- Arpino, C, Da Cas, R, Donini, G et al. Use and misuse of antidepressant drugs in a random sample of the population of Rome, Italy. *Acta Psychiatr Scand* 92: 7-9, 1995
- Avison, WR. Social networks as risk and protective factors for onset and recurrence of mental disorders. *Curr Opin Psychiatry* 9: 149-152, 1996
- Bartley, M. Unemployment and ill-health: understanding the relationship. *J Epidemiol Community Health* 48: 333-337, 1994
- Barraclough, B, Bunch, J, Nelson, B. et al. A hundred cases of suicide: clinical aspects. *Br J Psychiatry* 125: 355-373, 1974
- Bartone, PT, Ursano, RJ, Wright, KM. et al. The impact of a military air disaster on the health of assistance workers. A prospective study. *J Nerv Ment Dis* 177: 317-328, 1989
- Baruffol, E, Gisle, L, Corten, P. Life satisfaction as a mediator between distressing events and neurotic impairment in a general population. *Acta Psychiatr Scand* 92: 56-62, 1995
- Baxter, D, Appleby, L. Case register study of suicide risk in mental disorders. *Br J Psychiatry* 175: 322-326, 2000
- Beaudet, M. Depression. Statistics Canada: Health reports, 7: 11-22, 1996
- Bebbington, P. Causal models and logical inference in epidemiological psychiatry. *Br J Psychiatry* 136: 317-325, 1980

- Bebbington, PE. Population surveys of psychiatric disorders and the need for treatment. *Soc Psychiatry Psychiatr Epidemiol* 25: 33-40, 1990
- Bebbington, P, Kuipers, L. The clinical utility of expressed emotion in schizophrenia. *Acta Psychiatr Scand* 89: 46-53, 1994a
- Bebbington, P, Kuipers, L. The predictive utility of expressed emotion in schizophrenia: an aggregate analysis. *Psychol Med* 24: 707-718, 1994b
- Bebbington, P, Brewin, CR, Marsden, L et al. Measuring the need for psychiatric treatment in the general population: the community version of the MRC needs for care assessment. *Psychol Med* 26: 229-236, 1996
- Bebbington, PE, Marsden, L, Brewin, CR. The need for psychiatric treatment in the general population: the Camberwell needs for care survey. *Psychol Med* 27: 821-834, 1997
- Beck, AT, Steer, RA, Kovacs, M et al. Hopelessness and eventual suicide: a 10-year prospective study of patients hospitalised with suicidal ideation. *Am J Psychiatry* 142: 559-563, 1985
- Berkman, LF, Syme, L. Social networks, host resistance, and mortality: a nine-year follow-up study of Alameda county residents. *Am J Epidemiol* 109: 186-204, 1979
- Berkman, LF. The role of social relations in health promotion. *Psychosom Med* 57: 245-254, 1995
- Bhugra, D, Hilwig, M, Hossein, B et al. First-contact incidence rates of schizophrenia in Trinidad and one-year follow-up. *Br J Psychiatry* 169: 587-592, 1996
- Bhugra, D, Leff, J, Mallett, R et al. Incidence and outcome of schizophrenia in whites, African-Caribbeans and Asians in London. *Psychol Med* 27: 791-798, 1997
- Bifulco, A, Brown, GW. Cognitive coping response to crises and onset of depression. *Soc Psychiatry Psychiatr Epidemiol* 31: 163-172, 1996
- Bifulco, A, Brown, GW, Moran, P et al. Predicting depression in women: the role of past and present vulnerability. *Psychol Med* 28: 39-50, 1998
- Bijl RV, van Zessen, G, Ravelli, A et al. The Netherlands Mental Health Survey and Incidence Study (NEMESIS). *Soc Psychiatry Psychiatr Epidemiol* 33: 581-586, 1998a
- Bijl, RV, Ravelli, A, van Zessen, G. Prevalence of psychiatric disorder in the general population: results of the Netherlands Mental Health Survey and Incidence Study (NEMESIS). *Soc Psychiatry Psychiatr Epidemiol* 33: 587-595, 1998b
- Bijl, R, Ravelli, A. Current and residual functional disability associated with psychopathology Findings from the Netherlands Mental Health Survey and Incidence Study (NEMESIS). *Psychosom Med* 30: 657-668, 2000
- Black, DW, Warrack, G, Winokur, G. The Iowa record linkage study. I. Suicides and accidental deaths among psychiatric patients. *Arch Gen Psychiatry* 42: 71-75, 1985a
- Black, DW, Warrack, G, Winokur, G. The Iowa record linkage study. III. Excess mortality among patients with "functional" disorders. *Arch Gen Psychiatry* 42: 82-88, 1985b
- Bland RC, Newman SC, Orn H. Period prevalence of psychiatric disorders in Edmonton. *Acta Psychiatr Scand* 77 (Suppl. 338): 33-42, 1988b
- Bland RC, Orn H, Newman SC. Lifetime prevalence of psychiatric disorders in Edmonton. *Acta Psychiatr Scand* 77 (Suppl. 338): 24-32, 1988a
- Blane, D, Drever, F. Inequality among men in standardised years of potential life lost, 1970-93. *BMJ* 317: 255, 1998

- Boehnke K, Schwartz S, Stromberg C et al. The structure and dynamics of worry: theory, measurement, and cross-national replications. *J Pers* 66: 745-782, 1998
- Bosma, H, Stansfeld, SA, Marmot, MG. Job control, personal characteristics, and heart disease. *J Occup Health Psychol* 3: 402-409, 1998a
- Bosma, H, Peter, R, Siegrist, J et al. Two alternative job stress models and the risk of coronary heart disease. *Am J Public Health* 88: 68-74, 1998b
- Bosma, H, van de Mheen, D, Mackenbach, JP. Social class in childhood and general health in adulthood: questionnaire study of contribution of psychological attributes. *BMJ* 318: 18-22, 1999
- Bosworth, HB, Siegler, IC, Brummett, BH et al. The association between self-rated health and mortality in a well-characterized sample of coronary artery disease patients. *Medical Care* 37: 1226-1236, 1999
- Bowling, A. Mortality after bereavement: a review of the literature on survival periods and factors affecting survival. *Soc Sci Med* 24: 117-24, 1987
- Bowman BJ. Cross-cultural validation of Antonovsky's Sense Of Coherence Scale. *J Clin Psychol* 52:547-9, 1996
- Bradburn NM. The structure of psychological well-being. Chicago: Aldine, 1969.
- Brazier, JE, Harper, R, Jones, NMB et al. Validating the SF-36 health survey questionnaire: new outcome measure for primary care. *BMJ* 305: 160-4, 1992
- Brems, C. Women and depression: a comprehensive analysis. Pp 539-566, In Beckham, EE, Leber, WR (Ed), handbook of depression. New York, Guilford, 1995
- Breslau, N, Peterson, EL, Schultz, LR et al. Major depression and stages of smoking. A longitudinal investigation. *Arch Gen Psychiatry* 55: 161-166, 1998
- Brewin CR, Wing JK, Mangen SP et al. Principles and practices of measuring needs in long-term mentally ill: the MRC Needs for Care Assessment. *Psychol Med* 17: 971-981, 1987
- Brosschot, JF, Godaert, GLR, Benschop, RJ et al. Experimental stress and immunological reactivity: a closer look at perceived uncontrollability. *Psychosom Med* 60: 359-361, 1998
- Brown, G, Bhrolchain, MN, Harris, TO. Social class and psychiatric disturbance among women in an urban population. *Sociology* 9: 225-254, 1975
- Brown GW, Harris T. Social origins of depression. A study of psychiatric disorders in women. New York: Free Press, 1978
- Brown, GW, Craig, TKJ, Harris, O. Depression: distress or disease? Some epidemiological considerations. *Br J Psychiatry* 147: 612-622, 1985
- Brown, GW, Lemyre, L, Bifulco, A. Social factors and recovery from anxiety and depressive disorders. A test of specificity. *Br J Psychiatry* 161: 44-54, 1992
- Brown, GW, Harris, TO, Hepworth, C. Life events and endogenous depression. A puzzle re-examined. *Arch Gen Psychiatry* 51: 525-534, 1994
- Brown, S. Excess mortality of schizophrenia. A meta-analysis. *Br J Psychiatry* 171: 502-508, 1997.
- Brown, S, Birtwistle, J. People with schizophrenia and their families. Fifteen-year outcome. *Br J Psychiatry* 173: 139-144, 1998

- Browne, S, Clarke, M, Gervin, M et al. Determinants of quality of life at first presentation with schizophrenia. *Br J Psychiatry* 176: 173-6, 2000
- Bruce, M, Leaf, P, Rozal, G et al. Psychiatric status and 9-year mortality data in the New Haven Epidemiologic Catchment Area study. *Am J Psychiatry* 151: 716-721, 1994
- Brucey, ML, Takenchi, D, Leaf, PJ. Poverty and psychiatric status. *Arch Gen Psychiatry* 48: 470-474, 1991.
- Brugha, TS, Bebbington, P, Tennant, C et al. The List of Threatening Experiences: a subset of 12 life event categories with considerable long term contextual threat. *Psychol Med* 15: 189-194, 1985
- Brugha, TS, Cragg, D. The List of Threatening Experiences: the reliability and validity of a brief life events questionnaire. *Acta Psychiatr Scand* 82: 77-81, 1990
- Brunner, E. Socio-economic determinants of health. Stress and the biology of inequality. *BMJ* 314: 1472-6, 1997
- Büchi, S, Sensky, T, Allard, S et al. Sense of coherence – A protective factors for depression in rheumatoid arthritis. *J Rheumat* 25: 869-875, 1998
- Burg, MM, Seeman, T. Families and health: the negative side of social ties. *Ann Behav Med* 16: 109-115, 1994
- Burns, DD, Sayers, SI, Moras, K. Intimate relationships and depression: is there a causal connection? *J Consult Clin Psychol* 62: 1033-1043, 1995
- Callahan, LF, Pincus, T. The sense of coherence scale in patients with rheumatoid arthritis. *Arthritis Care Res* 8: 28-35, 1995
- Caplan, G. Loss, stress, and mental health. *Community Ment Health J* 26: 27-48, 1990
- Carels, RA, Sherwood, A, Babyak, M et al. Emotional responsivity and transient myocardial ischemia. *J Cons Clin Psychol* 67: 605-610, 1999
- Carney, RM, Freeland, KE, Veith, RC et al. Major depression, heart rate, and plasma norepinephrine in patients with coronary heart disease. *Biol Psych* 45: 458-463, 1999
- Carpiniello, B, Lai, GL, Pariante, CM et al. Symptoms, standards of living and subjective quality of life: a comparative study of schizophrenic and depressed out-patients. *Acta Psychiatr Scand* 96: 235-241, 1997
- Carroll, D, Smith, GD, Bennett, P. Socio-economic status and health. Pp: 171-174. In: *Cambridge Handbook of Psychology, Health and Medicine*. Eds: Baum, A, Newman, S, Weinman, J. et al. Cambridge, Cambridge University Press, 1997.
- Carstens, JA, Spangenberg, JJ. Major depression: a breakdown in sense of coherence? *Psychol Rep* 80: 1211-1220, 1997
- Carver, CS, Scheier, MF, Weintraub, JK. Assessing coping strategies: a theoretically based approach. *J Pers Soc Psychol* 56: 267-283, 1989
- Carver, CS, Scheier, MF. Situational coping and coping dispositions in a stressful transaction. *J Pers Soc Psychol* 66: 184-195, 1994
- Cederblad, M, Dahlin, L, Hagnell, O et al. Salutogenic childhood factors reported by middle-aged individuals. Follow-up of the children from the Lundby study grown up in families experiencing three or more childhood psychiatric risk factors. *Eur Arch Psychiatry Clin Neurosci* 244: 1-11, 1994
- Cederblad M, Dahlin L, Hagnell O et al. Intelligence and temperament as protective factors for mental health. A cross-sectional and prospective epidemiological study. *Eur Arch Psychiatry Clin Neurosci* 245:11-19, 1995
- Cederblad, M, Dahlin, L, Hagnell, O et al. Coping with life span crises in a group at risk of mental and behavioural disorders: from the Lundby study. *Acta Psychiatr Scand* 91: 322-330, 1995

- Cederblad, M, Hansson, K. Sense of coherence – a concept influencing health and quality of life in a Swedish psychiatric at-risk group. *Isr J Med Sci* 32: 194-199, 1996
- Chambers, E, Belicki, K. Using sleep dysfunction to explore the nature of resilience in adult survivors of childhood abuse or trauma. *Child Abuse Negl* 22: 753-8, 1998
- Chen, L-S, Eaton, WW, Gallo, JJ et al. Empirical examination of current depression categories in a population-based study: symptoms, course and risk factors. *Am J Psychiatry* 157: 573-80, 2000
- Cherkas, L, Hochberg, F, MacGregor, AJ et al. Happy families: a twin study of humor. *Twin Research* 3: 17-22, 2000
- Choquet M, Kovess V, Poutignat N. Suicidal thoughts among adolescents: an intercultural approach. *Adolescence* 28: 649-59, 1993
- Ciarlo, JA, Shern, DL, Tweed, DL et al. The Colorado Social Health Survey of Mental-Health-Service Needs - Sampling, Instrumentation, and Major Findings. *Eval Prog Plann* 15: 133-147, 1992
- Cobb, S. Social support as a moderator of life stress. *Psychosom Med* 38: 300-314, 1976.
- Colligan, RC, Offord, KP, Malinchoc, M et al. CAVEing the MMPI for an Optimism-Pessimism Scale: Seligman's attributional model and the assessment of explanatory style. *J Clin Psychol* 50 : 71-95, 1994
- Cooke, DJ. Psychosocial variables and the life event/anxiety-depression link. *Acta Psychiatr Scand* 74: 281-91, 1986
- Cooper, H, Arber, S, Fee, L. et al. The influence of social support and social capital on health. A review and analysis of British data. London, Health Education Authority, 1999
- Coryell, W, Endicott, J, Winokur, G et al. Characteristics and significance of untreated major depression. *Am J Psychiatry* 152: 1124-1129, 1995
- Costa, PT, McCrae, RR. Theories of personality and psychopathology: approaches derived from philosophy and psychology. Pp: 507-519. In: *Comprehensive textbook of psychiatry VI*, Eds. Kaplan HI, Sadock, BJ. Baltimore, Maryland, Williams & Wilkins, 1995
- Cronkite, RC, Moos, RH. Life context, coping processes and depression. Pp 569-587, In Beckham, EE, Leber, WR (Ed), *handbook of depression*, New York, Guilford, 1995
- Cui XJ, Vaillant GE. Antecedents and consequences of negative life events in adulthood: a longitudinal study. *Am J Psychiatry* 153:21-6, 1996
- Dalgard, OS. Living conditions, social network and mental health. In: *Social Support Health and Disease*. Editors: Isacson, S.O. and Janzon, L. pp: 71-87. Stockholm: Almqvist & Wiksell, 1986 (cited in Dalgard et al. 1997)
- Dalgard, OS, Bjork, S, Tambs, K. Social support, negative life events and mental health. *Br J Psychiatry* 166: 29-34, 1995
- Dalgard, OS, Sorensen T, Sandanger I et al. Psychiatric interventions for prevention of mental disorders. A psychosocial perspective. *Int J Technol Assess Health Care* 12: 604-17, 1996
- Dalgard, OS, Tambs, K. Urban environment and mental health. A longitudinal study. *Br J Psychiatry* 171: 530-536, 1997
- Dalgard, OS, Lund Håheim, L. Psychosocial risk factors and mortality: a prospective study with special focus on social support, social participation, and locus of control in Norway. *J Epidemiol Community Health* 52:476-81, 1998

- DeNeve, KM, Cooper, H. The happy personality: a meta-analysis of 137 personality traits and subjective well-being. *Psychol Bull* 124: 197-229, 1998
- Denollet, J. Biobehavioral research on coronary heart disease: Where is the person? *J Behav Med* 16: 115-141, 1993
- Denollet J. Personality and coronary heart disease: The Type-D Scale-16 (DS16). *Ann Behav Med* 20: 209-215, 1998a
- Denollet, J. Personality and the risk of cancer in men with coronary heart disease. *Psychol Med* 28: 991-5, 1998b
- Diener, E. Assessing subjective well-being: progress and opportunities. *Soc Indic Res* 33: 103-157, 1994
- Diener, E, Diener, M, Diener, C. Factors predicting the subjective well-being of nations. *J Pers Soc Psychol* 96: 851-64, 1995
- Dinan, TG. The physical consequences of depressive illness include coronary artery disease and reduced bone mineral density. *BMJ* 318: 826, 1999
- Diverty, B, Beaudet, MP. Depression: An undertreated disorder? *Statistics Canada: Health Reports*, 8: 9-18, 1997
- Dohrenwend, BS, Krasnoff, L, Askenasy, AR et al. Exemplification of a method for scaling life events: The PERI Life Events Scale. *J Health Soc Behavior* 19: 205-229, 1978
- Dohrenwend, B, Shrout, PE, Egri, G et al. Nonspecific psychological distress and other dimensions of psychopathology. *Arch Gen Psychiatry* 37: 1229-1236, 1980
- Dohrenwend, BP. Socioeconomic status (SES) and psychiatric disorders. *Soc Psychiatry Psychiatr Epidemiol* 25: 41-47, 1990
- Dohrenwend, BP, Levav, I, Shrout, PE et al. Socio-economic status and psychiatric disorders: the causation-selection issue. *Science* 946-952, 1992
- Dohrenwend, BP, Schwartz, S. Socioeconomic status and psychiatric disorders. *Curr Opin Psychiatry* 8: 138-141, 1995
- Dooley, D, Catalano, R, Wilson, G. Depression and unemployment: panel findings from the Epidemiologic Catchment Area Study. *Am J Commun Psychol* 22: 745-764, 1994
- Dupuy, HJ. Self-representations of general psychological well-being of American adults. Paper presented at American Public Health Association Meeting, Los Angeles, 1978
- Dyer, JG, McGuinness, TM. Resilience: analysis of the concept. *Arch Psychiatr Nurs* 10: 276-82, 1996
- Eaton, WW, Harrison, G. Epidemiology and social aspects of the human envirome. *Curr Opin Psychiatry* 11: 165-168, 1998
- Ekselius, L, von Knorring, L. Changes in personality traits during treatment with sertraline or citalopram. *Br J Psychiatry* 174: 444-8, 1999
- Elo, A-L. Health and stress of seafarers. *Scand J Work Environ Health* 11: 427-432, 1985
- Farmer, A, Harris, T, Redman, K et al. Cardiff depression study. A sib-pair study of life events and familiarity in major depression. *Br J Psychiatry* 176: 150-155, 2000
- Fischbach, RL, Herbert, B. Domestic violence and mental health: correlates and conundrums within and across cultures. *Soc Sci Med* 45: 1161-1176, 1997

Fichter, MM, Meller, I, Witzke, W et al. Die Oberbayerische Verlaufsuntersuchung: Psychische Erkrankungen in der Bevölkerung. München: Psychiatrische Universitätsklinik München, 1988

Flaherty, JA, Gaviria, FM, Black, EM et al. The role of social support in the functioning of patients with unipolar depression. *Am J Psychiatry* 140: 473-476, 1983

Flannery, RB, Perry, JC, Penk, WE et al. Validating Antonovsky's Sense of Coherence Scale. *J Clin Psychol* 50: 575-7, 1994

Fournier, L, Lemoine, O, Chevalier, S et al. Implementing a direct multi-method strategy for assessing community mental health needs. Abstract 16: Paper presented at the WPA Section Symposium From Epidemiology To Clinical Practice, 1-4 August, Turku, Finland 1999

Frank, E, Anderson, B, Reynolds, CF et al. Life events and the Research Diagnostic Criteria Endogenous Subtype. *Arch Gen Psychiatry* 51: 519-524, 1994

Frankenhoff, C. Antonovsky's sense of coherence concept: an instrument for primary prevention in social work services. *International Social Work* 41: 511-522, 1998

Friedman, HS, Tucker, JS, Tomlinson-Keasey, C et al. Does childhood personality predict longevity? *J Pers Soc Psychol* 65: 176-185, 1993

Frommberger, U, Stieglitz, RD, Straub, S et al. The concept of "sense of coherence" and the development of post-traumatic stress disorder in traffic accident victims. *J Psychosom Res* 46: 343-8, 1999

Fryers, T, Grotorex, I. Case registers and mental health information systems. Pp: 81-98. In: *Measuring mental health needs*. Thornicroft, G., Brewin, C.R., Wing, J.K. (editors). Dorchester, Gaskell 1992.

Fuhrer, R, Dufouil, C, Antonucci, T et al. Psychological disorder and mortality in French older adults: do social relations modify association? *Am J Epidemiol* 149: 116-126, 1999

Garratt, AM, Ruta, DA, Abdalla, MI et al. The SF-36 health survey questionnaire: an outcome measure suitable for routine use within the NHS? *BMJ* 306: 1440-4, 1993

George, VD. African American women's health self-assessment: health status and the sense of coherence. *J Natl Black Nurses Assoc*: 10: 9-23, 1999

Geyer, S. Some conceptual considerations on the sense of coherence. *Soc Sci Med* 44: 1771-9, 1997

Gibson, LM, Cook, MJ. Neuroticism and sense of coherence. *Psychol Rep* 79: 343-9, 1996

Glover GR, Robin E, Emami J et al. A needs index for mental health care. *Soc Psychiatry Psychiatr Epidemiol* 33:89-96, 1998

Glover, GR, Leese, M, McCrone, P. More severe mental illness is more concentrated in deprived areas. *Br J Psychiatry* 175: 544-8, 1999

Goldberg, DP, Hillier, VF. A scaled version of the General Health Questionnaire. *Psychol Med* 9: 139-145, 1979

Goldberg, D, Steele, JJ, Johnson, A et al. Ability of primary care physicians to make accurate ratings of psychiatric symptoms. *Arch Gen Psychiatry* 39: 829-822, 1982

Goldberg, D, Bridges, K, Cook, D. et al. The influence of social factors on common mental disorders. Destabilisation and restitution. *Br J Psychiatry* 156: 704-713, 1990

Goldberg, D, Huxley, P. *Common mental disorders. A bio-social model*. Routledge, London, 1992

Goodyer, IM, Herbert, J, Tamplin, A et al. First-episode major depression in adolescents. Affective, cognitive and endocrine characteristics of risk status and predictors of onset. *Br J Psychiatry* 176: 142,149, 2000

- Gunderson, JG, Phillips, KA. Personality disorders. In: Comprehensive textbook of psychiatry VI, eds. Kaplan HI, Sadock, BJ. Baltimore, Maryland, Williams & Wilkins, 1995
- Häggman-Laitila, A, Pietilä, AM. Life control and health in view of qualitative and quantitative research. *Int J Nurs Pract* 4: 103-112, 1998
- Hagnell, O, Lanke, J, Rorsman, B. Suicide and depression in the male part of the Lundby study. *Neuropsychobiology* 8: 182-7, 1982
- Hale, WD, Fiedler, LR, Cochran, CD. The revised Generalized Expectancy for Success Scale: A validity and reliability study. *J Clin Psychol* 48: 517-521, 1992
- Halpern, D. Mental health and built environment. London: Taylor & Francis, 1995 (cited in Dalgard et al. 1997)
- Hansson, B, Isacson, S-O, Janzon, L et al. Social network and social support influence mortality in elderly men. *Am J Epidemiol* 130: 100-111, 1989
- Hansson, L, Borgquist, L, Nettelbladt, P et al. The course of psychiatric illness in primary care patients. A 1-year follow-up. *Soc Psychiatry Psychiatr Epidemiol* 29: 1-7, 1994
- Hare, EH. Mental illness and social conditions in Bristol. *Journal of Mental Science*, 102: 349-357, 1956 (cited by Wing et al. 1992)
- Harri, M. The sense of coherence among nurse educators in Finland. *Nurse Educ Today* 18: 202-212, 1998.
- Harris, EC, Barraclough, B. Excess mortality of mental disorder. *Br J Psychiatry* 173: 11-53, 1998
- Harrison, J, Barrow, S, Creed, F. Social deprivation and psychiatric admission rates among different diagnostic groups. *Br J Psychiatry* 167: 456-462, 1995
- Harrison, G, Glazebrook, C, Brewin, J et al. Increased incidence of psychotic disorders in migrants from the Caribbean to the United Kingdom. *Psychol Med* 27: 799-806, 1997
- Hart, CL, Smith, GD, Hole, DJ et al. Alcohol consumption and mortality from all causes, coronary heart disease, and stroke: results from a prospective cohort study of Scottish men with 21 years of follow-up. *BMJ* 318: 1725-9, 1998
- Hatcher, S. Debt and deliberate self-poisoning. *Br J Psychiatry* 164: 111-114, 1994
- Helgason, T. Public health implications of increasing use of antidepressants. Abstract 49: Paper presented at the WPA Section Symposium From Epidemiology To Clinical Practice, 1-4 August, Turku, Finland 1999
- Henriksson MM, Aro HM, Marttunen MJ et al. Mental disorders and comorbidity in suicide. *Am J Psychiatry* 150: 935-40, 1993
- Himelein MJ, McElrath JA. Resilient child sexual abuse survivors: cognitive coping and illusion. *Child Abuse Negl* 20:747-58, 1996
- Hintikka, J, Kontula, O, Saarinen, P et al. Debt and suicidal behaviour in the Finnish general population. *Acta Psychiatr Scand* 98: 493-496, 1998
- Hoff, RA, Bruce, ML, von Kasl, S et al. Subjective ratings of emotional health as a risk factor for major depression in a community sample. *Br J Psychiatry* 170: 167-172, 1997
- Holley, HL. Geography and mental health: a review. *Soc Psychiatr Psychiatric Epidemiol* 33: 535-542, 1998
- Holmes, TH, Rahe, RH. The social readjustment scale. *J Psychosom Res* 11: 213-218, 1967
- Honig, A, Pop, P, de Kemp, E et al. Physical illness in chronic psychiatric patients from community psychiatric unit revisited. A three year follow-up study. *Br J Psychiatry* 161: 80-83, 1992

- Horley, J. Life satisfaction, happiness, and morale: two problems with the use of subjective well-being indicators. *Gerontol* 24: 124-127, 1984
- Horwitz, AV, Reinhard, SC. Family and social network supports for the seriously mentally ill: patient perceptions. Pp 205-232. In: *Research in community and mental health*, vol 8. Greenly, J.R. (editor). Greenwich, JAI Press 1994 (cited in Avison 1996)
- House, JS, Robbins, C, Metzner, HL. The association of social relationships and activities with mortality: prospective evidence from Tecumseh community health study. *Am J Epidemiol* 116: 123-140, 1982
- Hourani, LL, Khlal, M. Determinants of perceived mental health status and help-seeking behavior: preliminary testing of a conceptual model. *Soc Sci Med* 22: 1081-86, 1986
- Huxley, P, Mohamad, H, Koror, J et al. Psychiatric morbidity in social workers' clients. A comparison between an inner-city area and a small town. *Soc Psychiatry Psychiatr Epidemiol* 28: 28-31, 1993
- Høyer, EH, Mortensen, PB, Olesen AV. Mortality and causes of death in total national sample of patients with affective disorders admitted for first time between 1973 and 1993. *Br J Psychiatry* 176: 76-82, 2000
- Idler, EL, Angel, RJ. Self-rated health and mortality in the NHANES-I epidemiologic follow-up study. *Am J Public Health* 80: 446-452, 1990
- Isometsä, E, Aro, S, Aro, H. Depression in Finland: a computer assisted telephone interview study. *Acta Psychiatr Scand* 96: 122-128, 1997
- Isometsä, E. Suicide. *Curr Opin Psychiatry* 13: 143-147, 2000
- Iwatsubo, Y, Derriennic, F, Cassou, B et al. Predictors of life satisfaction amongst retired people in Paris. *Int J Epidemiol* 25: 160-170, 1996
- Jagger, C, Ritchie, K, Brønnum-Hansen, H et al. Mental health expectancy – the European perspective: a synopsis of results presented at the conference of the European Network for the Calculation of Health Expectancies (Euro-REVES). *Acta Psychiatr Scand* 98: 85-91, 1998
- Jahoda, M. *Current concepts of positive mental health*. New York, Basic Books, 1958
- Jarman, B. Identification of underprivileged areas. *BMJ* 286: 1705-1709, 1983
- Jarman, B. Underprivileged areas: validation and distribution of scores. *BMJ* 289: 1587-1592, 1984
- Jarman, B, Hirsch, S, White, P et al. Predicting psychiatric admission rates. *BMJ* 304: 1146-1151, 1992
- Jeffreys, SE, Harvey, CA, McNaught, AS et al. The Hampstead schizophrenia survey 1991. I: Prevalence and service use comparisons in an inner London health authority, 1986-1991. *Br J Psychiatry* 170: 307-311, 1997
- Jenkins, R. Health targets. . In: *Measuring mental health needs*. Thornicroft, G., Brewin, C.R., Wing, J.K. (editors). Royal College of Psychiatrists, Gaskell Dorchester, 1992
- Jenkins, R, Lewis, G, Bebbington, P et al. The national psychiatric morbidity surveys of Great Britain – initial findings from the household survey. *Psychol Med* 27: 775-789, 1997
- Jenkins, R, Bebbington, P, Brugha, TS et al. British psychiatry morbidity survey. *Br J Psychiatry* 173: 4-7, 1998
- Jenkinson, C, Coulter, A, Wright, L. Short form 36 (SF-36) health survey questionnaire: normative data for adults of working age. *BMJ* 306: 1437-40, 1993
- Joukamaa, M. Prescription of psychotropic drugs in Finland. Abstract 50: Paper presented at the WPA Section Symposium From Epidemiology To Clinical Practice, 1-4 August, Turku, Finland 1999

- Julkunen, J. Risk and prognosis of coronary heart disease. Kuntoutussäätiö, Helsinki, 1996
- Kagan, J. The Allure of infant determinism. Pp: 83-150. In: Three Seductive ideas, by Kagan, J., Harvard University Press, Cambridge, Massachusettes, 1998
- Kan, CC, Breteler, MHM, Zitman, FG. High prevalence of benzodiazepine dependence in out-patient users, based on the DSM-III-R and ICD-10 criteria. *Acta Psychiatr Scand* 96: 85-93, 1997
- Kandel, E. A new framework for psychiatry. *Am J Psychiatry* 155: 457-469, 1998
- Kaplan, GA, Camacho, T. Perceived health and mortality: a nine-year follow-up of the human population laboratory cohort. *Am J Epidemiol* 117: 292-304, 1983
- Kaplan, GA, Salonen, JT, Cohen, RD et al. Social connections and mortality from all causes and from cardiovascular disease: prospective evidence from Eastern Finland. *Am J Epidemiol* 128: 370-380, 1988
- Kaprio, J, Koskenvuo, M, Langinvainio, H et al. Psychosocial factor and morbidity: hospitalisation and mortality in the Finnish twin cohort. Basic tabulations of a six year follow-up of 31 116 Finnish adults. Department of Public health, University of Helsinki, Helsinki 1987a
- Kaprio, J, Koskenvuo, M, Rita, H. Mortality and bereavement: a prospective study of 95 647 widowed persons. *Am J Public Health* 77: 283-287, 1987b
- Kaprio, J. Genetic Epidemiology. *BMJ* 320: 1257-9, 2000
- Katschnig, H. (On behalf of the working group on mental health) Mental health. Chapter 9, pp. 103-121, In: Priorities for public health action in the European Union. Editors: Weil, O. et al. European Commission, 1999
- Katz, MM, Lyerly, SB. Methods for measuring adjustment and social behavior in the community. I. Rational, description, discriminative validity and scale development. *Psychol Rep* 13: 503-535, 1963
- Katz, SJ, Kessler, RC, Frank, RG et al. The use of outpatient mental health services in the United States and Ontario: the impact of mental morbidity and perceived need for care. *Am J Public Health* 87: 1136-1143, 1997
- Kawachi, I, Kennedy, PB. Health and social cohesion: Why care about income inequality? *BMJ* 314: 1037-40, 1997
- Kendler, KS, Kessler, RC, Walters, EE et al. Stressful life events, genetic liability and onset of an episode of major depression in women. *Am J Psychiatry* 152: 833-42, 1995
- Kendler, KS, Karkowski-Shuman, L. Stressful life events and genetic liability to major depression: genetic control of exposure to the environment? *Psychol Med* 27: 539-547, 1997
- Kendler, KS, Karkowski, LM, Prescott, CA. Causal relationship between stressful life events and the onset of major depression. *Am J Psychiatry* 156: 837-841, 1999
- Kendler, KS, Myers, JM, Neale, MC. A multidimensional twin study of mental health in women. *Am J Psychiatry* 157: 506-13, 2000
- Kessler, RC, McGonagle, K, Zhao, S. et al. Lifetime and 12-month prevalence of DSM-III-R Psychiatric Disorders in the United States. *Arch Gen Psychiatry* 51: 8-19, 1994a
- Kessler, RC, Magee, WJ. The disaggregation of vulnerability to depression as a function of the determinants of onset and recurrence. Pp 239-258. In: Stress and mental health: contemporary issues and prospects for the future. Avison W.R., Gotlib, I.H. (editors). New York, Plenum, 1994b
- Kessler, RC, Kendler, KS, Neale, MC et al. Perceived support and adjustment to stress in a general population sample of female twins. *Psychol Med* 24: 317-334, 1994c

- Kessler, RC. Sociology and psychiatry. Pp: 356-365 In: *Comprehensive textbook of psychiatry VI*, eds. Kaplan HI, Sadock, BJ. Baltimore, Maryland, Williams & Wilkins, 1995
- Kessler, RC, Foster, CL, Saunders, WB et al. Social consequences of psychiatric disorders, I: Educational attainment. *Am J Psychiatry* 152: 1026-1032, 1995
- Kessler, RC, Frank, RG. The impact of psychiatric disorders on work loss days. *Psychol Med* 27: 861-873, 1997
- Kiecolt-Glaser, JK, Fisher, LD, Ogrocki, P et al. Marital quality, marital disruption and, immune function. *Psychosom Med* 49: 13-34, 1987
- Killaspy, H, Banerjee, S, King, M et al. Prospective controlled study of psychiatric out-patient non-attendance. *Br J Psychiatry* 176: 160-165, 2000
- Kivimäki, M, Vahtera, J, Thomson, L et al. Psychosocial factors predicting employee sickness absence during economic decline. *J Appl Psychol* 82: 858-872, 1997
- Kivimäki, M, Kalimo, R, Toppinen, S. Sense of coherence as a modifier of occupational stress exposure, stress perception, and experienced strain: a study of industrial managers. *Psychol Rep* 83: 971-981, 1998
- Klerman, G. Clinical epidemiology of suicide. *J Clin Psychiatry* 48: 99-110, 1987
- Kenkt, P, Raitasalo, R, Heliövaara, M et al. Elevated lung cancer risk among persons with depressed mood. *Am J Epidemiol* 144: 1096-1103, 1996
- Koivumaa-Honkanen, H-T, Viinamäki, H, Honkanen, R et al. Correlates of life satisfaction among psychiatric patients. *Acta Psychiatr Scand* 94: 372-378, 1996
- Koivumaa-Honkanen, H-T. Life satisfaction as a health predictor. (Dissertation) Kuopio University Publications D. Medical sciences 143, Kuopio, 1998
- Kovess, V, Murphy, HB, Tousignant, M. Urban-rural comparisons of depressive disorders in French Canada. *J Nerv Ment Dis* 175: 457-466, 1987
- Kovess, V, Gysens, S, Poinard, R et al. Mental health and use of care in people receiving a French social benefit. *Soc Psychiatry Psychiatr Epidemiol* 34: 588-594, 1999
- Kovess, V, Lazarus, CM. The prevalence of psychiatric disorders and use of care by homeless people in Paris. *Soc Psychiatry Psychiatr Epidemiol* 34: 580-587, 1999
- Lachman, ME, Weaver, SL. The sense of control as a moderator of social class differences in health and well-being. *J Pers Soc Psychol* 74: 763-73, 1998
- Lahtinen, E, Lehtinen, V, Riikonen, E et al. (editors). *Framework for promoting mental health in Europe*. Hamina, EC, Stakes, and the Ministry of Social Affairs and Health, 1999
- Landsverk, SS, Kane, CF. Antonovsky's sense of coherence: theoretical basis of psychoeducation in schizophrenia. *Issues Ment Health Nurs* 19: 419-431, 1998
- Lane, D, Carroll, D, Lip, GY. Psychology in coronary care. *QJM*: 92: 425-31, 1999
- Langbehn, DR, Pfohl, BM, Reynolds, S et al. The Iowa personality disorder screen: development and preliminary validation of a brief screening interview. *Journal of Personality Disorders* 13: 75-89, 1999
- Langford, CP, Bowsher, J, Maloney, JP et al. Social support: a conceptual analysis. *J Adv Nurs* 25: 95-100, 1997
- Lehman, AF, Ward, NC, Linn, LS. Chronic mental patients: the quality of life issue. *Am J Psychiatry* 139: 1271-1276, 1982

- Lehman, AF. The well-being of chronic mental patients. Assessing their quality of life. *Arch Gen Psychiatry* 40: 369-373, 1983
- Lehtinen, V. Assessment as to the need for psychiatric treatment. *Nordisk Psykiatrisk Tidskrift* 39: 463-469, 1985
- Lehtinen V, Joukamaa, M, Lahtela, K et al. Prevalence of mental disorders among adults in Finland; basic results from the Mini Finland Health Survey. *Acta Psychiatr Scand* 81:418-425, 1990
- Lehtinen, V, Lindholm, T, Veijola, J et al. Stability of prevalences of mental disorders in a normal population cohort followed for 16 years. *Soc Psychiatry Psychiatr Epidemiol* 26: 40-46, 1991
- Lehtinen, V. Population needs for mental health services. Introduction to the theme. *Epidemiologia e Psichiatria Sociale* 6 (suppl.1): 3-12, 1997
- Leino-Arjas, P, Liira, J, Mutanen, P et al. Predictors and consequences of unemployment among construction workers: prospective cohort study. *BMJ* 319: 600-605, 1999
- Lenzenweger, MF, Loranger, AW, Korfine, L, et al. Detecting personality disorders in a nonclinical population. *Arch Gen Psychiatry* 54: 345-51, 1997
- Lesage, AD, Clerc, D, Uribí, I et al. Estimating local-area needs for psychiatric care: a case study. *Br J Psychiatry* 169: 49-57, 1996A
- Lesage, AD, Fournier, L, Cyr, M et al. The reliability of the community version of the MRC Needs for Care Assessment. *Psychol Med* 26: 237-243, 1996
- Lester, D. The suicide rate in Finnish prisons: does it conform to sociological theory? *Psychiatria Fennica* 93-6, 1999
- Lewinsohn, PM, Mermelstein, RM, Alexander, C et al. The Unpleasant Events Schedule: A scale for the measurement of aversive events. *J Clin Psychology* 41: 483-498, 1985
- Lewis, G, Bebbington, P, Brugha T et al. Socio-economic status, standard of living and neurotic disorder. *Lancet* 352: 605-9, 1998
- Lewis, G. Population-based needs assessment. *Curr Opin Psychiatry* 12: 191-194, 1999
- Lewis, JM. For better or worse: interpersonal relationship and individual outcome. *Am J Psychiatry* 155: 582-589, 1998
- Lin, E, Goering, PN, Lesage, A et al. Epidemiological assessment of over-met need in mental health care. *Soc Psychiatry Psychiatr Epidemiol* 32: 355-362, 1997
- Linden, M, Lecrubier, Y, Bellantuono, C et al. The prescribing of psychotropic drugs by primary care physicians: an international collaborative study. *J Clin Psychopharmacol* 19: 132-140, 1999
- Link, BG, Lennon, MC, Dohrenwend, BD. Socioeconomic status and depression: the role of occupations involving direction, control, and planning. *Am J Sociol* 98: 1351-1387, 1993
- Lizardi H, Klein DN, Ouimette PC et al. Reports of the childhood home environment in early-onset dysthymia and episodic major depression. *J Abnorm Psychol* 104: 132-9, 1995
- Llewellyn, AM, Stowe, ZN, Nemeroff, CB. Depression during pregnancy and the puerperium. *J Clin Psychiatry* 58 (suppl 15): 26-32, 1997
- Lu, L. The relationship between subjective well-being and psychosocial variables in Taiwan. *J Soc Psychol* 135: 351-357, 1995

- Lundberg, O. Childhood conditions, sense of coherence, social class and adult ill-health: exploring their theoretical and empirical relations. *Soc Sci Med* 44: 821-31, 1997
- Lynch, JW, Kaplan, GA, Salonen, JT. Why do poor people behave poorly? Variation in adult health behaviours and psychosocial characteristics by stages of the socio-economic lifecourse. *Soc Sci Med* 44: 809-819, 1997a
- Lynch, JW, Kaplan, GA, Shema, SJ. Cumulative impact of sustained economic hardship on physical, cognitive, psychological, and social functioning. *NEJM* 337: 1889-1895, 1997b
- Lynch, JW, Davey Smith, G, Kaplan GA et al. Income inequality and mortality: importance to health of individual income, psychosocial environment, or material conditions. *BMJ* 320: 1200-4, 2000
- Lynd-Stevenson, RMK. A test of the hopelessness theory of depression in unemployed young adults. *Br J Clin Psychol* 35: 117-132, 1996
- Mackenbach, JP, Van De Mheen, H, Stronks, K. A prospective cohort study investigating the explanation of socio-economic inequalities in health in the Netherlands. *Soc Sci Med* 38: 299-308, 1994a
- Mackenbach, JP, Van Den Bos, J, Joung, IMA et al. The determinants of excellent health: different from the determinants of ill-health? *Int J Epidemiol* 23: 1273-1281, 1994b
- Madianos M, Vlachonicolis J, Madianou D et al. Prevalence of psychiatric disorders in the Athens area. *Acta Psychiatr Scand* 71:479-487 1985
- Magliano, L, Fadden, G, Madianos, M et al. Burden on the families of patients with schizophrenia: results from the BIOMED I study. *Soc Psychiatry Psychiatr Epidemiol* 33: 405-412, 1998
- Maguire, P, Selby, P. Assessing quality of life in cancer patients. *Br J Cancer* 60: 437-440, 1989
- Malinchoc M, Colligan RC, Offord KP. Assessing explanatory style in teenagers: adolescent norms for the MMPI Optimism-Pessimism Scale. *J Clin Psychol* 52:285-295, 1996
- Manninen, P, Heliövaara, M, Riihimäki, H et al. Does psychological distress predict disability? *Int J Epidemiol* 26: 1063-1070, 1997
- Marteau, TM, Kinmonth, AL, Pyke, S et al. Readiness for lifestyle advice: Self-assessment of coronary risk prior to screening in the British family heart study. Family Heart Study Group. *Br J Gen Pract* 45: 5-8, 1995
- Martikainen, P, Valkonen, T. Excess mortality of unemployed men and women during a period of rapidly increasing unemployment. *Lancet* 348: 909-912, 1996
- Marttunen, M, Aro, H, Henriksson, M et al. mental disorders in adolescent suicide: DSM-III-R axes I and II diagnoses in suicides among 13- to 19-year-olds in Finland. *Arch Gen Psychiatry* 48: 834-839, 1991
- Massé, R, Poulin, C, Dassa, C et al. The structure of mental health: higher-order confirmatory factor analyses of psychological distress and well-being measures. *Soc Indic Res* 45: 475-504, 1998
- Masten, AS, Hubbard, JJ, Gest, SD et al. Competence in the context of adversity: pathways to resilience and maladaptation from childhood to late adolescence. *Dev Psychopathol* 11: 143-69, 1999
- Matthew GK. Measuring need and evaluating services. In McLachlan M (ed) *Portfolio for health, problems and progress in medical care* pp. 27-46. London: Oxford University Press, 1971
- Mazure, CM. Life stressors as risk factors in depression. *Clinical Psychology – Science and Practice* 5: 291-313, 1998.
- Mazure, CM, Bruce, ML, Maciejewski, PK et al. Adverse life events and cognitive-personality characteristics in the prediction of major depression and antidepressant response. *Am J Psychiatry* 157: 896-903, 2000

- McCabe, CJ, Thomas, KJ, Brazier, JE et al. Measuring the Mental Health Status of a Population: a Comparison of the GHQ-12 and the SF-36 (MHI-5). *Br J Psychiatry* 169: 517-521, 1996
- McDowell I, Praught E. On the measurement of happiness: an examination of the Bradburn scale in the Canada Health Survey. *Am J Epidemiol* 116: 949-958, 1982
- McDowell, MI, Newell, C. *Measuring health: A guide to rating scales and questionnaires*. University of Ottawa. Oxford University Press, 1987
- McDowell, I, Newell, C. Psychological well-being, pp177-237 in: *Measuring Health, a guide to rating scales and questionnaires*. Second edition, Oxford, Oxford University Press 1996
- McGuffin, P. Genetics. In: *Prevention in Psychiatry*. Eds Paykel, ES, Jenkins, R. London, Gaskell, 1994.
- McGuire, M, Troisi, A. *Darwinian Psychiatry*. Oxford University Press, Oxford 1998.
- McKenna, SP, Payne, RL. Comparison of the General Health Questionnaire and the Nottingham health profile in a study of unemployed and re-employed men. *Fam Pract* 6: 3-8, 1989
- McKenna, FP, Warburton, DM, Winwood, M. Exploring the limits of optimism: the case of smokers' decision making. *Br J Psychol* 84: 389-394, 1993
- McNaught, AS, Jeffreys, SE, Harvey, CA et al. The Hampstead schizophrenia survey 1991. II: Incidence and migration in inner London. *Br J Psychiatry* 170: 307-311, 1997
- McSherry, WC, Holm, JE. Sense of coherence: its effects on psychological and physiological processes prior to, during and after a stressful situation. *J Clin Psychol* 50: 476-87, 1994
- Mehlum, L. Suicidal ideation and sense of coherence in male conscripts. *Acta Psychiatr Scand* 98: 487-492, 1998
- Meltzer H, Gill B, Petticrew M et al. *The prevalence of psychiatric morbidity among adults living in private households*. London: Office of Population Censuses & Surveys, 1995
- Menaghan, EG. Depressive affect and subsequent divorce. *J Fam Issues* 6: 295-306, 1985
- Miller GH, Dear M, Streiner DL. A model for predicting utilization of psychiatric facilities. *Canad J Psychiatry* 31: 424-430, 1986
- Miller TQ, Smith TW, Turner CW et al. A meta-analytic review of research on hostility and physical health. *Psychol Bull* 119: 322-348, 1996
- Mirsky J, Barasch, M. Adjustment problems among Soviet immigrants at risk, Part 2: Emotional distress among elderly Soviet immigrants during the Gulf War. *Isr J Psychiatry Relat Sci* 30:233-43, 1993
- Monroe, SM, Depue, RA. Life stress and depression. Pp 101-130. In Eds. Becker, J, Kleinman, A. *Psychosocial aspects of depression*. Hillsdale, NJ, Erlbaum, 1991.
- Morrison KA. Personality correlates of the Five-Factor Model for a sample of business owners/managers: associations with scores on Self-Monitoring, Type A Behavior, Locus of Control, and Subjective Well-being. *Psychol Rep* 80: 255-72, 1997
- Mortensen, PB. Prevalence of disorders and epidemiological methods. *Curr Opin Psychiatry* 11: 169-173, 1998
- Mossey, JM, Shapiro, E. Self-rated health: a predictor of mortality among the elderly. *Am J Public Health* 72: 800-808, 1982
- Motzer, SU, Stewart, BJ. Sense of coherence as predictor of quality of life in persons with coronary heart disease surviving cardiac arrest. *Res Nurs Health* 19: 287-298, 1996

- Mroczek, DK, Spiro, A, Aldwin, CM et al. Construct validation of optimism and pessimism in older men: findings from the normative aging study. *Health Psychology* 12: 406-409, 1993
- Murray, CJL, Lopez, AD. The global burden of disease. A comprehensive assessment of mortality and disability from disease, injuries and risk factors in 1990 and projected to 2020. Cambridge, MA: Harvard University Press, 1996
- Mäkikyrö, T, Karvonen, JT, Hakko, H et al. Comorbidity of hospital-treated psychiatric and physical disorders with special reference to schizophrenia: a 28 year follow-up of the 1966 Northern Finland general population birth cohort. *Public Health* 112: 221-8, 1998
- Neeleman, J, Ormel, J, Bijl, R. The distribution of psychiatric and somatic ill-health associations with personality and socio-economic status (unpublished manuscript, to be finalised)
- Neufeld, K, Mohan, D. Disability, quality of life, burden of care and stigma in mental disorders. *Curr Opin Psychiatry* 13: 195-9, 2000
- Nunn KP. Personal hopefulness: a conceptual review of the relevance of the perceived future to psychiatry. *Br J Med Psychol* 69: 227-45, 1996
- Nunn, KP, Lewin, TJ, Walton, JM et al. The construction and characteristics of an instrument to measure personal hopefulness. *Psychol Med* 26: 531-545, 1996
- Okun, MA, Stock, WA. Correlates and components of subjective well-being among the elderly. *J Appl Gerontol* 6: 95-112, 1987
- Olfson, M, Guardino, M, Struening, E et al. Barriers to the treatment of social anxiety. *Am J Psychiatry* 157: 521-7, 2000
- Orley, J, Saxena, S, Herrman, H. Quality of life and mental illness. *Br J Psychiatry* 172: 291-293, 1998
- Ormel, J, Kempen, GI, Penninx BW et al. Chronic medical conditions and mental health in older people: disability and psychosocial resources mediate specific mental health effects. *Psychol Med* 27: 1065-77, 1997
- Paykel, ES, Prusoff, BA, Uhlenhuth, EH. Scaling of life events. *Arch Gen Psychiatry* 25: 343-347, 1971
- Paykel, ES. Contribution of life events to causation of psychiatric illness. *Psychol Med* 8: 245-253, 1978
- Paykel, ES, Emms, EM, Fletcher, J et al. Life events and social support in puerperal depression. *Br J Psych* 136: 339-346, 1980
- Paykel ES. Methodological aspects of life events research. *J Psychosom Res* 27: 341-352, 1983
- Paykel, ES, Cooper, Z. Life events and social stress. Pp 149-170, In Paykel, ES (Ed), *Handbook of affective disorders*, New York, Guilford Press, 1992
- Pearlin, LI, Lieberman, M, Menaghan, E et al. The stress process. *J Health Soc Behav* 22: 337-56, 1981
- Petrie, K, Brook, R. Sense of coherence, self esteem, depression and hopelessness as correlates of reattempting suicide. *Br J Clin Psychol* 31: 293-300, 1992
- Phelan, M, Slade, M, Dunn, G et al. *Camberwell Assessment of Need. Research version R 3.0*. London: Institute of Psychiatry, 1994a
- Phelan, M, Thornicroft, G. Community treatment of schizophrenia. *Schizophr Monitor* 4:1-4, 1994b
- Phillips, DP, Ruth, TE, Wagner, LM. Psychology and survival. *Lancet* 342: 1142-1145, 1993
- Pill, R, Stott, NCH. Development of a measure of potential health behaviour: a salience of lifestyle index. *Soc Sci Med* 24: 125-134, 1987

- Pincus, HA, Davis, WW, McQueen, LE. "Subthreshold" mental disorders. *Br J Psychiatry* 174: 288-96, 1999
- Powell, J, Geddes, J, Deeks, J et al. Suicide in psychiatric inpatients. *Br J Psychiatry* 176: 266-272, 2000
- Power, KG, Cooke, DJ, Brooks, DN. Life stress, medical lethality, and suicidal intent. *Br J Psychiatry* 147: 655-659, 1985
- Prescott, CA, Neale, MC, Corey, LA et al. Predictors of problem drinking and alcohol dependence in a population-based sample of female twins. *J Stud Alcohol* 58: 167-181, 1997
- Pulska, T, Pahkala, K, Laippala, P et al. Follow up study of longstanding depression as predictor of mortality in elderly people living in the community. *BMJ* 318: 432-433, 1999
- Putnam, RD. Bowling alone: America's declining social capital. *Journal of Democracy* 6: 65-78, 1995
- Rabkin, JG. Stress and psychiatric disorders. Pp 477-495. In: Eds. Goldberger, L, Breznitz, S. *Handbook of stress: Theoretical and clinical aspects*, 2nd edition. New York, Free Press, 1993
- Rappaport, J. Terms of empowerment/exemplars of prevention: towards a theory for community psychology. *Am J Comm Psychol* 15: 121-142, 1987 (cited in Rogers et al. 1997)
- Regier, DA, Boyd, JH, Burke, JD et al. One-month prevalence of mental disorders in the United States. *Arch Gen Psychiatry* 45:977-986, 1988
- Regier, DA, Kaelber, CT, Rae, DS et al. Limitations of diagnostic criteria and assessment instruments for mental disorders. Implications for research and policy. *Arch Gen Psychiatry* 55: 109-115, 1998
- Regier, DA, Narrow, WE, Rae, DS. Components of a clinically sensitive epidemiology: Population risk-adjustment for mental health service planning. Abstract 14: Paper presented at the WPA Section Symposium From Epidemiology To Clinical Practice, 1-4 August, Turku, Finland 1999
- Rena, F, Moshe, S, Abraham, O. Couples' adjustment to one partner's disability: the relationship between sense of coherence and adjustment. *Soc Sci Med* 43:163-71, 1996
- Richman, JA, Flaherty, JA. Childhood relationships, adult coping resources and depression. *Soc Sci Med* 23: 709-716, 1986
- Rimm, EB, Williams, P, Fosher, K. Moderate alcohol intake and lower risk of coronary heart disease: meta-analysis of effects on lipids and haemostatic factors. *BMJ* 319: 1523-1528, 1999
- Robbins, AS, Spence, JT, Clark, H. Psychological determinants of health and performance: the tangled web of desirable and undesirable characteristics. *J Pers Soc Psychol* 61: 755-65, 1991
- Robins, E, Murphy, GE, Wilkinson, RH et al. Some clinical considerations in the prevention of suicide based on a study of 134 successful suicides. *Am J Public Health* 49: 888-899, 1959
- Robins, LN, Helzer, JE, Weissman, MM et al. Lifetime prevalence of specific psychiatric disorders in three sites. *Arch Gen Psychiatry* 41:949-958, 1984
- Rogers, ES, Chamberlin, J, Ellison, ML et al. A consumer-constructed scale to measure empowerment among users of mental health services. *Psychiatr Serv* 48: 1042-1047, 1997
- Romanov, K, Hatakka, M, Keskinen, E et al. Self-reported hostility and suicidal acts, accidents, and accidental deaths: a prospective study of 21 443 adults aged 25 to 59. *Psychosom Med* 56: 328-336, 1994
- Romelsjö, A, Leifman, A. Association between alcohol consumption and mortality, myocardial infarction, and stroke in 25 year follow-up of 49 618 young Swedish men. *BMJ* 319: 821-822, 1999

- Ross, NA, Wolfson, MC, Dunn, JR et al. Relation between income inequality and mortality in Canada and in the United States: cross sectional assessment using census data and vital statistics. *BMJ* 320: 898-902, 2000
- Rotter, JB. Generalized expectancies for internal versus external control of reinforcement. *Psychol Monogr* 609: 1-28, 1966
- Ruggeri, M, Tansella, M. Evaluating outcome in mental health care. *Curr Opin Psychiatry* 8: 116-121, 1995
- Russo, J, Trujillo, CA, Wingerson, D et al. The MOS 36-Item Short Form Health Survey: reliability, validity, and preliminary findings in schizophrenic outpatients. *Med Care* 36: 752-756, 1998
- Rutledge, T, Linden, W, Davies, RF. Psychological risk factors may moderate pharmacological treatment effects among ischemic heart disease patients. *Psychosomatic Medicine* 61: 834-841, 1999
- Rutter, M. Resilience in the face of adversity. Protective factors and resistance to psychiatric disorder. *Br J Psychiatry* 147: 598-611, 1985
- Rutter, M. Psychosocial adversity and child psychopathology. *Br J Psychiatry* 174: 480-493, 1999
- Sainfort, F, Becker, M, Diamond, R. Judgements of quality of life of individuals with severe mental disorders: patients self-report versus provider perspectives. *Am J Psychiatry* 153: 497-502, 1996
- Salize, HJ, Küstner, BM, Torres-Gonzalez, F et al. Needs for care and effectiveness of mental health care provision for schizophrenic patients in two European regions: a comparison between Granada (Spain) and Mannheim (Germany). *Acta Psychiatr Scand* 100: 1-7, 1999
- Sammallahti, PR, Holi, MJ, Komulainen EJ et al. Comparing two self-report measures of coping--the Sense of Coherence Scale and the Defense Style Questionnaire *J Clin Psychol* 52: 517-24, 1996
- Sampson, RJ, Raudenbush, SW, Earls, F. Neighborhoods and violent crime: a multilevel study of collective efficacy. *Science* 277: 918-924, 1997
- Sandanger, I, Moum, T, Ingebrigtsen, G et al. The meaning and significance of caseness: the Hopkins Symptom Checklist-25 and the Composite International Diagnostic Interview. II. *Soc Psychiatry Psychiatr Epidemiol* 34: 53-59, 1999
- Sarafino, EP. Chapter 4: Stress, biopsychosocial factors and illness. Pp: 101-136. In: *Health Psychology – Biopsychosocial interactions*. Author: Sarafino, EP. New York, John Wiley Sons, 1994a
- Sarafino, EP. Chapter 3: Stress, illness and coping. Pp: 71-100. In: *Health Psychology – Biopsychosocial interactions*. Author: Sarafino, EP. New York, John Wiley Sons, 1994b
- Sarafino, EP. Chapter 5: Coping with and reducing stress. Pp: 137-151. In: *Health Psychology – Biopsychosocial interactions*. Author: Sarafino, EP. New York, John Wiley Sons, 1994c
- Sarason, IG, Johnson, JH, Siegel, JM. Assessing the impact of life changes: development of the Life Experiences Survey. *J Cons Clin Psychology* 46: 932-946, 1978.
- Sarason, IG, Levine, HM, Basham, RB et al. Assessing social support: the Social Support Questionnaire. *J Pers Soc Psychol* 44: 127-139, 1983
- Sarason, IG, Sarason, BR, Shearin, EN et al. A brief measure of social support: practical and theoretical implications. *J Soc Personal Relations* 4: 497-510, 1987
- Scheidt, CE, Waller, E, Malchow, H et al. Attachment representation and cortisol response to the adult attachment interview in idiopathic spasmodic torticollis. *Psychother Psychosom* 69: 155-162, 2000
- Scheier, MF, Carver, CS. Optimism, coping, and health: Assessment and implications of generalized outcome expectancies. *Health Psychology* 4: 219-247, 1985

- Scheier, MF, Weintraub, JK, Carver, CS. Coping with stress: divergent strategies of optimists and pessimists. *J Pers Soc Psychol* 51: 1257-1264, 1986
- Scheier, MF, Matthews, KA, Owens, JF et al. Dispositional optimism and recovery from coronary artery bypass surgery: the beneficial effects on physical and psychological well-being. *J Pers Soc Psychol* 57: 1024-1040, 1989
- Scheier, MF, Carver, CS. Effects of optimism on psychological and physical well-being: Theoretical overview and empirical update. *Cognitive Therapy & Research* 16 : 201-228, 1992
- Scheier, MF, Carver, CS, Bridges MW. Distinguishing optimism from neuroticisms (and trait anxiety, self-mastery, and self-esteem): A reevaluation of the Life Orientation Test. *J Pers Soc Psychol* 67: 1063-1078, 1994
- Scheier, MF, Bridges, MW. Person variables and health: personality predispositions and acute psychological states as shared determinants for disease. *Psychosom Med* 57: 255-268, 1995
- Schreurs, KM, de Ridder, DT. Integration of coping and social support perspectives: implications for the study of adaptation to chronic diseases. *Clin Psychol Rev* 17: 89-112, 1997
- Schnyder, U, Buchi, S, Morgeli, H et al. Sense of coherence – a mediator between disability and handicap? *Psychoter Psychosom* 68: 102-110, 1999
- Schwartz, S, Anderson, WM, Cole, SR et al. Insomnia and heart disease: A review of epidemiologic studies. *Journal of Psychosomatic Research, Special Issue: Sleep and Fatigue* 47: 313-333, 1999
- Scourfield, J, Martin, N, Lewis, G et al. Heritability of social cognitive skills in children and adolescents. *Br J Psychiatry* 175: 559-64, 1999
- Shapiro, S, Skinner, EA, Kessler, LG et al. Utilization of health and mental health services. Three Epidemiologic Catchment Area sites. *Arch Gen Psychiatry* 41: 971-8, 1984
- Sheffield, D, Krittayaphong, R, Cascio, WE et al. Heart rate variability at rest and during mental stress in patients with coronary artery disease: Differences in patients with high and low depression scores. *Int J Behav Med* 5: 31-47, 1998
- Shekelle, RB, Raynor, WJ, Ostfeld, AM et al. Psychological depression and 17-year risk of death from cancer. *Psychosom Med* 43: 117-125, 1981
- Shrout, PE, Link, BG, Dohrenwend, BP et al. Characterizing life events as risk factors for depression: The role of fateful loss events. *J Abnorm Psychol* 95: 460-7, 1989
- Singer, E, Garfinkel, R, Cohen, SM. et al. Mortality and mental health: evidence from the Midtown Manhattan restudy. *Soc Sci Med* 10: 517-525, 1976
- Segal, S, Silverman, C, Temkin, T. Measuring empowerment in client-run self-help agencies. *Comm Men Health J* 31: 215-227, 1995
- Seeman, TE, Kaplan, GA, Knudsen, L et al. Social network ties and mortality among the elderly in the Alameda county study. *Am J Epidemiol* 126: 714-723, 1987
- Slade, M. Needs assessment. Involvement of staff and users will help to meet needs. *Br J Psychiatry* 165: 293-296, 1994
- Slade, M, Thornicroft, G. Health and social needs of the long-term mentally ill. *Curr Opin Psychiatry* 8: 126-9, 1995
- Smith, P, Sheldon, TA, Martin, S. An index of need for psychiatric services based on inpatient utilisation. *Br J Psychiatry* 169: 308-316, 1996

- Smith, J, Birchwood, M, Cochrane, R et al. The needs of high and low expressed emotion families: a normative approach. *Soc Psychiatry Psychiatr Epidemiol* 28: 11-6, 1993
- Smith, GD, Egger, M. Changes in population distribution of sense of coherence do not explain changes in overall mortality. *BMJ* 315: 490, 1997
- Sloan, RP, Shapiro, PA, Bagiella, E et al. Cardiac autonomic control buffers blood pressure variability responses to challenge: A psychophysiological model of coronary artery disease. *Psychosom Med* 61: 58-68, 1999
- Sohlman, B, Lehtinen, V. Mortality among discharged psychiatric patients in Finland. *Acta Psychiatr Scand* 99: 102-109, 1999
- Solantaus, J. Uudenmaan sairaanhoitopiirin toiminnan kehittäminen 1990-luvulla. Uudenmaan sairaanhoitopiiri, Espoo, 1993 (in Finnish, cited in Lehtinen 1997)
- Somers, AR. Marital status, health, and use of health services. *JAMA* 241: 1818-1822, 1979
- Sommerville, PD, Kaplan, BH, Heiss, G et al. psychological distress as a predictor of mortality. *Am J Epidemiol* 130: 1013-23, 1989
- Sperber, AD, Carmel, S, Atzmon, Y et al. The sense of coherence index and the irritable bowel syndrome. A cross-sectional comparison among irritable bowel syndrome patients with and without coexisting fibromyalgia, irritable bowel syndrome non-patients and controls. *Scand J Gastroenterol* 34: 259-63, 1999
- Spitzer, RL, Wakefield, JC. DSM-IV Diagnostic criterion for clinical significance: does it help solve the false positives problem? *Am J Psychiatry* 156: 1856-1864, 1999
- Stansfeld, SA, Fuhrer, R, Shipley MJ. Types of social support as predictors of psychiatric morbidity in a cohort of British Civil Servants (Whitehall II Study). *Psychol Med* 28: 881-92, 1998
- Steinhausen, H-C, Metzke, CW, Meier, M et al. prevalence of child and adolescent psychiatric disorders: the Zürich epidemiological study. *Acta Psychiatr Scand* 98: 262-271, 1998
- Stern D. The interpersonal world of the infant. New York: Basic Books, 1985
- Stevens, A, Raftery, J. Introduction. In: Health care needs assessment, the epidemiologically based needs assessment reviews. Vol. 1. Stevens, A., Raftery, J. (editors). Oxford: Radcliffe Medical Press, 1994
- Strumpfer, DJW, Viviers, MR. Antonovsky's sense of coherence scale related to negative and positive affectivity. *European Journal of Personality* 12: 457-480, 1998
- Studnicka, M, Studnicka-Benke, A, Wögerbauer, G et al. Psychological health, self-reported physical health and health service use. *Soc Psychiatry Psychiatr Epidemiol* 26: 86-91, 1991
- Suominen, S. Perceived health and life control. A theoretical review and empirical study about the connections between health and life control determined according to the strength of sense of coherence. National Research and Development Centre for Welfare and Health. Research reports 26. Åbo Akademi University. University of Turku. Gummerus, Jyväskylä, Finland, 1993.
- Surtees, PG, Wainwright, NW. Surviving adversity: event decay, vulnerability and the onset of anxiety and depressive disorder. *Eur Arch Psychiatry Clin Neurosci*: 249: 86-95, 1999
- Susser, M, Susser, E. Choosing a future for epidemiology. *Am J Public Health* 86: 668-677, 1996
- Söderqvist, S, Bäckman, G. Life control and perceived health. *Meddelanden från ekonomisk-statsvetenskapliga fakulteten vid Åbo Akademi. Ser A. Åbo* 1988: 262
- Takeuchi, D, Chung, RC, Lin, K et al. Lifetime and twelve-month prevalence rates of major depressive episodes and dysthymia among Chinese Americans in Los Angeles. *Am J Psychiatry* 155: 1407-14, 1998

- Tennant, C, Bebbington, P. The social causation of depression: a critique of the work of Brown and his colleagues. *Psychol Med* 8: 565-75, 1978
- Thoits, PA Stress, coping, and social support processes: where are we? What next? *J Health Soc Behav Spec No*: 53-79, 1995
- Thornicroft, G. Social deprivation and rates of treated mental disorder. Developing statistical models to predict psychiatric service utilisation. *Br J Psychiatry* 158: 475-84, 1991
- Thorson, JA, Powell, FC, Sarmany-Schuller, I et al. Psychological health and sense of humor. *J Clin Psychol* 53: 605-19, 1997
- Tienari, P. Interaction between genetic vulnerability and rearing environment. In Werbart, A, Culberg, J (Eds), *Psychotherapy of schizophrenia: Facilitating and obstructive factors*. Scandinavian University Press, Oslo, 1992
- Trull, TJ. Dimensional models of personality disorders. *Curr Opin Psychiatry* 13: 179-84, 2000
- Tsuang, MT. Genes, environment and mental health wellness. *Am J Psychiatry* 157: 489-91, 2000
- Turner, RJ, Marino, F. Social support and social structure: a descriptive epidemiology. *J Health Soc Behav* 35: 193-212, 1994
- Tyrer, P, Steinberg, D. *Models for mental disorder. Conceptual models in psychiatry*. Third Edition. London, John Wiley & Sons, 1998
- Ustun, TB, Rehm, J, Chatterji, S et al. Multiple-informant ranking of the disabling effects of different health conditions in 14 countries. *Lancet* 354: 111-115, 1999
- Vaillant, G.E *Wisdom of the ego*. Cambridge, MA, Harvard University Press, 1993
- Vaillant, GE. Natural history of male psychological health, XIV: relationship of mood disorder vulnerability to physical health. *Am J Psychiatry* 155: 184-191, 1998
- Valkonen T Problems in the measurement and international comparisons of socio-economic differences in mortality. *Soc Sci Med* 36:409-18, 1993
- Valkonen T, Sihvonen AP, Lahelma E. Health expectancy by level of education in Finland. *Soc Sci Med* 44:801-8, 1997
- Van Elderen, T, Maes, S, Dusseldorp, E. Coping with coronary heart disease: A longitudinal study. *J Psychosom Res* 47: 175-183, 1999
- Van Haaster, I, Lesage, A, Cyr, M et al. Problems and needs for care of patients suffering from severe mental illness. *Soc Psychiatry Psychiatr Epidemiol* 29: 141-148, 1994a
- Van Haaster, I, Lesgae, AD, Cyr, M et al. Further reliability and validity studies of procedure to assess the needs for care of the chronically mentally ill. *Psychol Med* 24: 215-222, 1994b
- Van Os, J, Jones, P, Sham, P et al. Risk factors for onset and persistence of psychosis. *Soc Psychiatry Psychiatr Epidemiol* 33: 596-605, 1998
- Van Os, J, Driessen, G, Gunther, N, Delespaul, P. neighbourhood variation in incidence of schizophrenia. Evidence for person-environment interaction. *Br J Psychiatry* 176: 243-48, 2000
- Vassend, O. Dimensions of negative affectivity, self-reported somatic symptoms, and health-related behaviors. *Soc Sci Med* 28: 29-36, 1989
- Vázquez-Barquero, JL, Díez-Manrique, JF, Peña, C et al. A community mental health survey in Cantabria: a general description of morbidity. *Psychol Med* 17: 227-241, 1987

- Veenhoven, R. Conditions of happiness. Pp 1-38, Boston, Reidel Publishing Company, 1984
- Viinamäki, H, Koskela, K, Niskanen, L et al. Unemployment and mental well-being: a factory closure study in Finland. *Acta Psychiatr Scand* 88: 429-433, 1993.-311, 1991
- Viinamäki, H, Koskela, K, Niskanen, L. The impact of unemployment on psychosomatic symptoms and mental well-being. *Int J Soc Psychiatry* 39: 266-273, 1993
- Viinamäki, H, Kontula, O, Niskanen, L et al. The association between economic and social factors and mental health in Finland. *Acta Psychiatr Scand* 92: 208-213, 1995
- Veenhoven, R. Is happiness a trait? Tests of the theory that a better society does not make people any happier. *Soc Indicat Res* 32: 101-160, 1994
- Veijola, J, Puukka, P, Lehtinen, V et al. Sex differences in the association between childhood experiences and depression. *Psychol Med* 28: 21-27, 1991
- Voruganti, L, Hesslegarve, R, Awad, AG et al. Quality of life measurement in schizophrenia – Reconciling the quest for subjectivity with the question of reliability. *Psychol Med* 28: 165-72, 1998
- Waddington, JL, Youssef, HA, Kinsella, A. Mortality in schizophrenia. Antipsychotic polypharmacy and absence of adjunctive anticholinergics over the course of a 10-year prospective study. *Br J Psychiatry* 173: 325-329, 1998
- Wallston, KA, Wallston, BS, DeVellis, R. Development of the multidimensional health locus of control (MHCL) scales. *Health Education Monographs* 6: 161-170, 1978
- Wallston, KA. Perceived control and health behaviour. Pp: 151-154. In: *Cambridge Handbook of Psychology, Health and Medicine*. Eds. Baum, A., Newmna, S, Weinman, J. et al. Cambridge, Cambridge University Press, 1997
- Walsh, F. The Concept of Family Resilience: Crisis and Challenge. *Fam Process* 35: 261-281, 1996
- Wanberg, CR. Antecedents and outcomes of coping behaviors among unemployed and reemployed individuals. *J Appl Psychol* 82: 731-44, 1997
- Ware, JE, Sherbourne, CD. The MOS 36-item Short-Form Health Survey (SF-36). I. Conceptual framework and item selection. *Med Care* 30: 473-483, 1992
- Weich, S, Lewis, G. Poverty, unemployment, and common mental disorders: population based cohort study. *BMJ* 317: 115-119, 1998
- Weissman, MM, Paykel, ES. *The Depressed Woman: a study of social relationships*, Chicago, IL, University of Chicago Press, 1974
- Weissman, MM, Bothwell, S. Assessment of social adjustment by patient self-report. *Arch Gen Psychiatry* 33: 1111-1115, 1976
- Welin, L, Svärdsudd, K, Ander-Peciva, S et al. Prospective study of social influences on mortality. *Lancet* 915-18, 1985
- Wellner, AS, Adox, D. Happy Days. *Psychology Today* 32 (3): 32-7, 2000
- Wells, KB, Burnam, MA, Rogers, W et al. The course of depression in adult outpatients. Results from the medical outcomes study. *Arch Gen Psychiatry* 49: 788-794, 1992
- Weyerer, S, Dilling H. Prävalenz und Behandlung psychischer Erkrankungen in der Allgemeinbevölkerung. Ergebnisse einer Feldstudie in drei Gemeinden Oberbayerns. *Nervenarzt* 55:30-42, 1984

- Weyerer, S, Dilling, H. Psychiatric and physical illness, sociodemographic characteristics, and the use of psychotropic drugs in the community: results from the Upper Bavarian field study. *J Clin Epidemiol* 44: 303, 1991
- Weyerer, S. Economic factors and the rates of suicide in Germany between 1881 and 1989. *Psychol Rep* 76: 1331-41, 1995
- WHO. World Health Organisation Constitution. *WHO Chronicle* 1: 29, 1947
- WHO. Prevention of Suicides. *Public Health Papers* 35. WHO, Geneva, 1968
- WHO. World Health Organisation. International Classification of Impairments, Disabilities and Handicaps. WHO, Geneva, 1980
- WHO. ICD-10, The ICD-10 Classification of mental and behavioural disorders. Clinical descriptions and diagnostic guidelines, World Health Organisation, Geneva, 1992
- WHO. Health for All. List of Statistical Indicators. Copenhagen: Regional Office for Europe. World Health Organization, 1996
- Wiersma D, Nienhuis FJ, Giel R et al. Stability and change in needs of patients with schizophrenic disorders: a 15-and 17-year follow-up from first onset of psychosis, and a comparison between 'objective' and 'subjective' assessments of needs for care. *Soc Psychiatry Psychiatr Epidemiol.* 33:49-56, 1998
- Wilkins, K, Beaudet, MP. Work stress and health. *Statistics Canada: Health reports* 10: 47-62, 1998
- Wills, TA. Social support and health. Pp: 168-171. In: *Cambridge Handbook of Psychology, Health and Medicine*. Eds. Baum, A., Newmna, S, Weinman, J. et al. Cambridge, Cambridge University Press, 1997
- Wilson, KCM, Chen, R, Taylor, S et al. Socio-economic deprivation and the prevalence and prediction of depression in older community residents. *Br J Psychiatry* 176: 549-53, 1999
- Winefield, HR. Reliability and validity of the health locus of control scale. *J Pers Assess* 46: 614-9, 1982
- Wing, JK. Meeting the needs of people with psychiatric disorders. *Soc Psychiatry Psychiatr Epidemiol* 25: 2-8, 1990
- Wing, JK, Brewin, CR, Thornicroft, G. Defining mental health needs. . In: *Measuring mental health needs*. Thornicroft, G., Brewin, C.R., Wing, J.K. (editors). Dorchester, Gaskell, 1992
- Wittchen, H-U, Höfler, M, Grander, F et al. Screening for mental disorders: performance of the Composite International Diagnostic Screener (CID-S). *International Journal of Methods in Psychiatric Research* 8: 59-70, 2000
- Wulsin, LR, Vaillant, GE, Wells, VE. A systematic review of the mortality of depression. *Psychosom Med* 61: 6-17, 1999
- Yardley, JK, Rice, RW. The relationship between mood and subjective well-being. *Soc Indicat Res* 24: 101-111, 1991
- Ying, YW, Akutsu, PD, Zhang, X et al. Psychosocial dysfunction in Southeast Asian refugees as mediated by sense of coherence. *Am J Psychol* 25: 839-859, 1997
- Young, TK. *Population health. Concepts and methods*. New York, Oxford University Press, 1998
- Ystgaard, M, Tambs, K, Dalgard, OS. Life stress, social support and psychological distress in late adolescence: a longitudinal study. *Soc Psychiatry Psychiatr Epidemiol* 34:12-9, 1999
- Zeanah, C, Boris, NW, Larrieu, JA Infant development and developmental risk. *J Am Acad Child Adol Psychiatry* 36: 165-178, 1997

Zissi, A, Barry, MM, Cochrane, R. A mediational model of quality of life for individuals with severe mental health problems. *Psychol Med* 28: 1221-1230, 1998

Zlotnick, C, Shea, MT, Pilkonis PA et al. Gender, type of treatment, dysfunctional attitudes, social support, life events, and depressive symptoms over naturalistic follow-up. *Am J Psychiatry* 153: 1021-7, 1996

Zonderman, AB, Costa, PT, McCrae, RR. Depression as a risk for cancer morbidity and mortality in a nationally representative sample. *JAMA* 262: 1191-1195, 1989

Appendix 1. Scales assessing needs

Measurement	Assessment by
Need for Care Assessment (NFCAS) (Brewin et al. 1987)	Expert
Need for Care Assessment – Community Version (NFCAS-C) (Bebbington et al. 1996)	Expert
Camberwell Assessment of Needs (CAN) (Phelan et al. 1994b)	Patient and staff

Appendix 2: Index of needs models

Model by (author)	Indicators	Data combined from
Jarman UPA score (1983, 1984)	Elderly living alone, children under 5, lone parent families, unskilled workers, unemployment (as % of economically active), overcrowded households, changed address in past year, people in certain ethnic groups	Survey of one in ten GPs in the UK
Jarman model to predict admissions to psychiatric hospitals (1992). Standardised admission rates based on district population size and national overall rate (six most important)	Percentages of: single-person households; people over 65 living alone; population single widowed or divorced; households without car; average illegitimacy index; residential private households without car	Service use data, district and national census data
Jarman model to predict admissions to psychiatric hospitals (1992). Standardised admission rates based on district age, sex, marital status composition (six most important)	SMR for ages under 65; SMR for ages under 75; % of people over 65 living alone; SMR bronchitis, emphysema and asthma; illegitimacy index.	Service use data, district and national census data
Smith et al. 1996	Proportion of households headed by a lone parent; proportion of dependants with no carer; proportion of persons born in New Commonwealth; proportion of pensionable age living alone; SMR for ages 0-74; proportion of adults permanently sick	Service use data and census data
Lesage et al. 1996	Variables related to poverty, unemployment, occupational skills, social isolation and ethnic background	Epidemiological survey, service use data and census data
Thornicroft 1991	Overcrowding of household	Service use data and census data

	(>1.5 persons per room); lack of household amenities; living in one room; change of address in past year; overcrowding (>1 person per room); population density; ethnic composition; no access to a car and being a lone parent	data
Solantaus 1993 (cited in Lehtinen 1997)	Demographic: percentage of population over 65 yrs and over 75, percentage of population under 18, population change, percentage of employed population; Social problems: age standardised loneliness, unemployment, living standard (income structure, social benefits, lone parent households); Health: age-standardised mortality, disability pensions, subsidised medications, sickness compensations; Social stress: suicides, mortality due to alcohol use, violent criminality, children taken into custody	Local authorities in Finland
Wilson et al. 1999 (Townsend index 1988)	Car ownership; home ownership; unemployment; overcrowding	Aggregated data with postal districts
Glover et al. 1997 & 1998: MINI	Single, widowed or divorced; no car; permanently sick; unemployed; household not self-contained; hostel, lodging houses etc	Service use data and census data

Appendix 3: Scales measuring “Social support” or “social health”

Measurement	Number of items	Administered by
Social Support Questionnaire (Sarason et al. 1983)	27	Self
Brief Social Support Questionnaire (Sarason et al. 1987)	6	Self
Oslo 3-items social support scale	3	Self/Interview
Katz Adjustment scale (Katz 1963)	205	Self
Social Adjustment Scale – self-report, (Weissman 1976)	42	Self
Interview Schedule for Social Interaction (Henderson et al. 1980)	52	Interview
Social Relationship Scale (McFarlane 1981)	6	Self/interview
Rand Social Health Battery (Rand 1978)	11	Self
Medical Outcomes Study Social Support Survey (Sherbourne 1991)	20	Self
Duke-UNC Functional Social Support Questionnaire (Parkerson 1989)	8	Self
Duke Social Support and Stress Scale (Parkerson 1989)	24	Self
Social Functioning Scale (Tyrer 1979)	121	Interview
Social Maladjustment Scale (Clare 1978)	42	Interview
Social Dysfunction Scale (Linn 1969)	21	Interview
Structured & Scaled Interview to Assess Maladjustment (Gurland 1972)	60	Interview

Appendix 4. Scales measuring life events

Measurement	Number of items	Manner of administration
Social Readjustment Scale (SRRS) (Holmes et al. 1967)	43	Self-rating scale
The Life Experiences Survey (LES) (Sarason et al. 1978)	57	Self-rating scale
The PERI Life Events Scale (Dohrenwend et al. 1978)	102	Self-rating scale
The Unpleasant Events Schedule (UES) (Lewinsohn et al. 1985)	320 (Short version with 53 items)	Self-rating scale
List of Threatening Events (LTE) (Brugha et al. 1985)	12	Self-rating scale
Bedford College Life Events and Difficulties Schedule (LEDS) (Brown et al. 1978)	10 domains of life; manual with >2000 life events	Semi-structured interview

Appendix 5: Scales measuring positive mental health

Measurement	Concept	Number of items
Affect Balance Scale (Bradburn 1969) Scale included in Lancashire QOL profile	Positive and negative feelings	10
General Well-being Schedule (Dupuy 1978)	Dimensions of anxiety and depression	18
Rand Mental Health Inventory (Stewart et al. 1992)	Anxiety, depression, behavioural/emotional control, general positive affect and emotional ties	38
Psychological Well-being Manifestation Scale (Massé et al. 1998)	Self-esteem, social involvement, mental balance, control of self and events, sociability and happiness	25
Health Opinion Survey (Macmillan, 1957)	Psychoneurotic and related types of disorder	20
22-Item Screening Score (Langner 1962)	Common psychiatric symptoms: anxiety, depression and other neurotic symptoms	22
Four Single-Item Indicators of Well-being (Andrews 1976)	Satisfaction with life in general or specific topics	1
Emotional health (Hoff 1997)	Emotional well-being	1
Life Satisfaction Index A (Neugarten 1961)	Life satisfaction: general feelings of well-being among older people	20
Philadelphia Geriatric Center Morale Scale (Lawton 1972)	Dimensions of emotional adjustment among people aged 70 to 90	22
Health Perceptions Questionnaire (Ware 1976)	Perceptions of past, present and future health; resistance to illness; attitude to sickness	33
Demoralization Scale 17 (Dohrenwend et al. 1981)*	Demoralisation:	17
Life Orientation Test – Revised (LOT-R) (Scheier et al.) (LOT)	Optimism (Optimism)	6 (8)
Hunter Opinions and Personal Expectations Scale (HOPES, Nunn 1996)	Hopefulness	20
Orientation to Life Questionnaire (Antonovsky 1979); long and short version	Sense of Coherence: meaningfulness, comprehensibility and	29 or 13

	manageability of life	
Empowerment Scale (Rogers et al. 1997)	Empowerment: sense of competence, control over one's life	28
Self-Regard Questionnaire (Horowitz et al. 1996)	Self-regard: integration of conscious self-concept	5
Ways of Coping checklist (Folkman et al. 1980)	Hypothetical stressors: problem solving & emotion-focused coping	68
Multidimensional Health Locus of Control Scales (Wallston et al. 1978)	Locus of control (LOC): internal health LOC; powerful-others' health LOC; Chance LOC	18
Satisfaction with Life Domain Scale (Baker et al. 1982) (SLDS)*	Satisfaction with life in general	11 (modified version, Baruffol et al. 1995)
Generalised self-efficacy Scale (Schwarzer 1993)	Self-efficacy: belief in ability to respond in novel situations and to deal with variety of stressors	10
Health and Daily Living (Billings et al. 1984)*	Coping with hypothetical stressors	
Internal-External Scale (Rotter 1966)	Locus of control: beliefs about internality and externality of personal control	
Attributional Style Questionnaire (Seligman et al. 1979)*	Coping with hypothetical stressors	
COPE scale (Carver et al. 1989)*	Coping with hypothetical stressors	

Appendix 6. Scales measuring QOL pertinent to mental health

Measurement	Number of domains covered
Short-Form-36 Health Survey (Ware et al. 1990); generic health	8 (mental health questions: 11)
Short-Form-20 Health Survey (Stewart 1988); generic health	6 (mental health items: 5)
Duke Health Profile (Parkerson 1990); generic health	17 items: mental well-being and negative measures on anxiety and depression
Lancashire QOL Profile (Oliver 1991/2); psychiatric patients	15 (97 questions)
WHOQOL (WHOQOL 1998); psychiatric patients	Satisfaction with 24 life facets
QOL Index – Mental Health (Becker et al. 1993); psychiatric patients	9 (short scale: clinician or self administered)
Baker & Intagliata measure of QOL for the severely mentally ill (1982); psychiatric patients	15 facets of life; satisfaction with
QOL Interview (Lehman et al. 1982)	8 (147 items)

Modified version: QOL schedule (Zissi et al. 1998); psychiatric patients	52 items; subjective, objective and QOL mediators
QOL Assessment (Skantze et al. 1990); psychiatric patients	11 (100 items)

Appendix 7. Structured psychiatric interview methods for epidemiological studies

Method	Year	Diagnostic classification	Interview by	Abbreviation
Present State Examination	1974	ICD-8	Psychiatrist, psychologist, nurse	PSE
Diagnostic Interview Schedule	1981	DSM-III	Lay interviewer	DIS
Diagnostic Interview Schedule – Self Administered (Abridged from DIS)	1990	DSM-III-R	Self-administered	DISSA
Structured Clinical Interview for DSM-III-R I and II	1989	DSM-III-R (DSM-IV)	Psychiatrist, psychologist	SCID I and II
Composite International Diagnostic Interview	1990	ICD-10 DSM-III-R	Trained lay interviewer	CIDI
Schedules for Clinical Assessment in Neuropsychiatry	1990	ICD-10 DSM-III-R	Psychiatrist, psychologist	SCAN

Appendix 8. Measures of non-specific psychological distress

General health Questionnaire (Goldberg)	Psychological distress	Versions: GHQ-60; GHQ-30; GHQ-20; GHQ-12
MHI-5 (in SF-36)	Psychological distress	5
Psychological Distress Manifestation Scale (Massé et al. 1998)	Anxiety, depression, irritability, self-depreciation, social disengagement	23
Psychiatric Epidemiology Research Interview (PERI) (Dohrenwend 1980)*	Psychological distress	25
Hopkins Symptom Checklist-25 (SCL-25) Other versions: SCL-90; SCL-41; SCL-17 (as QOL measure)	Psychological distress	25 90 (includes 9 subscales) 17