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Social capital, trust in institutions, discrimination and self-rated health. An epidemiological study in southern Sweden.

Mohseni, Mohabbat

2008

[Link to publication]

Total number of authors:
1

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An epidemiological study in southern Sweden

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2008

To

My dear husband,

Ali

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Social capital, trust in institutions, discrimination and self-rated health

An epidemiological study in southern Sweden

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Malmö 2008

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Abstract

The rational for studying health consequences of social determinants is to enable understanding of factors that affect population patterns of health, disease and well-being in order to produce knowledge useful for guiding policies and actions to reduce social inequalities in health and promote social well-being. The aims of this study have been to investigate the association between aspects of social capital, discrimination and health.

The first article is a prospective study which investigates the impact of self-rated health with five alternatives on the incidence of first-ever acute myocardial infarction (AMI). Papers II-IV are cross-sectional studies and concern the associations between institutional trust in the health care system, political trust in the *Riksdag* (the Swedish parliament) and anticipation of discrimination, on the one hand, and self-rated health, on the other, adjusting for generalized (horizontal) trust in other people as a confounder.

The 2000 public-health survey in Skåne is a cross sectional study based on self-reported information from a postal questionnaire survey sent to randomly selected persons born in 1919-1981 during the period November 1999 to February 2000. A total of 13,715 (59%) persons answered the questionnaire. Paper I is a prospective cohort study using the 2000 survey as baseline, linked to AMI morbidity/mortality data from January 2000-December 2002.

Data from the 2004 public health survey in Skåne in southern Sweden are used for papers II-IV. A postal questionnaire was sent out to a random sample of 47,621 persons aged 18-80 years during the autumn of 2004. A total of 27,963 (59%) respondents returned complete answers.

In paper I the three-year first-ever acute myocardial infarction incidence rate was significantly higher among people who were daily smokers, and had higher age, low education, and poor self-rated health. The five-alternative item on self-rated health, both dichotomized and the not dichotomized alternatives, predicts first-ever AMI, even after multiple adjustments in Cox-regression models. In the second cross-sectional study low (institutional) trust in the health care system was associated with poor self-rated health (paper II). Adjustment for "care-seeking behaviour" in the multivariate model had a decreasing effect on the vertical trust differences in poor self-rated health. Low "political trust" in the *Riksdag* was significantly associated with poor self-

rated health, even after adjustments for plausible confounders including generalised (horizontal) trust in other people (paper III). Individuals with higher "anticipation of discrimination by employers" had a higher risk of having poor health status (paper IV). The inclusion of generalised trust in other people in the multivariate model had a decreasing effect on the "anticipation of discrimination by employers" differences in poor self-rated health. The positive association between poor self-rated health and the risk of first-ever acute myocardial infarction, as well as between the institutional trust variables/discrimination and self-rated health seem to represent causal pathways which might be at least partly independent of socioeconomic status.

In conclusion, the results show that self-rated health with five alternatives predicts incidence of first-ever acute myocardial infarction. Furthermore, we found that low trust (institutional) in the health care system and in the *Riksdag*, and anticipation of discrimination by employers are associated with poor (self-rated) health. The association between trust in the health care system and self-rated health seem to be partly mediated by care-seeking behaviour. After adjustments for confounders including generalised (horizontal) trust in other people the significant association remains.

Key words: Self-rated health, acute myocardial infarction (AMI), social capital, institutional trust, horizontal trust, access to health care, care-seeking behaviour, political trust, ethnicity, anticipation, discrimination, Sweden

Abbreviations

AMI   Acute myocardial infarction

BMI   Body mass index

CHD   Coronary heart disease

CI   Confidence interval

CVD   Cardiovascular disease

DALY   Disability-adjusted life years

OR   Odds ratio

SES   Socioeconomic status

SRH   Self-rated health

WHO   World Health Organization

List of publications

This thesis is based on the following publications that will be referred to by their Roman numbers:

I.   Mohseni M, Rosvall M, Merlo J, Ali SM, Gerdtham U-G, Islam K, Lithman T, Lindström M. Self-rated health predicts first-ever acute myocardial infarction (AMI): A prospective cohort study in southern Sweden. Manuscript.

II.   Mohseni M, Lindström M. Social capital, trust in the health care system and self-rated health: the role of access to health care in a population-based study. *Soc Sci Med* 2007 64(7):1373-83.

III.   Mohseni M, Lindström M. Social capital, political trust and self-rated health: A population-based study in southern Sweden. *Scand J Public Health* 2008, In press.

IV.   Mohseni M, Lindström M. Ethnic differences in anticipated discrimination, generalised trust in other people and self-rated health: a population-based study in Sweden. Submitted.

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Introduction

Health inequalities and their social determinants

Equality in health for various population subgroups, such as socioeconomic, ethnic and geographic subpopulations, is one important objective of the World Health Organization (World Health Organization Europe, 1993). All cause mortality and morbidity as well as for instance cardiovascular mortality and morbidity are higher in lower socioeconomic groups in western countries as well as in many other countries (Marmot et al., 1991; Marmot, 2004). In Sweden socioeconomic differences in cardiovascular mortality and total mortality have also increased in recent decades, according to the national public health report (National Public Health Report, 1999). If these data are correct, this is of extreme importance, since- as Pearce and Davey Smith believe- it indicates that "development" on its own may not automatically be good for health, and that the way in which the gross national product (GNP) is shared within the population may be as important as its total level (Pearce & Davey Smith, 2003). Sweden has also in recent decades become a multiethnic country with more than one million inhabitants born outside Sweden. The cultural and ethnic diversity will become even more pronounced as the population born in other countries than Sweden is estimated to further increase in the future. Studies from Sweden show that morbidity, regardless of whether it is measured as number of sick-days, early retirement pension (National Public Health Report, 1997), long term illness (Sundquist, 1995) or self-rated health (Lindström et al., 2001a) is higher among foreign-born individuals than among individuals born in Sweden.

The debate concerning the influence of socioeconomic status (SES) on health started with the Whitehall study in the 1970s. The results of the original Whitehall study (as well as later Whitehall studies) showed that there are not only SES differences in health and disease, but also a SES gradient with a stepwise increase in life expectancy for each new step on the SES ladder. This pattern of a SES gradient is apparent in western countries and some other countries for many highly prevalent chronic diseases, such as psychiatric diseases and musculoskeletal disorders, as well as causes of death, such as deaths from cardiovascular diseases, accidents and some forms of cancer (Marmot, 2004). Several theoretical approaches have been presented to explain socioeconomic

inequalities in health. The Black Report suggested four possible causal pathways: the social selection explanation, the artefact explanation, materialist or structuralist explanation, and cultural or behavioural explanation. The social selection hypothesis postulates that SES inequalities may be explained by the mobility between different socioeconomic groups (i.e. health determines socioeconomic status), resulting in a downward mobility regarding SES of people with poor health and, correspondingly, an upward mobility regarding SES of people with good health. The artefact hypothesis assumes that failure to reduce the socioeconomic differences in health may be the result of the decreasing proportion of unskilled manual workers and people with low education. The materialist/structuralist approach states that social and, particularly, material circumstances, i.e., "upstream" factors, are responsible for socioeconomic differences in health. The cultural/behavioural explanation proposed factors that were more "downstream" and related to individual health-related behaviours, e.g., physical activity and dietary habits (Townsend & Davidson, 1982).

The recent interest in socioeconomic and other social determinants of health has to an important extent stemmed from the now well known socioeconomic inequalities in health. Socioeconomic status (SES) is used as a term for specific socioeconomic factors such as income, education, and occupation. All these factors are strongly associated with overall health, although the patterns are different for various diseases (Lynch & Kaplan, 2000).

There are some difficulties concerning the measurement of socioeconomic status. The measurement of level of education for instance ignores the fact that people can climb or descend the social ladder throughout their life course, regardless of their initial educational level. Furthermore, reliable information on income is often hard to trace in a questionnaire survey. Different definitions of income (gross or net salary, individual or household income) can also make income as an indicator of SES less useful. In our study, information on income was not included in the 2000 and 2004 public health surveys in Skåne. However, it has been shown that education is highly correlated with other indicators of SES such as occupation in Malmö (Lindström, 2000).

For reasons of availability and practical possibility to adjust for SES, SES is measured as education in papers I-IV. Economic stress may also partly be regarded as an indirect indicator of socioeconomic status (SES). In papers I-IV adjustments are made for education and economic

stress in the multiple regression models (Cox regression models in paper I, logistic regression models in papers II, III, and IV). One important overarching question of this thesis is whether the association between the social determinants (institutional trust, discrimination) and health might be explained by SES or not.

Social factors such as for instance SES, social capital and various aspects of discrimination may be regarded as determinants of health. The focus of the current debate regarding SES differences in health concerns the proponents of social capital (Kawachi & Kennedy, 1997) as an explanation of these SES differences as opposed to their neomaterialist opponents (Pearce & Davey Smith, 2003). This debate may be seen as a development of the debate between the proponents of the psychosocial as opposed to the material explanations of SES differences in health which has been going on since the 1970s (Berkman & Syme, 1979). Social capital is defined as those features of social structures, such as social networks, interpersonal trust, trust in institutions, norms of reciprocity, and mutual aid, which constitute resources which may facilitate interaction between individuals and groups of individuals to achieve collective action (Putnam, 1993; 2000). Social capital is associated with discrimination, because historical and current evidence clearly shows that various forms of discrimination tend to destroy the level of social capital in society (Putnam, 2000). One definition of discrimination by Krieger states that "discrimination is a socially structured and sanctioned phenomenon, justified by ideology and expressed in interactions, among and between individuals and institutions, intended to maintain privileges for members of dominant groups at the cost of deprivation for others" (Krieger, 2000). SES is associated with, among other things, both aspects of social capital (Lynch & Kaplan, 2000) and discrimination (Putnam, 2000). SES may theoretically be regarded as a determinant of social capital and discrimination. It may, alternatively, be regarded as a confounder of the association between social capital (institutional trust) and aspects of discrimination, and (self-rated) health status (Marmot, 2004).

This thesis will mainly investigate the effects of some aspects of social capital and anticipated discrimination on health, taking SES into account as a confounder in all the multiple regression analyses. The association between social capital and health has been investigated in many previous studies. However, these studies have mainly concerned horizontal aspects of social capital such as generalised trust in other people and social participation. This thesis will deal with the much less investigated vertical or institutional aspects of social capital, i.e. trust in the health care system and

political trust in the national parliament in Sweden (the *Riksdag*). Discrimination has also been investigated previously in many studies. However, the anticipation in the general population that discrimination may occur not necessarily to the respondent but generally has been investigated to a very small extent. Health is measured as a self-rated item with five alternatives. The next section will discuss the self-rated item and its measurement. The first article may be regarded as a validation of this measure in relation to incidence of acute myocardial infarction (AMI). The following sections will discuss social capital and discrimination/anticipation of discrimination.

Global self-rated health

One of the major tasks in social epidemiology is to identify social groups who are in need of special attention or at risk of poor health outcomes. Population based studies make it possible to assess the health status in a population and enable comparisons between different groups within a population such as different age, ethnicity and SES groups. To appraise health in different groups in the population it is necessary to first understand what the definition of health is. It is well known that the concept of health is multi-faceted. For some people, health means absence of pain and illness, while for others it is a feeling of well-being. Health may exist in the presence or absence of disease, dysfunction or disability because it is a personal experience (Svedberg, 2006). It may seem disputable that health and disease are not mutually exclusive. Still, it is most likely that a person who has a disease experiences poor health. However, what is considered as "good health" varies between individuals, and different people have different interpretation of self-rated heath (Krause & Jay, 1994).

The World Health Organization (WHO) has declared that health is "the state of complete physical, mental and social well-being and not merely the absence of disease or infirmity" (WHO, 2003). It has been argued that the concept of health as presented by the WHO might be an ideal state impossible to achieve as a realistic goal for medical care. The WHO has accordingly also defined health to be the ability to function normally within one's social setting (Svedberg, 2006).

The WHO has emphasized the importance of global self-rated health for the monitoring of population health (De Burin et al., 1996). Self-rated health is among the most frequently used instruments in public health surveys. It plays an important role in clinical practice, research and

policy. It is a dynamic representation of overall health that elicits the person's judgment about the severity of current illness, and his/her knowledge of past medical problems and health changes over time (Idler & Benyamini, 1997). Self-rated health may include physical, psychological, and social dimensions of health (Idler & Benyamini, 1997). It thus describes health as it is defined according to the WHO (Svedberg, 2006). Self-rated health is by nature a more valid and inclusive assessment of health status than alternative measures, and it is more likely than other measures to include undiagnosed or early stage illness that might be missed by a physician (Idler & Benyamini, 1997).

One of the first systematic studies of self-ratings of health was made in the USA at Duke University early in the 1950s. In the 1960s and 1970s repeated medical examinations and also self-rated health of healthy elderly volunteers showed some associations between self-rated health and physician's ratings, but not a complete correspondence. Self-rated health was often in the direction of better health than the physician's rating in those cases where there were differences between the ratings. It was more likely to give an optimistic rating of health with regard to higher levels of chronic illness and disability when the subject was older (Svedberg, 2006). The first study on self-rated health and mortality appeared in 1982 (Mossey & Shapiro, 1982). Since the early 1980s more than 50 investigations from around the world have been published on the association between self-rated health and mortality (Idler & Benyamini, 1997). A significant association appeared in the great majority of these studies, even in multivariate analyses.

Self-rated health is appraised by a simple question. The question has been measured by different words and in various ways, followed by a graded scale of three to seven (less commonly) ordinal response categories from very poor to excellent health in most of the studies. It has been claimed that the actual wording of the questions is of less interest as long as they include an overall rating (Eriksson et al., 2001). The most common way of asking respondents to rate their health status is the general, non-comparative question "How would you rate your general health status?" Another way is age-comparative which asks, "How would you rate your general health status compared to that of others of your own age?" The time comparative is the third way that asks "How would you rate your present health status compared to your health status some years ago?" The reliability (Lundberg & Manderbacka, 1996) and validity (Idler & Benyamini, 1997; Heistaro et al., 2001; Franks et al., 2003) of self-rated health has been proved in previous studies comparing other alternative health measures. It has been stated that people are likely to be well informed about their

health status from external sources. They thus have an immediate experience of their health and health problems. These aspects are relatively stable in themselves, resulting in the reliability of self-reported health (Lundberg & Manderbacka, 1996).

In national samples, self-rated health is found to be associated with age, gender, race/ethnicity, education, and income (Franks et al., 2003; Sundquist & Johansson, 1997; Williams et al., 2003). It has been shown that different people have different interpretations of self-rated health. Some people think about specific health problems when asked to rate their health, whereas others think about their physical health and functioning or health behaviours (Krause & Jay, 1994). The main determinant of self-rated health is stated to be physical health, although many physiological and psychosocial determinants of self-rated health have been cited in the literature (Kaplan et al., 1996; Manderbacka et al., 1999). The interpretations of self-rated health also vary by age and gender (Krause & Jay, 1994; McCullough & Laurenceau, 2004). It has been argued that when self-rating health young persons would compare their heath to a healthy group, whereas older persons would compare their health to a less healthy group (Eriksson et al., 2001). Age is often related to the susceptibility of disease. Older adults generally experience and report poorer self-rated health than younger adults, although there are many healthy elderly with ratings corresponding to younger adults. Cross-sectionally, an increase in total variance in self-rated health with age has been shown for many health related variables, whereas of the few longitudinal studies some have reported change while others report stability in the level of self-rated health with age (Svedberg, 2006).

Women generally rate their health status as poorer than men (Eriksson et al., 2001; McCullough & Laurenceau, 2004), although such sex differences in the self-rating of health tend to decrease or disappear as people grow older (McCullough & Laurenceau, 2004). The greater experience of morbidity throughout the life span as among women has been proposed to explain these gender effects on self-reporting of health (Deeg & Kriegsman, 2003). It is assumed that men rate their health based on the conditions that are linked with life threatening events and mortality risks, whereas women rate their health based on health conditions that are chronic and disabling, rather than fatal (Deeg & Kriegsman, 2003).

Self-rated health can predict different health outcomes. There is extensive evidence that self-rated health is a potent predictor of mortality even when other health status indicators are taken into

account (Idler & Benyamini, 1997; Miilunpalo et al., 1997; Sundquist & Johansson, 1997; Heistaro, 2001; Heidrich et al., 2002; Mackenbach et al., 2002; Franks et al., 2003; Vuorisalmi et al., 2005). The most fascinating declaration in studies of self-rated health is that subjective health measures are often outstanding compared to clinical assessments for predicting mortality. It has also been quoted that self-rated health is an indicator of well-being, associated with chronic diseases (e.g., depression, neurological disease, and rheumatoid arthritis) and physician's ratings of health status (Moller et al., 1996; Miilunpalo et al., 1997; Svärdh et al., 1998; Bosworth et al., 1999; Heidrich et al., 2002;), access to health care services (Axén & Lindström, 2002), and a significant predictor of utilization of utilisation of health care services (Miilunpalo et al., 1997). Some studies have shown self-rated health to be associated with risk factors, life-style, and health-related behaviours (Idler & Benyamini, 1997; Manderbacka et al., 1999; Eriksson et al., 2001; McCullough & Laurenceau, 2004; Kasmel et al., 2004; Ali et al., 2006), although these associations are less conclusive.

As self-rated health is the individual's own appraisal, it could be affected not only by specific diseases but also by sociodemographic factors (Lindström et al., 2001b; Franks et al., 2003; McCullough & Laurenceau, 2004). Self-rated good health has been connected to better socioeconomic status (Sundquist & Johansson, 1997; Franks et al., 2003). It is assumed that those who have higher education may be more informed and active in healthier health-related behaviours and have greater access to medical care, and hence better health status (Bosworth et al., 1999).

Studies have shown that psychosocial well-being (Idler & Benyamini, 1997; Mackenbach et al., 2003), social capital variables including social networks, social support and trust (Barefoot et al., 1998; Kawachi et al., 1999; Lindström et al., 2001b; Lindström et al., 2004; Lindström, 2004; Armstrong et al., 2006), and also self-reported discrimination (Karlsen & Nazroo, 2002; Williams et al., 2003; Stuber et al., 2003; Schulz et al., 2006; Harris et al., 2006; Paradies, 2006, Jasinskaja-Lahti et al., 2007) are associated with self-rated health.

Acute myocardial infarction (AMI)

Cardiovascular disease (CVD) is the leading cause of death, both in Skåne (Rosvall et al., 2006) and in Sweden and worldwide (National Public Health Report, 2005). Coronary heart disease kills more than seven milion people each year, and causes 43 percent of global deaths from CVD, which

makes it the most prominent type of cardiovascular disease. The contribution to disability-adjusted life years (DALY) is considerable. Among men, coronary heart disease is responsible for 7 percent of the global DALYs, and is thereby the second largest disease, while it accounts for 5 percent among women as the third greatest disease. Death rates from coronary heart disease are decreasing in Sweden. From 1987 to 2002, the decrease was 23 percent, which accounted for a substantial increase in life expectancy. Among men, the 3-year observed gain in life expectancy was almost solely attributable to the decrease in cardiovascular death rates (National Public Health Report, 2005).

Both incidence and mortality of AMI are associated with sex and age. Smoking, high blood cholesterol and hypertension are the most well established primary risk factors for AMI as well as for other cardiovascular diseases. Among other less important but still potent risk factors are obesity, low levels of physical activity, diabetes mellitus type II, socioeconomic status and psychosocial strain (National Public Health Report, 2005).

Despite advantages in the management of myocardial infarction, it is still the most common cause of death in Sweden (National Public Health Report, 2005) and presumably continues to be a substantial public health problem with substantial mortality and morbidity differences between different segments of the population, and with long term health consequences. Malmö in southern Sweden is the biggest city in Skåne in southern Sweden with approximately 270,000 inhabitants. The city is divided into 18 administrative areas. Malmö University Hospital is the only referral unit for care and treatment of patients with myocardial infarction. The annual age- and sex-adjusted incidence of myocardial infarction has been found to range between the administrative areas from 469 to 681/100,000 in mortality in ischemic heart disease from 286 to 446/100,000 (Tydén et al., 1998).

It is obvious that the development of cardiovascular disease negatively affects (self-rated) health (Bardage, 2001). Some studies have analysed the association between self-rated health and AMI as the endpoint (Moller et al., 1996; Maeland & Havik, 1988; Svärdh et al., 1998; Weinehall et al., 1998). It is therefore of interest to investigate if self-rated health can predict acute myocardial infarction in a population (in Sweden/Skåne) with a high incidence rate of myocardial infarction which requires a sensitive measure to detect vulnerable groups. Article I of this thesis prospectively

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investigates the association between self-rated health measured with the item with five alternative answers assessed in Skåne in 1999/2000 and the incidence of acute myocardial infarction (AMI) in 2000-2002 in order to check whether the self-rated item is valid also in the region of Skåne during the early 2000s.

Social capital and health

The concept of social capital has rather recently, i.e. approximately ten years ago, been introduced in the public health literature primarily as a possible explanation for findings regarding inequalities in health (Kawachi et al., 1997). One definition of social capital given by a group of prominent investigators within the social epidemiology tradition is the features of social structures, such as civic participation, levels of interpersonal trust, and norms of reciprocity and mutual aid that facilitate cooperation for mutual benefit (Kawachi et al., 1997), although the social capital concept has its origins in political sciences and sociology (Coleman, 1990; Putnam, 1993). In political science social capital is defined as those features of social structures, such as social networks, interpersonal trust, trust in institutions, norms of reciprocity, and mutual aid, which constitute resources which may facilitate interaction between individuals and groups of individuals to achieve collective action (Putnam, 1993; 2000). A society with high social capital may be characterised by high civic engagement and social participation among the citizens, high generalised (horizontal) trust in other people, high levels of institutional (vertical) trust in the institutions of society and generalised reciprocity (Putnam, 1993; 2000).

Social capital is a rather complicated concept. Social capital is regarded by some scholars as mainly a social characteristic of larger geographic areas and social contexts (Putnam, 2003), while other scholars regards it as social relations in the local environment and trust between individuals (Coleman, 1990). Particularly the trust aspect of social capital has one vertical aspect, i.e. trust in institutions across a power gradient, and one horizontal aspect, i.e. generalised trust in other people as equals (Narayan & Cassidy, 2001). One existing terminology defines different forms of social capital as bonding, i.e. social relations among persons belonging to the same sociodemographic group, bridging, i.e. social relations among persons belonging to different sociodemographic group, and linking, i.e. social relations across power gradients, social capital (Szreter & Woolcock, 2004). Still, social participation/ social networks and trust are central features of social capital (Coleman,

1990; Putnam, 1993, 2000). The organization of society is important for the formation of aspects of social capital such as social participation and trust (Fukuyama, 1995; Putnam, 2000).

Social capital has been claimed to be causally associated with population health by a number of etiological pathways: by influencing norms and values related to health-related behaviours, by increasing access to health care and local services, by decreasing crime (particularly violent crime), and by decreasing psychosocial stress through providing affective support and being a source of self-esteem and mutual respect (Kawachi et al., 1999). Social capital has for instance been shown to be associated with lower crime rates (Kennedy et al., 1998), better self-rated health status (Kawachi et al., 1999; Lindström, 2004), lower coronary heart disease mortality rates (Lynch et al., 2001), and lower total mortality rates (Kawachi & Kennedy, 1997; Kawachi et al., 1997). However, other studies on social capital and health are less convincing, because associations are inconsistent and seem to be confined to particular countries, especially the United States. For instance, an ecological study of 23 countries by Lindström and Lindström (2006) supports the neo-materialist hypothesis that income inequality and absolute income levels have stronger influence on population health than social capital measured as trust.

A number of studies have measured the relationship between social capital and health at four different levels: the macro (countries, regions), meso (neighborhoods), micro (social networks of individuals) and individual psychological (trust) levels of analysis (Macinko and Starfield, 2001). Political scientist Robert D. Putnam (1993) found that social capital measured both as participation in civic activities, e.g. voting in elections and newspaper reading, and trust, was positively correlated with socioeconomic modernity, political performance and administrative performance in the regions of Italy. The performance of political institutions may similarly be associated with levels of social capital, as explained by Putnam (1993). Kennedy and co-workers (1998) found that among the states in the USA, social capital mediates the relationship between income inequality and the incidence of crime. Kawachi and co-workers (1997) measured social capital with an index composed of three trust questions and one indicator of participation in clubs and associations, and demonstrated that citizens living in states characterized by high income disparities tend to be more mutually distrustful and belong to fewer civic associations. This study revealed that greater income inequality decreases the stock of social capital of a state which in return leads to poorer health of the citizens. Specifically, higher levels of trust and greater participation in associations were related

to lower levels of mortality from most of the major causes of death. Kawachi et al. (1999) found that people living in states with lower social capital were at increased risk of poor self-rated health, even after controlling for individual risk factors. Social capital has also been measured in relation to discrimination, with results indicating a negative association between social capital and discrimination (Putnam, 2001).

In recent years there has been a serious debate between proponents of the social capital approach and its neomaterialist critics. Proponents of the social capital approach tend to see psychosocial factors as mediating factors between income inequality and health outcomes. In contrast, neomaterialist authors emphasize the material causes of inequalities rather than just the perceptions of inequality. The neomaterialists have suggested that most of the SES differences in health can be explained by material factors (Pearce & Davey Smith, 2003). It has been claimed that absolute material deprivation is an important determinant of public health even in the western world, but the importance of psychosocial resources and relative material inequality has also been emphasised (Lynch & Kaplan, 2000). The theoretical framework of social capital has been criticized by the neomaterialists because it introduces an artificial dichotomy between material and psychosocial factors which are both determined by the same socioeconomic conditions, because it introduces a new concept to denote phenomena previously debated in other terms, because it ignores the effects of politics and policy on health, and because it reintroduces the psychosocial theory that has previously proved to result in poor accumulation of scientific knowledge as explanation for social differences in health (Muntaner, 2004). However, some neomaterialists have still suggested that social capital may be involved in a part of the association between income inequality and health, because income inequality is a major determinant of national mortality rates, because the mechanism by which this occurs is that increased income inequality reduces social capital leading to poorer health in pooer communities, and because the most likely explanation for this mechanism involves psychosocial factors (Pearce & Davey Smith, 2003). Furthermore, some critics also claim that the interest in social capital in the public health area may fully or partly shadow the importance of politics and welfare for health, and create an artificial dichotomy between civil society and the state (Muntaner, 2004).

It should also be added that social capital in the form of strong bonds and trust within certain socioeconomic or ethnic groups may also have a socially exclusive effect on other groups. Putnam

has named this the "dark side of social capital" (Putnam, 2000).

The association between different aspects of trust and health

Social capital has mostly been operationalised as either trust or social participation in social activities/networks (Putnam, 1993). Social participation/social networks is an observable feature of social capital that can be measured either as the density of organizations in for instance a geographical area, or by asking respondents to what extent they are engaged in formal and informal social activities in society (Cattell, 2001). Social participation has for instance been shown to be positively associated with health protecting behaviours such as smoking cessation, high levels of physical activity and high consumption of vegetables (Lindström, 2000) as well as self reported mental and self-rated global health (Lindström, 2004).

Social capital exists both in a vertical/institutional dimension, i.e. trust in various institutions in society, and in a horizontal dimension, i.e. generalised (horizontal) trust in other people and participation in the social networks and social activities of civil society. It is possible to imagine vertical participation such as for instance voting participation in elections. In Sweden the institutional aspect of social capital has been operationalised as voting participation in one study (Sundquist et al., 2006). However, the trust aspect of social capital trust seems more clearly to have both a vertical (institutional) and a horizontal (generalised trust in other people) dimension (Narayan & Cassidy, 2001).

Trust is a relational phenomenon, which enhances cooperation. Trust includes the expectation that an individual or institution will act competently, fairly, openly, and with concern (Hall et al., 2001; Gilson, 2003). To trust someone is to believe that the person or institution is honest, sincere and will not deliberately harm you (Mechanic, 2000). At a general level trust as a part of the broader concept of social capital is related to people's health and well-being. Generalised (horizontal) trust in other people was for instance associated with better self-rated health, more satisfaction and longer survival (Barefoot et al, 1998). It has also been argued that the levels of trust vary between societies with the level of social connectedness (Putnam, 2000; Thiede, 2005). A well-connected society with generalised reciprocity and generalised trust in other people is more efficient than a distrustful society. Putnam (2000) has also argued that trustworthiness simplifies social life.

Studies from the USA and Sweden show that features of social capital such as generalised trust in other people and social participation are associated with self-rated health (Kawachi & Kennedy, 1997; Barefoot et al., 1998; Lindström, 2004; Lindström et al., 2004). Low trust is specifically associated with poor self-rated health (Kawachi et al., 1999; Lindström, 2004; Lindström et al., 2004). Low levels of generalised (horizontal) trust in other people are related to low levels of trust and confidence in public institutions and government (Putnam, 1993, 2000), low levels of political participation (Putnam, 1993, 2000; Kennedy et al., 1998), and reduced efficacy of government institutions (Putnam, 1993). Research on the association between sociodemographic characteristics and trust are inconsistent (Hall et al., 2003; Nguyen et al., 2005).

Generalised (horizontal) trust in other people as an aspect of social capital has in recent years been investigated in relation to health to a much higher extent than trust in institutions (vertical trust). The lack of studies on aspects of trust in institutions (vertical trust) such as trust in the health care system and trust in the political institutions such as national, regional and local elected political assemblies is surprising considering the fact that macro-level political and health care institutions are considered to have major influence on public health (Walt, 1994).

Institutional or vertical trust refers to the trust of the citizens in the institutions, especially the public institutions, of society (Putnam, 1993; Veenstra & Lomas, 1999; Gilson, 2003). The health care system is an institution, which often has been discussed in relation to population health. The performance of any health care system is partly based on institutional trust. It allows patients to trust providers without any personal knowledge of the health workers that represent the health care system (Russell, 2005). Trust also supports the cooperation between different actors within the health care system that is necessary for health production, communication (Gilson, 2003), disclosure of medically relevant information, and the willingness to seek health care (Hall et al., 2001; Gilson, 2003; Russell, 2005). With regard to health care-seeking behavior, the trust of a person is based on beliefs or expectations about how others will behave in relation to that person in the future (Gilson, 2003). Trust in the health care system also encourages use of services (Gilson, 2003; Russell, 2005), submission to treatment, and patient compliance (Hall et al., 2001). Moreover, institutional trust is important for economic and political viability of hospitals, insurers and health care systems due to the patient support and use of services (Tibandebage & Mackintosh, 2005).

One recent study in the USA found that lack of trust in the health care system was significantly associated with self-rated health (Armstrong et al., 2006).

Article II investigates the association between institutional/vertical trust in the health care system and self-rated health.

Macro level politics and the general health care system are considered to have an important influence on public health (Walt, 1994). In Sweden voting participation has been used as a measure of vertical (institutional) trust (Sundquist et al., 2006). In article III we have used the particular item trust in the Riksdag (the Swedish national parliament), which specifies the particular institution in which respondents have trust or lack of trust. The populations in other Scandinavian countries have retained high trust in the political community, whereas trust in the Riksdag and its politicians in Sweden has declined dramatically among Swedes during the past decades, especially among the young (Holmberg, 1999). Article III investigates the association between the institutional/vertical item trust in the *Riksdag* (the Swedish National Parliament) and self-rated health.

Access to health care and care-seeking behavior

Access to health care is defined as the ability to obtain health services when needed. Access to health care refers to the relationship between need, provision and utilisation of health services, and is defined to have two aspects. Having access means that the service required exists, is available, and service utilisation is allowed following a contact with the health care service. Gaining access means that the service has been utilised. Utilisation is dependent on the affordability, accessibility and acceptability of services, not only the adequacy of health services. Access may be defined as some point on the continuum of contact with and the utilisation of health care services (National Co-ordinating Centre for NHS Service, 2001).

While the aspect of availability (having access) is commonly focused on, the other aspect "gaining access", has received less attention (Thiede, 2005). However, it is possible for a population group to have access to services but still not use them.

The international literature suggests that sociodemographic and financial issues, organisational, individual health and perceived health status, knowledge, amenability, communicative action and

the degree of interconectedness of social networks, trust, time and place of residence are considered as variables that have impact on care-seeking behavior, and also on the utilisation of health-care services (Birkel & Reppucci, 1983; National Co-ordinating Centre for NHS Service, 2001; Thiede, 2005). Trust has an important influence over the choice of health care provider (Balkrishnan et al., 2004). Trust in the health care system is important for the willingness to seek health care. It also encourages the use of services and compliance with treatment (Hall et al., 2001; Gilson, 2003; Russell, 2005). Furthermore, trust provides a context in which patients and providers can work effectively to establish and achieve care objectives (Perry et al., 1999; Mechanic & Meyer, 2000). It is therefore crucial to understand the roles of trust (and distrust) in shaping patients' experience and their satisfaction.

The decision of the patient to seek medical care comprises the first step in the process of accessing services (National Co-ordinating Centre for NHS Service, 2001). Mistrust and poor relationships with public providers can increase the financial cost burdens related to illness and can hinder discouraged people from seeking health care (Tibandebage & Mackintosh, 2005). Without trust people may not gain access to health care services (Russell, 2005; Tibandebage & Mackintosh, 2005). There may also be inappropriate patterns of service use. This comprises the non-uptake of preventive services, delay in the uptake of services for conditions requiring treatment, and inappropriate demands on emergency services. It should be noted that such plausible barriers to health care and, in the next step in the chain of causality, health are in accordance with the health belief model (National Co-ordinating Centre for NHS Service, 2001).

Self-rated health has been shown to be associated with both trust (Kawachi et al., 1997; Lindström et al., 2004) and care-seeking behaviour (Miilunpalo et al., 1997). In paper II the association between institutional trust in the health care system and self-rated health with regard to the role of care-seeking behaviour is investigated.

Ethnicity and health

Immigration increases the risk of physical and psychological diseases, given the social, emotional and physiological shock that it can provoke (Sundquist, 1995). Immigrants who have to acculturate into a new culture and society are exposed to multiple social, physical and psychosocial strains and

suffer different kinds of losses during the entire process of migration. Being exposed to these strains increases the risk of somatic and mental diseases (Sundquist, 1995). Several authors have claimed that ethnicity is associated with long-term illness and poor health (Sundquist, 1995; Lindström et al., 2001a; Wiking et al., 2004). The mechanisms that affect the health of individuals from minority populations are complex. They include several potentially relevant factors such as socioeconomic status (Lindström et al. 2001b; Stuber et al. 2003), social relations (Lindström et al. 2001a; Stuber et al. 2003), and social capital (Lindström et al. 2001b; Lindström 2004). In Sweden several studies have demonstrated that immigrants had poorer health compared to the native population (Lindström et al., 2001b; Wiking et al., 2004). The health status of immigrants is of crucial interest to health policy planners, since the foreign-born population has been growing in Europe, as well as in Sweden where 11.3% of the population is born abroad. These trends are expected to continue, so that in year 2020, the percentage of foreign-born persons in Sweden is expected to be 15% of the population (National Public Health Report, 1999). Thus, the cultural and ethnic diversity will become more pronounced.

Vulnerable and marginalized groups in society bear an undue proportion of health problems. Self-rated health is an indicator for morbidity in the population and may be used to detect poor health in immigrants (Wiking et al., 2004). International studies have revealed the effects of exposure to experiences of discrimination on self-rated health in ethnic groups in the USA (Williams et al., 2003) as well as in Sweden (Wiking et al., 2004).

Discrimination and health

There is a growing interest in the study of the adverse effects of perception of racial/ethnic discrimination on health. As defined by Krieger (2000, p.41) "discrimination is a socially structured and sanctioned phenomenon, justified by ideology and expressed in interactions, among and between individuals and institutions, intended to maintain privileges for members of dominant groups at the cost of deprivation for others". There are three types of discrimination. *Institutional discrimination* refers to discriminatory policies or practices conducted by state or non-state institutions. *Structural discrimination* refers to the ways in which society develops discrimination. *Interpersonal discrimination* refers to perceived discrimination between individuals- whether in their institutional roles (e.g. employer/employee) or as private individuals (e.g.

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shopkeeper/shopper) (Krieger, 2000). Discrimination has also been defined as the process by which a member or members of a socially defined group is, or are, treated differently (especially unfairly) because of his/her/their membership of that group (Jary & Jary, 1995). Health disparities related to any forms of discrimination in society are rooted in fundamental social and cultural inequalities (Health and freedom from discrimination, 2001). The mechanisms that affect the health of individuals from minority populations are complex. They include several potentially relevant factors such as socioeconomic status (Lindström et al., 2001b; Stuber et al., 2003), social relations, and social capital factors (Lindström et al. 2001b; Stuber et al. 2003; Lindström, 2004). Social capital has been shown to be negatively associated with discrimination (Putnam, 2001).

A review of the association between perceptions of racial/ethnic discrimination and health found that systematic exposure to experiences of discrimination appears to induce physiological and psychological disorders which may also have long term health consequences. Discrimination tends to be associated with poor health outcomes across socially disadvantaged groups in different societies (Williams et al., 2003). Discrimination whether institutional or interpersonal -overt or covert- hurts economic and social well-being (Krieger, 2000).

Krieger has suggested that discrimination can affect health through several pathways including exposure, susceptibility, and responses to a) economic and social deprivation at work, at home, in the neighbourhood, and other relevant socioeconomic regions; b) toxic substances and hazardous conditions pertaining to physical, chemical, and biological agents (at work, at home, and in the neighbourhood); c) socially inflicted trauma (mental, physical, or sexual, ranging from verbal to violent) at work, at home, in the neighbourhood, and in society; d) targeted marketing of legal and illegal psychoactive substances (alcohol, smoking, other drugs); and e) inadequate health care, by health care facilities and by specific providers (including access to care, diagnosis, and treatment) (Krieger, 2000).

Exposure to discrimination and racism have been assessed and studied concerning goods/service providers, courts of law/police, seeking employment, in education, housing, health care, in public, from neighbours, friends, government agencies and at home (Paradies, 2006). The most common site of individual discrimination is the work place (Pavalko et al., 2003). There is also evidence that work place discrimination, whether perceived or not, adversely affects income, job opportunities

(Williams et al., 1997; Krieger 2000; Williams & Williams-Morris 2000; Pavalko et al., 2003), and physical well-being among immigrants (Pavalko et al., 2003).

Self reported discrimination, the recounting of a person's experiences with being unfairly treated because of one's race/ethnicity, is associated with poorer self-rated health (Karlsen & Nazroo, 2002; Williams et al., 2003; Stuber et al., 2003; Schulz et al., 2006; Harris et al., 2006; Paradies, 2006, Jasinskaja-Lahti et al., 2007). Most studies on the association between discrimination and health concern the effects of personal experience of inter-personal discrimination or racism on health (Gee, 2002; Boardman, 2004).

Several previous studies have assessed the effects of individual experiences of discrimination on self-rated health in ethnic groups in the USA (Williams et al. 2003; Stuber et al. 2003; Schulz et al. 2006) and in some other countries including the UK (Karlsen & Nazroo, 2002), New Zealand (Harris et al., 2006), Finland (Jasinskaja-Lahti et al., 2007), and Sweden (Wiking et al., 2004). A previous study has also demonstrated that being worried about personally becoming a victim of racial harassment has a significant impact on the health experience of a respondent independent of gender, age and household social class (Karlsen & Nazroo, 2004). However, only few studies have investigated the effects on self-rated health of the respondent's *anticipation* that employers *generally* would discriminate against some people (ethnic group not specified) according to race, colour of skin, religion, or cultural background (Karlsen & Nazroo, 2002; see also Lindström, 2008 concerning mental health). In paper IV we have attempted to investigate this relationship, with regard to the role of an aspect of social capital, i.e. generalised (horizontal) trust in other people.

Social capital and discrimination

Social capital has been shown to be negatively associated with discrimination. Putnam (2001) has argued that there is a strong correlation between discrimination and current levels of social capital in the USA. The north-south geographic gradient in generalised (horizontal) trust in other people in the USA, with the low levels of trust in the south and levels of trust increasing with the proximity to the Canadian border, has its historical roots in American history. Both the system of slavery before the 1861-1865 civil war and the Jim Crow laws lasting until the mid-twentieth century in the American south represented discrimination sanctioned by the law which also tended to destroy

social capital in southern USA (Putnam, 2001). These patterns have remained in the American south even after the abolishment of institutional discrimination.

Aims

General aim

The aim of this epidemiological study was to investigate the association between the five-alternative self-rated health item and the incidence of acute myocardial infarction in the setting of the region of Skåne in the beginning of the 2000s.

The aim of this study was also to investigate the association between different aspects of institutional trust such as institutional trust in the health care system and political trust in the *Riksdag* (the Swedish parliament) and anticipation of discrimination on the one hand, and self-rated health, on the other, in Skåne, southern Sweden, adjusting for confounders including generalised (horizontal) trust in other people (i.e. trust extended also generally to unknown people).

Specific aims

To investigate the impact of self-rated health measured with the five-alternative item on the incidence of acute myocardial infarction (AMI) in a prospective cohort study in the population of Skåne, southern Sweden, in January 2000-December 2002.

To investigate the effects of institutional trust in the health care system and care-seeking behaviour on self-rated health, adjusting for generalized (horizontal) trust in other people, in the population of Skåne during the autumn (September-December) of 2004.

To investigate the association between political trust in the *Riksdag* (the Swedish national parliament) and self-rated health, taking generalised (horizontal) trust in other people into account.

To investigate the relationship between anticipation of discrimination by employers according to race, colour of skin, religion or cultural background and self-rated health, and whether the strength of this association is affected by social capital in the form of generalised trust in other people.

Study population and design

The 2000 public health survey in Skåne (Scania) (Paper I)

The 2000 public-health survey in Skåne (Scania) in southern Sweden is a cross sectional study. A random sample of 24,922 persons aged 18-80 (born in 1919-1981) was selected from the population over the period November 1999 to February 2000. The study started with a postal questionnaire followed by two letters of reminder. A total of 13,715 persons answered the questionnaire, but 111 questionnaires lack information on sex and/or age (questionnaire addressed to a specific person in a household answered by another person in the household with another sex and/or age). This represents a response rate of 59%. A study of representativity has shown a very good correspondence concerning age, sex, education, marital status, and health care consumption between the respondents of the original sample randomly selected for this study and the general population in Skåne investigated by official population registers (Carlsson et al., 2006). The random sample was weighted by age, sex and geographic area (municipality/city quarter) in order to increase the statistical power in some smaller administrative areas. In the statistical calculations of this study this has been corrected by a weighted variable. Representative prevalences (%) for the entire Skåne region are obtained when the weight variable is used. This weight has 360 different values, because 60 administrative areas in Scania were weighted by population size, sex (men and women) and age (three different age categories), which yield 60x2x3 different values of the weight variable. The differences in the prevalences between the uncorrected and corrected data are very small, i.e. they generally yield approximately the same prevalence when approximated as whole percent units.

In this prospective longitudinal cohort study the 2000 public health survey in Skåne was used as baseline. Prospective AMI morbidity/mortality data were collected for three years (January 2000-December 2002). Since this study cohort was followed prospectively to examine first-ever acute myocardial infarction(s) prior to January 2000, 196 men and 86 women of the participants in the survey who had prior to January 2000 had one or more myocardial infarctions, were excluded from this study. Consequently, the number of persons at risk was 13,322, consisting of 6,006 men and 7,316 women.

The 2004 public health survey in Skåne (Papers II, III, and IV)

Data from the 2004 public health survey in Skåne in southern Sweden were used. A postal questionnaire was sent out to a random sample of 47,621 persons aged 18-80 years during the autumn (September-December) of 2004. Two letters of reminder were sent to the respondents, and a subsequent phone call was made to the remaining non-respondents. A total of 27,963 respondents returned complete answers (right persons in the household according to age and sex answered the questionnaire). The response rate of this cross-sectional study was 59%. The study population shows similar composition according to age, sex, and marital status compared to the general composition of the population of Skåne and the 2000 public health survey in Skåne (Carlsson et al., 2006). The random sample was weighted by age, sex and geographic area in order to increase the statistical power in some smaller administrative areas. The strata were defined by 60 municipalities and city quarters according to age (three age groups), sex and geographic area (60 areas), yielding 360 strata and corresponding values of the weight variable. In the statistical calculations of this study this has been corrected by a weighted variable, so that the representative prevalences (%) for the entire Skåne region are given. The differences in prevalences between the uncorrected and corrected data are very small also in this study.

In these cross-sectional studies, the 2004 public health survey in Skåne was used as baseline. In papers II, III, and IV, a total of 27,963 individuals (12, 720 men and 15,243 women) aged 18-80 years who answered the questionnaire, were included.

Measures

Dependent variables

First-ever acute myocardial infarction (paper I)

Cases of first-ever acute myocardial infarctions (10th version ICD code I20 for morbidity and ICD I20-I25 for mortality) during a three year time period (January 2000-December 2002) following the 1999/2000 baseline survey investigation were retrieved from the national register of causes of death and inpatient register in Sweden at the Centre for Epidemiology, National Board of Health and Welfare. Both fatal and non-fatal cases were included in this study.

Self-rated health (paper II, III, IV)

Self-rated health was assessed by the question "How would you rate your general health status?" on a five-point scale (very good=1, good=2, neither good nor poor=3, poor=4, very poor=5). This variable was further dichotomised into good (alternatives 1 and 2) and poor (alternatives 3, 4 and 5) health.

Independent variables

Demographic characteristics

Age

In paper I age was divided into five age intervals under 35, 35-44, 45-54, 55-64, and above 65 years.

In papers I, II, and III age was divided into five age intervals 18-34, 35-44, 45-54, 55-64, and 65-80 years.

Sex

In paper I men and women were analysed in the same models with regard to analyses on the

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outcome variable. The rational for not stratifying for sex was problems with small numbers (only 52 women got first-ever AMI during the three-year time period).

In papers II, III, and IV all analyses were stratified by sex.

Country of origin

In papers II and III all persons born in countries other than Sweden were merged into a single category, which yielded the two categories "Sweden" and "other". In paper IV the "other" category was also categorized into "other Nordic" (Denmark, Finland, Iceland and Norway), "other European", "the Middle East and North Africa", "the rest of Africa", "Asia except the Middle East", "Latin America" and "North America and Australia/Oceania".

Socioeconomic status

Education (papers I-IV)

Education was divided by length of education into the three categories 9 years or less, 10-12 years, and 13 or more years of education.

Economic stress (papers I-IV)

Economic stress was categorized by the answer to the question "How many times during the past year did you not have money enough to afford the food or the clothes you and your family need?" There were four alternative answers: "Every month", "Approximately six months a year", "Very occasionally", and "Never".

Health related behaviours (paper I):

Daily smoking

Daily smoking was classified as either daily smoker or not daily smoker at baseline.

Low leisure time physical activity

Low leisure time physical activity was assessed with a question with four alternative answers. The first alternative was a completely sedentary leisure time physical activity status. The second alternative involved at least four hours of light leisure time physical activity (walking, bicycling etc.) per week. The third alternative comprised regular physical exercise and training, and the fourth hard and regular training at the élite level. In this study, leisure time physical activity was dichotomised into active in physical activities (the three latter alternatives) and physically inactive (the first alternative).

Body Mass Index (BMI)

Body Mass Index (BMI) Obesity was defined as BMI 30.0 or more, overweight as BMI 25.0-29.9, and normal weight as BMI <25.0. BMI was computed from the self-reported estimations of weight (kg) and height (m) in the questionnaire. The proportion of persons with underweight (BMI 18.5 or less) was very small in the population of this study (<1% among men and <2.5% among women).

Self-rated health

This variable was used as an independent factor in paper I. It has been explained earlier (in the part Dependent variables).

Trust

Generalised/horizontal trust in other people (Papers II-IV)

Generalised/horizontal trust in other people is a self-rated variable that encompasses an individual's perception of generalised trust in other people. It was appraised by the item "Generally, you can trust other people" with the four alternative answers: "Do not agree at all", "Do not agree", "Agree", and "Completely agree". It was dichotomised with the two first alternatives as low trust and the two latter alternatives depicting high trust.

Trust in the health care system (institutional/vertical trust) (Paper II)

Trust in the health care system (an aspect of institutional/vertical trust) is a self-rated item which encompasses an individual's trust in the health care system. The question was "What trust do you have in the health care system" with the five alternative answers: "Very high trust", "Rather high trust", "Not high", "No trust at all", and "No opinion".

Political trust (Paper III)

Political trust (another aspect of institutional/vertical trust) is a self-reported item which reflects trust in the Swedish *Riksdag* (the national parliament in Sweden). The question "What trust do you have in the following institutions in society?" concerned the *Riksdag* (the national parliament), the regional parliament as well as the respondent's local municipal assembly. It had four alternative answers: "Very big trust", "Rather big trust", "Not particularly big trust", "No trust at all", and "No opinion".

Care-seeking behaviour (Paper II)

Care-seeking behaviour was assessed by the question "Have you sought care when needed in the past three months?" with the alternative answers "Yes" and "No".

Anticipation of discrimination by employers (Paper IV)

Anticipated discrimination by employer was assessed by the item "Do you believe that employers in Sweden would discriminate according to race, colour of skin, religion, or cultural background?" It should be noted that this item does not refer to the anticipation that the respondent would be *personally* subjected to discrimination by employers, but rather to the anticipation that employers *generally* would discriminate against some people (ethnic group not specified) according to race, colour of skin, religion, or cultural background. The item had four alternative answers: "None or very few employers", "Less than 50% of all employers", "Approximately 50% of all employers", and "Most employers". This item was dichotomised further in some of the analyses in paper IV by aggregating the three first alternatives into one category and the latter alternative into the second category.

Statistical methods

The statistical analyses were performed using the SPSS software package, version 10.0.

Paper I

In this longitudinal study prevalences (%) of demographic, socioeconomic, health-related behaviour, BMI, and self-rated health variables were calculated, stratified by sex. Three-year first-ever AMI incidence rates and number of events were calculated according to demographic, socioeconomic, health-related behaviour and self-rated health variables, stratified by sex. Tests for trends in myocardial infarction incidence were calculated for all variables in the study in univariate Cox regression models. Adjusted hazard rate ratios (HRR, 95% CI) of first-ever acute myocardial infarction according to the self-rated health item, both dichotomised and not dichotomised, were calculated in Cox regression survival models adjusted for age, sex, education, economic stress, daily smoking, low leisure-time physical activity, and BMI.

Paper II

In this cross-sectional study prevalences (%) of self-rated health, socioeconomic, horizontal and vertical trust (trust in the health care system), and care-seeking behaviour variables were stratified by sex. Crude odds ratios and 95% confidence intervals (OR, 95%) were also calculated in order to analyse associations between socioeconomic, generalised (horizontal) and institutional (vertical) trust, and care-seeking behaviour variables and poor self-rated health. We conducted multivariate analyses using a logistic regression model to assess the potential importance of various confounders (age, country of origin, education, economic stress, horizontal trust and care-seeking behaviour) on the relationship between institutional trust in the health care system and poor self-rated health. We explored the effect of different variables on the association between care-seeking behaviour and the odds ratio of poor self-rated health by logistic regression analysis.

Paper III

Prevalences (%) stratified by sex of self-rated health, demographic, socioeconomic, generalized (horizontal) trust and political (institutional/vertical) trust in the *Riksdag* variables were calculated.

Crude odds ratios and 95% confidence intervals (OR, 95%) were calculated in order to analyse associations between the demographic, socioeconomic, generalised trust and political trust variables, and poor self-rated health. The multivariate analyses were conducted to assess the potential importance of various confounders (age, country of origin, education, economic stress, and horizontal trust) on the relationship between political trust and poor self-rated health using a logistic regression model.

Paper IV

Numbers and prevalences (%) stratified by sex of self-rated health, demographic, socioeconomic, horizontal trust and anticipated discrimination variables were calculated. Crude odds ratios and 95% confidence intervals (OR, 95%) were also calculated in order to analyse associations between socioeconomic, generalised (horizontal) trust and anticipated discrimination variables and poor self-rated health. All odds ratios were adjusted for age with the exception of the odds ratios showing the association between age and self-rated health. The relationships between country of origin stratified into different categories and dichotomised anticipated discrimination by employer, and self-rated health were investigated in logistic regression models. The multiple regression analyses were conducted using a logistic regression model to assess the potential importance of various confounders (age, country of origin, education, economic stress, and horizontal trust) on the relationship between anticipated discrimination and poor self-rated health. We explored the effect of different variables on the association between horizontal trust and poor self-rated health by a logistic regression analysis.

Results and conclusions

Paper I: Self-rated health predicts first-ever acute myocardial infarction: A prospective cohort study in southern Sweden

Results

The results of this study show that the distribution of "poor" self-rated health in 1999/2000 was 27.2% among men and 32.5% among women. The age distribution was similar among men and women. Respondents with high education constituted 24.9% of the male population and 27.7% of the female population. Economic stress was rather evenly distributed among men and women. The prevalence of daily smoking was 17.2% among men and 19.8% among women. A 15.3% of the men and 15.0% of the women had low levels of leisure time physical activity. A proportion of 42.5% of all men but only 27.9% of all women were overweight (BMI 25.0-29.9).

The numbers of first-ever myocardial infarction were 101 among men (55 surviving and 46 dead) and 52 among women (38 surviving and 14 dead). Higher age, male gender, low education, daily smoking and poor self-rated health were characteristics particularly strongly associated with high incidence rates of first-ever acute myocardial infarction. Men living with less economic stress had significantly higher incidence of first time AMI, which might be an age effect.

As table 1 shows the hazard rate ratio of first-ever acute myocardial infarction was significantly higher for poor compared to good self-rated health according to the dichotomized version of the item, HRR 3.34 (2.42-4.61), even after the final adjustments, HRR 2.12 (1.48-3.03) for all confounders. When the five self-rated health alternatives were analysed separately, only the "good" health alternative did not significantly differ from the "very good" health alternative according to incidence of first-ever acute myocardial infarction throughout the analyses. The "neither good nor poor", "poor", and "very poor" alternatives had significantly higher hazard rate ratios of incidence of acute myocardial infarction than the "very good" reference alternative throughout the analyses.

Conclusion

Self-rated health with five alternatives seems to predict incidence of first-ever acute myocardial infarction in Skåne 2000-2002. The results of the survival analysis of the five separate alternatives of the self-rated health item suggest that the common dichotomization of the five alternative self-rated health item seems to be valid also in a Swedish setting when it comes to identifying risk groups for AMI.

Table 1. Crude and adjusted hazard rate ratios (HRR, 95% CI) of first-ever acute myocardial infarction according to the five alternative self-rated health item (dichotomized and all five alternatives). Men and women (N=153/13,322). The public health survey in Skåne 2000.

	HRR (95% CI)*	HRR (95% CI)+	HRR (95% CI)£
Self-rated health (dichotomized)			
Good	1.00	1.00	1.00
Poor	**3.34 (2.42-4.61)**	**2.54 (1.84-3.52)**	**2.12 (1.48-3.03)**
Self-rated health (five items)			
Very good	1.00	1.00	1.00
Good	1.60 (0.85-2.99)	1.39 (0.74-2.60)	1.38 (0.72-2.67)
Neither good nor poor	**4.93 (2.68-9.07)**	**3.22 (1.74-5.95)**	**2.65 (1.38-5.10)**
Poor	**3.86 (1.73-8.58)**	**3.30 (1.48-7.35)**	**2.71 (1.14-6.46)**
Very poor	**6.29 (1.78-22.3)**	**5.91 (1.67-20.9)**	**7.29 (2.02-26.3)**

* Crude
+ Adjusted for age and sex.
£ Adjusted for age, sex, education, economic stress, daily smoking, leisure-time physical activity and BMI.

Paper II: Social capital, trust in the health care system and self-rated health: The role of access to health care in a population-based study

Results

The prevalence of low generalised trust in other people was 40.7% among men and 44.3% among women. A majority of the respondents had "very high" or "rather high" trust in the health care system (73.3%). Overall 18.0% of respondents had not sought care when needed. Almost one in five women had not sought care when needed. A 28.7% proportion of the men and 33.0% of the women rated their health as poor.

The likelihood of poor self-rated health was higher for both men and women born in other countries than Sweden, with higher age, low/medium education, high level of economic stress, low horizontal trust, low trust in the health care system, and those who had not sought care when needed during the past three months.

As table 2 shows the odds ratios for the "no trust at all" category were 3.1 (2.4-4.0) and 4.6 (3.6-5.9) for men and women, respectively. The odds ratios were considerably reduced after the inclusion of age, country of origin, education, economic stress and horizontal trust in the models, reducing the odds ratios of the "no trust at all" category to 2.5 (1.9-3.3) and 3.7 (2.8-5.0) for men and women, respectively. The inclusion of the care-seeking behaviour variable in the models further decreased the odds ratios to 1.9 (1.5-2.6) and 2.6 (1.9-3.6) for men and women, respectively.

The care-seeking behaviour variable "not sought medical care when needed" remained significantly associated with poor self-rated health throughout the analyses which successively included variabes including institutional trust in the health care system in the models.

Conclusion

Low trust in the health care system is associated with poor self-rated health. This association may be partly mediated by not seeking health care when needed. However, this is a cross-sectional exploratory study and the causality may go in both directions.

Table 2- Crude and multivariate odds ratios with 95% confidence intervals (OR:s, 95% CI:s) of trust in the health care system in relation to poor self-rated health.

Men

Institutional trust in health care system	OR (95% CI) *	OR (95% CI) §	OR (95% CI) #
Very high trust	1.0	1.0	1.0
Rather high trust	1.1(1.0-1.3)	1.2(1.0-1.3)	1.1(0.9-1.2)
Not high	1.8(1.6-2.1)	1.6(1.4-1.8)	1.4(1.2-1.6)
No trust at all	3.1(2.4-4.0)	2.5(1.9-3.3)	1.9(1.5-2.6)
No opinion	1.2(0.8-1.8)	0.9(0.6-1.5)	0.9(0.6-1.6)

Women

Institutional trust in the health care system	OR (95% CI) *	OR (95% CI) §	OR (95% CI) #
Very high trust	1.0	1.0	1.0
Rather high trust	1.1(1.0-1.2)	1.2(1.0-1.3)	1.1(1.1-1.3)
Not high	2.0(1.8-2.3)	1.8(1.6-2.1)	1.5(1.3-1.8)
No trust at all	4.6(3.6-5.9)	3.7(2.8-5.0)	2.6(1.9-3.6)
No opinion	1.1(0.8-1.6)	0.9(0.6-1.4)	0.9(0.6-1.5)

* Adjusted for age.

§ Adjusted for age, country of origin, education, economic stress and horizontal trust.

Adjusted for age, country of origin, education, economic stress, horizontal trust, and care-seeking behaviour.

The Public Health Survey in Skåne 2004.

Paper III: Social capital, political trust and self-rated health: A population-based study in southern Sweden

Results

The prevalence of low generalised trust in other people was 40.7% among men and 44.3% among women. The level of political trust ranged from 4.4% with "very high trust" in the *Riksdag*, 30.2% with "high trust", 38.2% with "not particularly high trust", to 17.3% with "no trust at all" among men (9.9% having no opinion) among men. Among women the corresponding proportions were 3.6%, 29.2%, 36.2%, 11.6% and 19.4%, respectively. A 28.7% proportion of the men and 33.2% of the women rated their health as poor.

The odds ratios of poor self-rated health were also significantly higher among men and women born in other countries than Sweden, with higher age, low/medium education, high level of economic stress, low horizontal trust, and low political trust (the political trust alternatives "not particularly high trust" and "no trust at all" as well as the "no opinion" category).

Table 3 shows that the odds ratios of poor self-rated health were significantly higher for the "not particularly high trust", "no trust at all" and "no opinion" categories of the political trust variable compared to the "very high trust" reference category among both men and women. The age-adjusted odds ratios for the "not particularly high trust" category were 1.6 (1.3-2.0) and 1.3 (1.1-1.6), for the "no trust at all" category 2.7 (2.1-3.4) and 2.2 (1.7-2.7), and for the "no opinion category 2.1 (1.6-2.7) and 1.6 (1.3-2.0), for men and women, respectively. These significant odds ratios remained largely unaffected after the inclusion of age and country of origin in the models. The addition of education and economic stress in the multivariate models reduced the odds ratios to some extent, although they remained significant. Finally, the inclusion of generalised (horizontal) trust in the models further reduced the odds ratios of poor self-rated health in the "no trust at all" category among both men and women, although all odds ratios that were initially significant remained significant. In these final models the odds ratios of self-rated health in the "no trust at all" category were reduced from 2.4 (1.8-3.1) to 2.1 (1.6-2.7) among men and from 1.9 (1.4-2.4) to 1.6 (1.3-2.1) among women.

Conclusion

Low political trust in the *Riksdag* (the Swedish national parliament) is associated with poor self-rated health, even after adjustment for social capital in the form of generalised trust in other people. However, this is a cross-sectional exploratory study and the causality may go in both directions.

Table 3. Age-adjusted and multivariate odds ratios with 95% confidence intervals (OR:s, 95% CI:s) of political trust in relation to poor self-rated health.

Men

Political trust in the **Riksdag (parliament)**	**OR (95% CI) ***	**OR (95% CI) §**	**OR (95% CI) #**	**OR (95% CI)¤**
Very high	1.0	1.0	1.0	1.0
High	1.1 (0.9-1.4)	1.1 (0.9-1.4)	1.2 (0.9-1.6)	1.2 (0.9-1.6)
Not particularly high	1.6 (1.3-2.0)	1.7 (1.4-2.2)	1.7(1.3-2.2)	1.6 (1.2-2.0)
No trust at all	2.7 (2.1-3.4)	2.8 (2.2-3.6)	2.4 (1.8-3.1)	2.1 (1.6-2.7)
No opinion	2.1 (1.6-2.7)	2.1 (1.6-2.7)	1.7 (1.3-2.3)	1.6 (1.2-2.8)

Women

Political trust in the **Riksdag (parliament)**	**OR (95% CI) ***	**OR (95% CI) §**	**OR (95% CI) #**	**OR (95% CI)¤**
Very high	1.0	1.0	1.0	1.0
High	0.9 (0.7-1.1)	0.9 (0.7-1.1)	0.9 (0.7-1.2)	0.9 (0.7-1.2)
Not particularly high	1.3 (1.1-1.6)	1.4 (1.1-1.7)	1.3 (1.1-1.7)	1.3 (1.0-1.6)
No trust at all	2.2 (1.7-2.7)	2.3 (1.8-2.8)	1.9 (1.4-2.4)	1.6 (1.3-2.1)
No opinion	1.6 (1.3-2.0)	1.6 (1.3-2.0)	1.4 (1.1-1.8)	1.4 (1.1-1.7)

* Adjusted for age.
§ Adjusted for age and country of origin.
# Adjusted for age, country of origin, education, and economic stress.
¤ Adjusted for age, country of origin, education, economic stress, and trust.
The Public Health Survey in Skåne 2004.

Paper IV: Ethnic differences in anticipated discrimination, generalised trust in other people and self-rated health: A population-based study in Sweden

Result

A 28.7% proportion of the men and 33.2% of the women rated their health as poor. The three largest country of origin subgroups apart from those born in Sweden were those born in other European (6.2%), other Nordic (2.9%), and Middle East and North Africa (1.3%) countries. The prevalence of low generalised trust in other people was 40.7% among men and 44.3% among women. The proportion of respondents who anticipated that employers would not discriminate according to race, colour of skin, religion, or cultural background was 17.0% among men and 15.1% among women. A proportion of 17.6% of the men and 14.7% of the women believed that most employers would discriminate according to race, colour of skin, religion, or cultural background.

The likelihood of having poor self-rated health was significantly higher among men and women born in the Middle East and North Africa, other European and other Nordic countries compared to men and women born in Sweden. Men and women born in other country of origin subgroups had odds ratios of poor self-rated health that did not significantly differ from men and women born in Sweden. The odds ratios of having poor self-rated health were higher for both men and women with higher age, low educational level, economic stress, low horizontal trust, and those who anticipated that most or approximately 50% employers would discriminate according to race, colour of skin, religion, or cultural background.

For both men and women the categories "other Nordic", "other European", "Middle East and North Africa", and "Latin America" had significantly higher odds ratios of poor self-rated health compared to the "born in Sweden" reference category. The age adjusted odds ratios of having poor self-rated health were significantly higher in the categories "other Nordic", "other European", and "Middle East and North Africa" for both men and women, but in the categories "the rest of Asia", and "Latin America" only in the case of women. The odds ratios of having poor self-rated health decreased after further adjustments for education, economic stress and generalised (horizontal) trust in other people but remained significant in the categories "other European", and "Middle East and

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North Africa" for men, and in the categories "other European" and "the rest of Asia" for women.

Table 4 shows that the odds ratios of poor self-rated health significantly differed for the "approximately 50%" and "most employers" categories of the anticipated discrimination by employers variable compared to the "none or very few" reference category among both men and women. The age adjusted odds ratios were 1.2 (1.1-1.4) and 1.8 (1.6-2.1) for men, and 1.2 (1.1-1.3) and 1.6 (1.4-1.9) for women, respectively. These odds ratios remained significant among both men and women after adjustments for both age and country of origin. After further adjustments for education and economic stress the odds ratio of having poor self-rated health slightly decreased to 1.7(1.5-2.0) for the "most employers" category among men, but slightly increased to 1.3(1.2-1.5) for the "approximately 50%" category among women. Further inclusion of the trust variable in the models decreased the odds ratios of the "most employers" category to 1.5 (1.3-1.8) and 1.5 (1.3-1.7) for men and women, respectively.

The horizontal trust variable remained significantly associated with poor self-rated health throughout the analyses including the plausible confounders and anticipated discrimination in the model.

Conclusion

The anticipation of discrimination by employers according to race, colour of skin, religion or cultural background is associated with poor self-rated health. This association was only affected to a limited extent by social capital in the form of generalised trust in other people. There were also ethnic differences in anticipated discrimination as well as in self-rated health. However, this is a cross-sectional exploratory study and the direction of causality may go in both directions.

Table 4. Age-adjusted and multivariate odds ratios with 95% confidence intervals (OR:s, 95% CI:s) of anticipated discrimination in relation to poor self-rated health.

Men

Anticipated discrimination by employers	OR (95% CI) *	OR (95% CI) §	OR (95% CI) #	OR (95% CI)¤
None or very few	1.0	1.0	1.0	1.0
Less than 50%	1.0 (0.9-1.1)	1.0 (0.8-1.1)	1.0 (0.9-1.2)	1.0 (0.9-1.2)
Approximately 50%	1.2 (1.1-1.4)	1.2 (1.1-1.4)	1.2 (1.1-1.4)	1.2 (1.0-1.3)
Most employers	1.8 (1.6-2.1)	1.8 (1.6-2.1)	1.7 (1.5-2.0)	1.5 (1.3-1.8)

Women

Anticipated discrimination by employers	OR (95% CI) *	OR (95% CI) §	OR (95% CI) #	OR (95% CI)¤
None or very few	1.0	1.0	1.0	1.0
Less than 50%	1.0 (0.9-1.1)	1.0 (0.9-1.1)	1.1 (0.98-1.3)	1.1 (0.98-1.2)
Approximately 50%	1.2 (1.1-1.3)	1.2 (1.1-1.4)	1.3 (1.2-1.5)	1.3 (1.1-1.4)
Most employers	1.6 (1.4-1.9)	1.6 (1.4-1.8)	1.6 (1.4-1.9)	1.5 (1.3-1.7)

* Adjusted for age.
§ Adjusted for age and country of origin.
# Adjusted for age, country of origin, education, and economic stress.
¤ Adjusted for age, country of origin, education, economic stress, and generalised (horizontal) trust in other people.
The Public Health Survey in Skåne 2004.

General discussion

Social factors affect health. Mortality and morbidity rates are higher in lower socioeconomic groups (Marmot et al., 1991). Citizens tend to be more mutually distrustful and belong to fewer civic associations where income disparities are greater, and in these circumstances health differences are greater (Kawachi et al., 1997). People with lower institutional trust in the health care system have poorer self-rated health (Armstrong et al., 2006). Discriminated people suffer more from a series of poorer health outcomes (Williams et al., 1997; Krieger, 2000). Addressing social inequalities, distrust, discrimination and other social conditions presents new and different challenges than past public health problems, and it seems that social determinants of poor health can only be addressed by societal solutions.

This thesis started with an ambition to focus on the association between social determinants of health i.e. aspects of social capital (horizontal/vertical trust) and discrimination, on the one hand, and self-rated health, on the other. The self-rated health measure has been utilised as either an indicator of health status or as a predictor of well-known social and bio-medical risk factors in public health surveys. It plays an important role in clinical practice, research and policy. Health was mainly defined as a subjective state that can give us information on and a overall view of the individual's health situation, with a poor evaluation of health being associated with poor health outcomes and greater health risks.

Socioeconomic status, psychosocial and social capital factors are regarded as determinants of health. Socioeconomic status may be regarded as a determinant of social conditions such as social capital (social networks/trust), or, alternatively, as a confounder associated with social conditions such as aspects of social capital, ethnicity, as well as with cardiovascular risk factors, and outcomes such as AMI (Lindström, 2000; Lindström et al., 2001b; Hammar et al., 2001; Tydén et al., 2002; Van Lenthe et al., 2002; Stuber et al., 2003). Horisontal aspects of social capital such as generalised (horisontal) trust are also associated with health and self-rated health (Kawach et al., 1997; Kawachi et al., 1999; Lindström et al., 2004). However, institutional/vertical aspects of social capital such as trust in political institutions and health care institutions have been much less investigated. Adjustments for SES measured as education and economic stress in papers I-IV, and for the social capital aspect horizontal trust in papers II, III, and IV, were thus conducted in order to

explore independent effects of institutional/vertical aspects of social capital and anticipated discrimination on (self-rated) health status.

In paper I, the poor self-rated health alternatives ("neither good nor poor", "poor" and "very poor") are significantly associated with an increased risk of first-ever acute myocardial infarction (AMI). After adjustments for age, sex, education, economic stress, daily smoking, leisure-time physical activity and BMI the increased risk of first-ever acute myocardial infarction remains significant. The positive association between poor self-rated health and the risk of first-ever acute myocardial infarction thus seems to indicate that poor self-rated health might be a predictor of AMI at least partly independent of SES also in the region Skåne in southern Sweden.

In paper II the "rather high trust", "not high trust" and "no trust at all" categories of the institutional trust in the health care system have significantly higher odds ratios of poor self-rated health compared to the "very high trust" reference category. The odds ratios were considerably reduced after the inclusion of age, country of origin, education, economic stress and horizontal trust in the models, but remained significant. The patterns remain in the multiple logistic regression model, including adjustment for care-seeking behaviour with the exception of the "rather high trust" category among men in which the significant association disappeared. The findings of paper II may represent a case where other mechanisms than SES are of importance for the association between trust in the health care system and (self-rate) health, i.e. an influence of access to health care in the link between institutional trust in the health care system and health status.

In paper III the "not particularly high trust", "no trust at all" and "no opinion" categories of the political trust in the *Riksdag* variable have significantly higher odds ratios of poor self-rated health compared to the "very high trust" reference category. These significant odds ratios remained largely unaffected after the inclusion of age and country of origin in the models. The addition of education and economic stress in the multivariate models reduced the odds ratios to some extent, although they remained significant, which indicates that the association between political trust and self-rated health may be partly independent of these socioeconomic factors. Finally, the inclusion of generalized (horizontal) trust in the models further reduced the odds ratios of poor self-rated health in the "no trust at all" category among both men and women, although all odds ratios that were initially significant remained significant. This association may be partly associated with generalised

(horizontal) trust in other people.

In paper IV the "approximately 50%" and "most employers" categories of the anticipated discrimination by employers variable have significantly higher odds ratios of poor self-rated health compared to the "none or very few" reference category. These odds ratios remained significant after multiple adjustments for age and country of origin. The addition of education and economic stress in the multiple logistic regression models had a slight effect on the significant relationship between anticipated discrimination and poor self-rated health, which indicate that the association may be partly independent of these socioeconomic factors. The inclusion of generalised (horisontal) trust in other people in the final model had a somewhat decreasing effect on the association between anticipation of discrimination by employers and self-rated health. This association was only to some extent affected by generalised (horisontal) trust in other people.

In the following parts of this discussion some basic findings of each article are separately described to introduce the associations between aspects of social capital (generalised/institutional trust), anticipation of discrimination by employers, acute myocardial infarction, and self-rated health.

Self-rated health predicts first-ever acute myocardial infarction (AMI)

The results of paper I show that the five-alternative self-rated health item predicts morbidity/mortality in acute myocardial infarction not only generally (as has been already presented in a number of international studies), but also in the setting of the region of Skåne (in the setting of the four articles included in this thesis) in the beginning of the 2000s. The rating of an individual's global self-rated health is the result of both traits of the personality and of a long-standing personal consciousness concerning health (Sundquist & Johansson, 1997). Evidence shows that poor self-rated health is associated with the development of cardiovascular disease (Bardage et al., 2001), and that cardiovascular diseases as well as myocardial infarction are associated with self-rated poor health (Maeland & Havik, 1988; Svärdh et al., 1998; Weinehall et al., 1998; Heidrich et al., 2002). The results of paper I demonstrate that this association is also found in a random sample of the general population in Skåne, southern Sweden, in 2000-2002.

Self-reported health is a valid (Idler & Benyamini, 1997; Heistaro et al., 2001; Franks et al., 2003) and reliable (Lundberg & Manderbakka, 1996) indicator of overall health in all population groups.

Self-rated health is also a valid indicator of chronic diseases (Moller et al., 1996; Svärdh et al., 1998), and strongly related to cohort mortality (Idler & Benyamini, 1997; Sundqvist & Johansson, 1997; Heistaro et al., 2001; Heidrich et al., 2002). People are likely to be well informed about their health status from external sources. They thus also have an immediate experience of their health and health problems (Lundberg & Manderbakka, 1996). It is argued that the self-rated health measure becomes less specific when a large number of response alternatives are used, because reliable estimates of global self-rated health tend to decrease (Lundberg & Manderbakka, 1996). The five-alternative item concerning self-rated health with its most common dichotomization into very good/good as opposed to neither good nor poor/poor/very poor seems to be sufficient to identify groups with higher risks of first-ever acute myocardial infarction. This particular dichotomization appears to be optimal in this respect, because only the "good" self-rated health alternative did not significantly differ from the "very good" reference alternative.

Research shows that self-rated health varies according to education and economic stress. Respondents with lower education and less economic stress seem to be more likely to report first-ever acute myocardial infarction. The somewhat unexpected significant association between low economic stress and high risk of acute myocardial infarction in our study can be completely explained by the fact that the data were not adjusted for age. Bosworth and colleagues (1999) assume that persons with higher education may be more informed and active in benevolent health-related behaviours, and have greater access to medical care. Several studies have shown that socioeconomic differences contribute to the incidence of coronary heart disease and acute myocardial infarction (Hammar et al., 2001; Tydén et al., 2002; Van Lenthe et al., 2002). Thorslund and Lundberg (1994) have studied social class inequalities in health in the oldest part of the population in Sweden. They found clear social inequalities in health for both men and women, but emphasized that the global self-rated health measure showed the smallest class gradient when controlling for age and sex, compared to other more concrete and descriptive health indicators used in their study (such as peak flow rate).

The findings of this study were consistent with the literature that being a smoker (Van Lenthe et al., 2002; Piegas et al., 2003), being overweight/obese (Wilhelmsen et al., 2001; Van Lenthe et al., 2002;) and having lower physical activity (Van Lenthe et al., 2002) are associated with the incidence of first-ever acute myocardial infarction.

Social capital, trust in the health care system and self-rated health with regard to the role of access to health care services

The results of paper II indicate that individuals with low institutional trust in the health care system to a significantly higher extent have poor self-perceived health. The interpretation could be that the level of institutional (vertical) trust affects (self-rated) health. This association may be partly mediated by care-seeking behaviour. A person's trust in the health care system can strongly affect health by at least two different causal mechanisms. One plausible mechanism may be psychosocial. It is plausibly generally more beneficial for a person's health, both psychological and physical health, to have trust than not to have trust. A second, probably much stronger, mechanism by which vertical trust in the health care system affects health concerns the access to health care and amenities. If a person has trust in the health care system that person is more likely to seek help and receive adequate treatment. This may for instance affect the probability of avoiding cardiovascular (CVD) incidence (e.g. acute myocardial infarction and stroke) among people with hypertension or deranged blood cholesterol and plasma lipid levels without any previous CVD incident. Trust in the health care system may also, in a similar way, affect the propensity of a post-myocardial infarction patient to follow prescribed medication/treatment and to return to the health care system for check-ups in order to prevent future CVD events. Both of these plausible causal mechanisms have previously been hypothesised by Kawachi et al. (1999). Care seeking behaviour may be the intermediate step in particularly the second mechanism.

Persistence over time in either institutional trust or lack of institutional trust is a precondition for the social capital trust factor to be a determinant of self-rated health. The literature on the persistence over time in trust or lack of trust in the health care system is very scarce. A recent study found that trust in an insurer was more likely to change over time than trust in one's own primary health care physician, which was stable over time (Balkrishnan et al., 2004). Furthermore, other trust variables such as horizontal trust (generalised trust in other people) and institutional trust in politicians and the political system have been shown to be very persistent over time (Holmberg, 1999; Putnam, 2000;).

The group with low institutional (vertical) trust in the health care system had a higher risk of reporting poor health status. One third of all respondents (31.4% of men and 35.3% of women) with

lack of/low trust in the health care system rated their health as poor. The inclusion of care-seeking behaviour in the multivariate logistic regression model had a decreasing effect on the vertical trust differences in poor self-rated health. This result supports the idea that insufficient access to health care might be an important mediating link in the association between trust in the health care system and self-rated health.

A recent US study found that lack of trust in the health care system was significantly associated with self-rated health (Armstrong et al., 2006). To our knowledge there are no other studies concerning this topic. In line with the previous international research, the results of this study show that self-rated poor health is associated with higher age, low educational attainment, low socioeconomic status (Kawachi et al., 1999; Franks et al., 2003), and low generalised trust in other people (Kawachi et al., 1999; Lindström, 2004; Lindström et al., 2004). A previous investigation has shown that higher levels of generalised trust in other people have protective effects on health. Generalised trust was for instance associated with better self-rated health, more satisfaction and longer survival (Barefoot et al., 1998). In Sweden, social participation and generalised trust in other people have been shown to be associated with self-rated health (Lindström, 2004).

The prevalences of "very high" and "rather high" trust in the health care system are 15.1% and 58.3% in the total population, respectively. There seems to be a very high potential of institutional trust in the health care system in the general population in Skåne in southern Sweden.

Access to health care is a multi-faceted concept, which entails the relationship between need, provision and utilization of health services. Access might be defined as some point on the pathway involving the processes of contacting, entry and utilization of effective, appropriate and acceptable services, as well as the attainment of the desired or appropriate outcomes (National Co-ordinating Centre for NHS Service, 2001). Barriers to access can consequently occur at different points on the continuum of contact to utilization of health care services, and depends on financial, organizational (e.g. registration, costs), and social/cultural barriers (e.g. care-seeking behaviour, poor relationship) which limit the utilization of services (National Co-ordinating Centre for NHS Service, 2001). Thus utilization is dependent on the affordability, accessibility and acceptability of services, not only the adequacy of health services (National Co-ordinating Centre for NHS Service, 2001).

In the international literature sociodemographic and financial issues, individual health and perceived health status, knowledge, amenability, time and place of residence, communicative action and the degree of interconnectedness of social networks are seen as variables that have a major impact on care-seeking behaviour, as well as access to and utilization of health care services (Birkel an & Reppucci, 1983; National Co-ordinating Centre for NHS Service, 2001; Thiede, 2005). Good interactions between patients and providers are of importance as a prerequisite of effective health care. Inappropriate networks and relationships between patients and providers produce low trust in the health care system. A low level of trust in the health care system presumably causes low level of access to health care, and delays in seeking health care until the health conditions deteriorate. The behaviour of patients may cause inappropriate patterns of service use such as non-uptake of preventive services, delay in the uptake of services for conditions requiring treatment, and inappropriate demands on emergencies (National Co-ordinating Centre for NHS Service, 2001). Poor health status also increases the propensity to use health care services, considering constant all other factors, a fact which was taken into consideration by including the access variable in the final multivariate models. Substantial attention has been focused on the availability of services (having access) (Thiede, 2005). Another aspect of access (gaining access), which has received less attention, concentrates on the relational factor that may affect people's subjective choice sets or their freedom to utilise health services (Thiede, 2005). This paper was one of the first to study the relationship between institutional trust in the health care system, generalised trust in other people, care-seeking behaviour and self-rated health.

Social capital, political trust and self-rated health

This paper was one of the first to study the relationship between political trust (which is a form of institutional or vertical trust), generalised (horizontal) trust in other people and self-rated health. This study demonstrates that the category with "low political trust" and people with "no opinion" concerning the *Riksdag* (the Swedish national parliament) to a significantly higher extent have poor self-rated health than the "very high political trust" reference category. The interpretation could be that political trust affects (self-rated) health. This association may be partly associated with generalised (horizontal) trust in other people.

It is plausible that political trust has an independent effect on self-rated health. Macro politics level

political factors may thus influence both population health and individual health. These results have implications for health policy and public health. First, trust in the *Riksdag* and its politicians may have health consequences. Public health is not only a matter for particular politicians, public officials and some private enterprises making decisions exclusively within the health care sector. Public health considerations should be taken into account in all decisions within other policy areas as well. They should also always be taken into account when decisions are made at the *macro* politics level. Health policy should also entail a healthy public policy in general (Walt, 1994). Second, new right wing populist parties have emerged in several West European countries in recent decades. They express discontent and lack of trust in what they regard as the political "establishment", i.e. the government and the other political parties and their representatives (Kitschelt, 1994; Mair, 1997). They are opposed to the European Union, the process of internationalisation, the immigration policy, and the political "establishment" in general (Kitschelt, 1995). Underlying factors explaining this development include processes of change on the labour market, changing skills requirement to obtain a job, and the decline of traditional social environments which are experienced as threats by some segments of the population (Kitschelt, 1995). In Skåne an average of 7% of the voters voted for a right wing populist party in the municipal elections in 2006 (Valmyndigheten)**.** It may be that the disappearance of social environments and identities tied to occupational skills and other social contexts affect both political trust and general health in the population to an important extent, although this has not been investigated in this study. However, after adjustments for both education and economic stress in the multiple regression models the significant association between political trust and self-rated health remained, which indicates that the association between political trust and self-rated health may be partly independent of these socioeconomic factors.

Ethnic differences in anticipation of discrimination, generalised trust in other people and self-rated health

Paper IV is one of the first to investigate the relationship between anticipated discrimination, social capital in the form of generalised trust in other people and self-rated health. The results of this study show that individuals with higher anticipation of discrimination by employers according to race, colour of skin, religion or cultural background to a significantly higher extent have poor self-rated health than the reference group that only anticipate that "none or very few employers" would

discriminate. The interpretation could be that high levels of anticipation of discrimination affect (self-rated) health. This association is only to some extent affected by generalised trust in other people. The inclusion of generalised trust in other people in the multivariate logistic regression model had a somewhat decreasing effect on the association between anticipation of discrimination by employers and self-rated health. This result supports the idea that low trust in other people might to some extent be associated with anticipation of discrimination and self-rated health.

A substantial proportion of people anticipated discrimination by employers even in the group born in Sweden. There were some other ethnic minorities that had almost the same odds ratios of anticipated discrimination as the group born in Sweden. A recent review of the effects of racism on mental health has indicated that psychosocial resources, such as supportive social ties and racial identity, can affect or buffer the adverse effects of acute and chronic discrimination on health problems of African Americans (Williams & Williams-Morris, 2000). The effect of perceived experiences of racism on blood pressure has for instance been shown to be benevolently affected by social support (Clark, 2003). Having a strong sense of racial/ethnic identity (Mossakowski, 2003; Sellers et al., 2003), participation in traditional activities (Whitbeck et al., 2002), spiritual activity (Bowen-Reid & Harrell, 2002), and religious support seeking/ instrumental social support (Finch & Vega, 2003) have been found to attenuate the adverse effects of self-reported racism on depressive symptoms (Whitbeck et al., 2002; Mossakowski, 2003; Sellers et al., 2003), psychological distress (Bowen-Reid & Harrell, 2002) and self-assessed health status (Finch & Vega, 2003).

Unexpectedly, we found significant differences of anticipation of discrimination by employers for other Nordic (among women) and other European (among both men and women) ethnic subgroups that are more similar to people born in Sweden according to race, colour of skin, religion or cultural background. A substantial part of the majority population also seems to anticipate that discrimination would occur according to race, colour of skin, religion or cultural background. A recent study has argued that people who are not considered to have disadvantaged social status occasionally think of themselves as experiencing discrimination (Pavalko et al., 2003). This is not necessarily people who are really at higher risk of discrimination. One study (Ferraro & LaGrange, 1992) reported for instance that women are more likely to express self-reported fear of crime or sense of insecurity in public places, despite the fact that they are not necessarily victimised to a higher extent than others. One other explanation is related to the definition of intra-racial racism.

This kind of racism occurs when a person is discriminated against due to his/her race by a member of his/her own ethnic/race group (Paradies, 2006). A recent study has reported that the members of oppressed racial groups are more likely to consider negative behaviours from members of their own racial group to be discriminatory compared with similar behaviours from members of other racial groups (Major et al., 2002).

The results of this study show that there were significant ethnic differences in self-rated health, a finding which supports the findings of previous studies (Lindström et al., 2001b; Wiking et al., 2004).

Social capital has been shown to be negatively associated with discrimination. The north-south geographic gradient in generalised (horizontal) trust in other people in the USA, with levels of trust increasing with the proximity to the Canadian border, has its historical roots in American history. Both the system of slavery before the 1861-1865 civil war and the Jim Crow laws lasting until the mid-twentieth century in the American south represented discrimination sanctioned by the law which also tended to destroy social capital in southern USA (Putnam, 2001). Furthermore, higher levels of generalised trust in other people are claimed to have protective effects on health. High trust is for instance associated with better self-rated health, more satisfaction and longer survival (Barefoot et al., 1998).

A Swedish study has shown that unfair treatment can adversely impact health for all persons who have such experiences, but minority populations will experience higher levels of discrimination because of their stigmatised status. Those of other origins than being born in Sweden have an experience of migration that influences their social life in the new country (Sundquist, 1995). Research also reveals that discrimination limits the employment opportunities and has an adverse impact on income levels (Williams et al., 1997; Krieger, 2000; Williams & Williams-Morris, 2000).

There are several studies that have revealed an association between self reported experiences of discrimination and self-rated health (Karlsen & Nazroo, 2002; Williams et al., 2003; Stuber et al., 2003; Schulz et al., 2006; Harris et al., 2006; Paradies, 2006, Jasinskaja-Lahti et al., 2007). Studies investigating the association between fear or anticipation of ethnic discrimination and health are much scarcer. A previous study demonstrated a significant association between fear of being the

victim of future racism and self-rated health, independent of gender, age and household social class (Karlsen & Nazroo, 2004), which is a result similar to our study. However, no previous study has, to our knowledge, investigated the effects of anticipation of discrimination by employers not directly connected with the respondent himself/herself on self-rated health, taking social capital (in the form of trust) and ethnic differences into consideration.

The results of this study suggest that discrimination by employers is not just anticipated by ethnic groups, but a substantial proportion of people born in Sweden also report anticipation that employers may discriminate. Most of the analyses concerning the effect of anticipation of discrimination by employers in the general population in this study have been conducted on the entire population sample from the Skåne 2004 survey, including the Swedish born majority. The health effects of discrimination and anticipation of discrimination on the entire population have been less investigated than the health effects of discrimination on minority populations. The results suggest that the health of a substantial proportion of the majority population might be affected by the anticipation of discrimination. On the other hand, it may also be regarded as a finding which suggests that the health of the majority population may be affected by the anticipation that ethnic discrimination may occur, although the discrimination may not be anticipated to be directed towards the respondents himself/herself or towards the majority population. Still, the odds ratios of poor self-rated health were higher among both men and women born in other countries compared to the odds ratios of poor self-rated health among men and women born in Sweden. This finding indicates that the effects of anticipation of discrimination on self-rated health are probably more pronounced among ethnic minority groups.

Limitations and strengths

Paper I is a longitudinal prospective cohort study design, which may be considered an important strength in this study.

Papers II-IV of this thesis are cross-sectional studies, which means that we can not draw definitive conclusions concerning the direction of causality.

The participation rate of 59% may be regarded as acceptable. The study population shows similar composition according to socio-demographic variables compared to the general composition of the

population of Skåne in statistical registers. However, the group born in other countries than Sweden is under-represented by approximately 4 per cent units in this study compared to official register statistics for Scania. Still, the risk of selection bias was considered low in a previous study on a random sample conducted with the same sampling design and with approximately the same participation rate (59%) in Skåne 2000 (Carlsson et al. 2006). There are no strong reasons to believe that the two studies are subject to any serious selection bias.

In study I confounding was controlled for by adjusting for age, sex, education, economic stress, daily smoking, leisure time physical activity, and BMI, and by censoring individuals with previous events of first-ever acute myocardial infarction prior to January 2000.

The Swedish In Care and the Swedish Cause-of-Death registers are of internationally high standard concerning validity and reliability particularly when it comes to CHD and AMI, as personal identification number, assigned to each person in Sweden, is recorded in all registers and was used for record linkages between the health survey in Skåne 2000 investigation. A small number of individuals might have left the country without notifying the authorities, but this most plausibly will not have affected the results of this study. Consequently, the risk of non-differential misclassification is probably of minor importance in this study, because non-differential misclassification tends to attenuate true differences, and this study shows significant results. Furthermore, we have also censored all participants in the baseline investigation that had had a first time acute myocardial infarction before January 2000.

The variable "leisure time physical activity" makes a valid distinction between alternative one (sedentary life style) and the three following alternatives (increasing amount of physical activity for each alternative) when dichotomised with the sedentary alternative against the three others (Rosengren & Wilhelmsen, 1997).

In the Skåne 2000 study material respondents were asked to self report their height and weight. Self report of height and weight tends to result in an overestimation of height (slightly) (Boström & Diderichsen, 1997) and an underestimation of weight (more importantly).

A potential weakness of study I is residual confounding, which may be due to the fact that the two classical cardiovascular risk factors high plasma cholesterol and hypertension have not been

assessed in this data material. Still, we have adjusted for BMI, which may be regarded as an indirect measure of the metabolic syndrome, which also includes high plasma cholesterol and hypertension, in a general Western population. Additional residual confounding may be attributed to the lack of information concerning prevalent health problems such as for instance angina pectoris.

Self-rated health is a valid (Franks et al., 2003) and reliable (Lundberg & Manderbacka, 1996) subjective indicator of overall health in all population groups. Self-rated health is also shown to be a valid indicator of chronic diseases (Moller et al., 1996; Svärdh et al., 1998), and is strongly related to cohort mortality in the USA and Sweden (Idler & Benyamini, 1997; Sundquist & Johansson, 1997).

The trust items (generalised/horizontal and political/institutional/vertical) are completely self-perceived items, which are very hard to validate. The generalised (horizontal) trust item used in this study has been used in previous nationwide investigations (Putnam, 1993). One strength with this item is that it was directly imported to the Skåne 2000 and 2004 data materials from the international literature (Kawachi has for instance used it in the international epidemiological literature many times and he, in his turn, imported it from political and social sciences, for instance Putnam). Furthermore, low social capital (low trust and low social participation) has been demonstrated in a previous prospective study linking the 2000 public health questionnaire in Scania to prospective register data on acute myocardial infarction incidence to be associated with an increased risk of acute myocardial infarction (Ali et al., 2006).

The new Skåne 2004 data material contains variables on institutional (vertical) trust in addition to the generalised (horizontal) trust in other people variable in the Skåne 2000 data material. The institutional trust in the health care system item has been used previously in a US study (Armstrong, 2006).

The political trust item (paper III) has been used previously in Sweden (Holmberg, 1999). The political trust in the *Riksdag* item was analysed in the paper III. The question concerning political trust also entailed items on trust in the regional parliament and the respondent's local municipal assembly. The Cronbach's alpha for the three political trust items was 0.85, indicating a high

concordance between the three items. Still, the political trust in the *Riksdag* item directly relates to the political authority level responsible for the functioning of both the economic system and the general welfare system in Sweden. Furthermore, it also directly relates to the measurements of political trust conducted within the political science literature (Holmberg, 1999).

The question "Have you sought medical care when needed in the past three months?"(paper II) was interpreted to be an expression of access. This item identified access patterns, with respect to care-seeking behaviour. In the survey instrument (questionnaire) used (the 2004 public health survey) this question is the only opportunity to explore accessibility. This question has previously been used to measure access to health care services (Nguyen et al., 2005). It is of course still possible that this item may incur some recall bias, a form of misclassification, which might have been introduced by asking respondents about their care-seeking behaviour during the preceding 3-month period.

The anticipation of discrimination by employer item (paper IV) is also a self-rated item, which is very hard to validate. Although we had only one question concerning anticipation of discrimination (ethnic discrimination may occur in many different situations), this item is very important because working life is an essential aspect of social life in general.

Dichotomization might be considered as a weakness in our studies. Only two variables were dichotomised (apart from the "self-rated heath" outcome variable which is discussed in study I, and "leisure time physical activity" that has been previously mentioned above). These two variables are "country of origin" and "generalised (horizontal) trust in other people". The dichotomization of the "country of origin" variable in some of the tables is due to the fact that the scale is nominal for the variable, i.e. it is not possible o describe the country of origin variable in terms of more or less, high or low. The relationship between for instance being born in the Nordic countries is only nominal in relation to being born in for instance the Middle East. The "generalised trust in other people" variable was dichotomised in the way that it has been dichotomised internationally. Adjusting for the generalised trust in other people variable without having dichotomised it (still four alternative answers on an ordinal scale) yields the same results as those already demonstrated in the tables.

In studies II-IV, the variables that were controlled for as confounders were age, country of origin, education, economic stress, and horizontal trust, while other variables in the models (care-seeking

behaviour in paper II and partly horizontal trust in paper IV in table 6) were regarded as potential mediating factors. The decision to regard these variables as intermediate ones in a causal chain was based on the results of Medline searches for mediating factors used in other studies in the same field. Controlling for such intermediate factors would theoretically lead to an underestimated effect of an exposure variable in the model, on the outcome variable.

Implications for future research

Acute myocardial infarction (AMI) may be partly regarded as a result of biological processes earlier in life. The life course approach in epidemiology has grown immensely in importance in recent decades, and cardiovascular epidemiology is one of the most essential areas in this new research field (Kuh & Ben-Schlomo, 2004). It thus seems to be a good strategy to analyse this outcome longitudinally over the life course, although this of course concerns data availability. The results of paper I suggest that the commonly used self-rated health item with five-alternative answers may be applied even in the current setting of the region of Skåne in southern Sweden even in future studies conducted on the Skåne 2000 and 2004 surveys.

The results of papers II-IV call for longitudinal studies. The results of papers II and III indicate that future research should focus on identifying the direction of the association between institutional trust and health, and disentangling what additional factors there are which may modify this relationship. In paper IV the rational for studying health consequences of discrimination is to enable full consideration of what drives population patterns of health, disease and well-being in order to produce knowledge useful for guiding policies and actions to reduce social inequalities in health and to promote social well-being. Similarly, as Krieger (2000) explains, apart from epidemiologic commitment to reduce human suffering, we can illuminate how oppression, exploitation, and degradation of human dignity harm health, and show how social justice is the foundation of public health. Sweden even has laws and specially appointed *ombudsmän* against discrimination. Still, the findings of this study open up for new research questions. Is it a disadvantage in relation to health to belong to a majority population that discriminates against an ethnic minority? The results of studies II-III may also call for multilevel analyses on the effects of not only horizontal social contexts but also different health care system, administrative and political contexts or cultures in different parts, regions and municipalities in Sweden on health and access to health care.

Implications for prevention

Study I shows that the self-rated health item with five alternatives may predict incidence of first-ever acute myocardial infarction in Skåne in 2000-2002. These results suggest the importance of the patient's perception of health status as an important indicator of at least cardiovascular health. Paper I also suggests that special attention should be paid to individuals with cardiovascular disease reporting poor health status.

The implications for preventive work following the results of paper II would be to improve trust in the health care system by increasing the access to health care and ultimately health outcomes, presumably by increasing appropriate networks and relationships between patients and providers, because in this paper the association between institutional trust in the health care system and (self-rated) health remained statistically significant even after adjustments for a number of demographic, SES, and generalised trust confounders. Adjustment for the "care-seeking behaviour" variable had a decreasing effect on the association between institutional (vertical) trust and poor self-rated health. This result supports the idea that insufficient access to health care in the groups with low trust in the health care system might be explained as a part of an important link behind the trust differences in self-rated health, and consequently, health status.

The results of paper III have implications for health policy and public health. Public health considerations should be taken into account in all decisions even when decisions are made at the macro politics level. Health policy should also entail a healthy public policy in general. However, in this paper the association between political trust and self-rated health remains statistically significant even after adjustments for plausible confounders including generalized (horizontal) trust. The implication for preventive work following from paper III would be to strive for rebuilding public trust, which is certainly not an easy task given the current strain on public welfare budgets. Furthermore, very little is known concerning how to build social capital (Putnam, 2000). This may also be a vicious circle, because an increase in poor self-rated health due to poorer political trust, which is one of the two possible directions of causality in this cross-sectional study, may also lead to a higher demand for health care and other public amenities.

The results of papers II and III are generally harder to convert into preventive strategies, because

little is known about the creation of institutional (vertical) trust in the same way as little is known concerning the creation of social capital in general (Putnam, 2000). Still, trust seems to be an important determinant of health in these papers.

The findings of paper IV recommend employers to avoid ethnic discrimination in their employment strategies and to modify environments that are conducive to any forms of discrimination, since physical health and emotional well-being affect worker productivity, and any work-based stressors that affect health and well-being are costly for productivity (absence) and employment-related health expenses (employee health insurance) (Pavalko et al. 2003). However, in this paper the association between anticipation of discrimination by employers according to race, colour of skin, religion or cultural background, and poor self-rated health was significant. This association was only affected to a limited extent by social capital in the form of generalised trust in other people. There were ethnic differences in anticipated discrimination as well as in self-rated health. This significant association was obvious also in the majority population, aside from the minority population, thus the same strategy might be to recommend programmes primarily directed towards groups of individuals born in Sweden.

Conclusions

Self-rated health with five alternatives seems to predict incidence of first-ever acute myocardial infarction in Scania 2000-2002. The results of the survival analysis of the five separate alternatives of the self-rated health item suggests that the common dichotomization of the five alternative self-rated health item seems to be valid also in a Swedish setting when it comes to identifying risk groups for AMI.

Low trust in the health care system is associated with poor self-rated health. This association may be partly mediated by not seeking health care when needed. However, this is a cross-sectional exploratory study and the causality may go in both directions.

Political trust in the *Riksdag* (the Swedish national parliament) is associated with poor self-rated health. This association may be partly associated with social capital in the form of generalised (horizontal) trust in other people. This is a cross-sectional exploratory study and the causality may go in both directions.

The anticipation of discrimination by employers according to race, colour of skin, religion or cultural background is associated with poor self-rated health. This association was only affected to a limited extent by social capital in the form of generalised trust in other people. There were also ethnic differences in anticipated discrimination as well as in self-rated health. This is a cross-sectional exploratory study and the causality may go in both directions.

Sammanfattning på svenska (Populärvetenskaplig sammanfattning)

Självrapporterad hälsa har i flera decennier använts som ett generellt mått på hälsa för såväl individer som i ett befolkningsperspektiv. Självrapporterad hälsa har i tidigare studier visats ha ett signifikant samband med såväl total morbiditet och mortalitet som morbiditet och mortalitet i vissa diagnoser och diagnosgrupper. Självrapporterad hälsa mäts ofta i folkhälsoenkäter med en fråga som innebär att respondenten uppmanas skatta sitt eget generella hälsotillstånd på en femgradig skala från mycket god hälsa till mycket dålig hälsa med ett neutralt alternativ i mitten. I denna avhandling används därför självrapporterad hälsa som en indikator på hälsa. Tonvikten i avhandlingen ligger på hur socialt kapital och diskriminering är associerade med hälsan i befolkningen i Skåne.

Artikel 1 är en longitudinell prospektiv studie (över de tre åren januari 2000- december 2002) som med hjälp av överlevnadsanalyser (Cox-regressioner) visar att dålig självskattad hälsa (den femgradiga skalan) i den folkhälsoenkätundersökning som genomfördes i Skåne 1999/2000 har signifikant samband med incidens och mortalitet i akut hjärtinfarkt (vilket även visats tidigare i andra internationella populationer) även i befolkningen i Skåne vid 2000-talets början.

De andra tre artiklarna har samtliga självrapporterad hälsa mätt med den femgradiga skalan som sin beroendevariabel. I dessa tre artiklar undersöks hur olika aspekter av socialt kapital och diskriminering påverkar hälsan i befolkningen. Socialt kapital definieras som de egenskaper hos sociala strukturer – framför allt mellanmänsklig tillit, tillit till samhällets institutioner, socialt deltagande samt normer om reciprocitet och ömsesidig hjälp – som underlättar gemensamt handlande för det gemensamma bästa. Socialt kapital anses av vissa författare påverka hälsan i en befolkning genom åtminstone fyra olika tänkbara verkningsmekanismer. Socialt kapital kan påverka folkhälsan genom att tillhandahålla känslomässigt stöd och genom att vara en källa till självförtroende och ömsesidig respekt, det vill säga en psykosocial förklaring som kan tänkas innefatta både ett psykologiskt och ett biologiskt (axeln hypothalamus-adenohypofysen-binjurebarken) orsakssamband. Socialt kapital kan också tänkas öka tillgängligheten till hälso- och sjukvård via ökad information, kommunikation och sociala nätverk. För det tredje kan socialt kapital påverkan hälsa genom att påverka normer och värderingar angående hälsorelaterade levnadsvanor. För det fjärde kan socialt kapital förebygga kriminalitet, inte minst våld, och således påverka folkhälsan positivt. Sambanden mellan socialt kapital och hälsa har tidigare huvudsakligen studerats i den horisontella dimensionen som samband mellan generaliserad tillit till andra människor och socialt deltagande, å ena sidan, och hälsa, å den andra. Det finns nu ett stort antal

studier som har studerat sambandet mellan olika aspekter av horisontellt socialt kapital och olika aspekter av hälsa och hälsorelaterade levnadsvanor. Däremot är det ett mycket litet antal studier som analyserat samband mellan vertikala aspekter av socialt kapital – tillit till samhällets institutioner – och hälsa liksom samband mellan diskriminering och hälsa. I Skåne har tillit till samhällets institutioner (vertikal tillit) och antecipering att diskriminering från arbetsgivarnas sida kan förekomma när det gäller ras, religion, hudfärg och etnisk bakgrund bara undersökts i den senaste folkhälsoenkäten som genomfördes 2004. De andra, tredje och fjärde artiklarna i avhandlingen undersöker därför sambanden mellan olika aspekter av tillit till samhällets institutioner som hälso- och sjukvården och Riksdagen samt förväntningar att arbetsgivare ska diskriminera på arbetsmarknaden på grund av ras, religion, hudfärg eller kultur, å ena sidan, och självskattad hälsa, å den andra. I samtliga dessa artiklar kontrolleras bland annat för den tänkbara confounder (faktor som har samband med både den beroende och oberoende variabeln och som därför kan påverka sambandet mellan dem) som generaliserad (horisontell) tillit till andra människor utgör i det här sammanhanget.

Resultaten av den andra artikeln visar att låg tillit till hälso- och sjukvården har ett signifikant samband med dålig självskattad hälsa in en logistisk regressionsmodell. Detta samband kan vara medierat av den variabel som mäter huruvida respondenten har sökt hjälp eller inte sökt hjälp i sjukvården för hälsoproblem av så allvarlig upplevd karaktär att man anser att sjukvård skulle ha behövts.

Politisk tillit är också en form av institutionell tillit. Den tredje artikeln visar att det finns ett signifikant positivt samband mellan politisk tillit till Riksdagen (parlamentet på nationell nivå i Sverige) och självskattad hälsa. Även i denna artikel har justering gjorts för en rad confounders som även innefattar generaliserad (horisontell) tillit till andra människor. Justering för generaliserad tillit till andra människor minskar något styrkan i sambandet mellan politisk tillit och självskattad hälsa, men sambandet förblir signifikant.

Den fjärde artikeln undersöker sambandet mellan den negativa förväntningen att flertalet arbetsgivare på arbetsmarknaden kan komma att diskriminera efter ras, hudfärg, religion eller kulturell bakgrund och självskattad hälsa. Sambandet är signifikant och påverkas bara till en begränsad del av justering för confounders bland vilka generaliserad (horisontell) tillit till andra människor också ingår. Det finns också skillnader mellan människor födda i olika länder i negativ förväntning att arbetsgivare kunde komma att diskriminera.

Studierna 2-4 är tvärsnittsstudier varför man inte säkert kan uttala sig om kausalitet, men de indikerar intressanta samband där framtida longitudinella analyser kan ge säkrare indikationer om kausalitet i sambanden mellan (vertikal) tillit till samhällets institutioner, anteciperad diskriminering och hälsa.

Acknowledgements

I wish to gratefully acknowledge all those who have contributed to this thesis. This is an impossible task, given the many people that have helped and sponsored the work. I am going to try anyway, and if your name is not listed, rest assured that my gratitude is not less than for those listed below.

I wish to thank all the participants in the 2000 and 2004 public health survey in Scania (Skåne) for their participation in the studies.

I would like to express my deep and sincere gratitude to associate Professor Martin Lindström, my supervisor, for his support, encouragement, humour, valuable advice and constructive comments, rapid reading, language revision of the text, summary in Swedish, and many effective discussions. His wide knowledge and logical way of thinking have been of great value for me and have provided a good basis for the present thesis.

Lots of thanks go to my second supervisor, associate Professor Maria Rosvall, for co-authorship and many valuable comments on the "kappa" of this thesis.

I wish to express my warm and sincere thanks to Professor Juan Merlo, associate Professor Thor Lithman, MD, PhD Sadiq Mohammad Ali, Professor Ulf Gerdtham, and PhD Kamrul Islam for their co-authorship.

It is a pleasure to express my gratitude to Professor Lennart Råstam, head of the Department of Clinical Sciences in Malmö, Lund University, for providing good conditions in the department.

I would also like to gratefully acknowledge the support of the secretaries in the department of Social Epidemiology and Health Economics, for helping the departments to run smoothly, and librarians at the Clinical Research Centre (CRC) of the Lund University, for providing services and assisting with literature.

I warmly thank Anette Saltin and Birgitta Reisdal, from the Research Education Office. Their kind support and guidance have been of great value during the PhD student period.

My special appreciation wholeheartedly goes to my parents, who formed part of my vision and

taught me the good things that really matter in life, for their constant support, understanding and love.

My special gratitude is due to my sister Meymanat, and my brothers Mavaddat and Ali, for their loving support and encouragements.

I wish to extend my warmest thanks to my parents in law and entire extended family for encouragement and providing a loving environment for me.

Words fail me to express my appreciation to Ali, my dear husband, whose love, understanding, persistent support and patience, has taken the load off my shoulders during the PhD student period. To him I dedicate this thesis.

The chain of my appreciation would indeed be incomplete if I would forget to thank the first cause of this chain; my sincere acknowledgements go to, as Aristotle's describes, The Prime Mover.

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Appendix