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Unemployment and sick leave at a young age and associations with future health and work

MAGNUS HELGESSON



ACTA
UNIVERSITATIS
UPSALIENSIS
UPPSALA
2015

ISSN 1651-6206
ISBN 978-91-554-9147-5
urn:nbn:se:uu:diva-242149

Dissertation presented at Uppsala University to be publicly examined in Frödingsalen, Ulleråkersvägen 40, Uppsala, Thursday, 12 March 2015 at 09:15 for the degree of Doctor of Philosophy (Faculty of Medicine). The examination will be conducted in Swedish. Faculty examiner: Ingemar Petersson.

Abstract

Helgesson, M. 2015. Unemployment and sick leave at a young age and associations with future health and work. *Digital Comprehensive Summaries of Uppsala Dissertations from the Faculty of Medicine* 1067. 65 pp. Uppsala: Acta Universitatis Upsaliensis. ISBN 978-91-554-9147-5.

The aim of this register-based longitudinal study was to explore the relationship between exposure to unemployment and sick leave at a young age and later health and work related outcomes. A comparison was also made between immigrants and native Swedes. The study population consisted of all immigrants, born between 1968 and 1972, and a random sample of native Swedes in the same age range. The follow-up period was 15 years, divided into three 5-year periods. Unemployment in 1992 was associated with later ≥ 60 days of sickness absence, disability pension and, for all subjects except native Swedish women, also mortality during follow-up. The risk of future sickness absence was about the same in all three follow-up periods. There was an increased risk of ≥ 100 days of unemployment in all three follow-up periods, but the risk declined, however, until the last follow-up period. Higher level of education at baseline as well as education attained between 1993 and 1997 decreased the risk of future unemployment. Participating in active labour market programmes was associated with higher risk of future unemployment. The risk of both future unemployment and future sickness absence increased with the length of unemployment in 1992. Immigrants had a higher risk of unemployment both at baseline and at follow-up compared with native Swedes, but matched the pattern of native Swedes during follow-up. Exposure to ≥ 60 days of sickness absence in 1993 was associated with increased risk for ≥ 60 days of sickness absence, ≥ 100 days of unemployment, disability pension and mortality during follow-up compared with no sick leave at baseline. The income from work, during the follow-up period, among individuals with spells of sick leave ≥ 60 days in 1993 was around two-thirds of that of individuals not on >60 days of sick leave. There was a rapid increase in future work absence for the first 1–7 days of sick leave claimed. Thereafter there was a lower, but steady increase in days of future work absence for every increase in sick leave. This of course affects the individual in the first place and to a society it means substantial costs in the form of increased welfare payments, and loss of productivity and tax income.

Magnus Helgesson, Department of Medical Sciences, Akademiska sjukhuset, Uppsala University, SE-75185 Uppsala, Sweden.

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ISSN 1651-6206

ISBN 978-91-554-9147-5

urn:nbn:se:uu:diva-242149 (<http://urn.kb.se/resolve?urn=urn:nbn:se:uu:diva-242149>)

To *E*lisabeth, *E*bba and *E*manuel

List of Papers

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

I Helgesson, M., Johansson, B., Nordquist, T., Lundberg, I., Vingård, E. 2013. “*Unemployment at a young age and later sickness absence, disability pension and death in native Swedes and immigrants*”, European Journal of Public Health, Vol. 23, No. 4, pp. 606–10.

II Helgesson, M., Johansson, B., Nordquist, T., Lundberg, I., Vingård, E. 2014. “*Unemployment at a young age and later unemployment in native Swedes and immigrants*”, Modern Economy, 5, pp 24–31.

III Helgesson, M., Johansson, B., Nordquist, T., Lundberg, I., Vingård, E. 2015. “*Sickness absence at a young age and later sickness absence, disability pension, death, unemployment and income*”. European Journal of Public Health First published online: 29 January 2015, DOI: <http://dx.doi.org/10.1093/eurpub/cku250>.

IV Helgesson, M., Johansson, B., Wernroth, L., Vingård, E. 2014. “*Length of accumulated sick leave and later work absence*”. Submitted.

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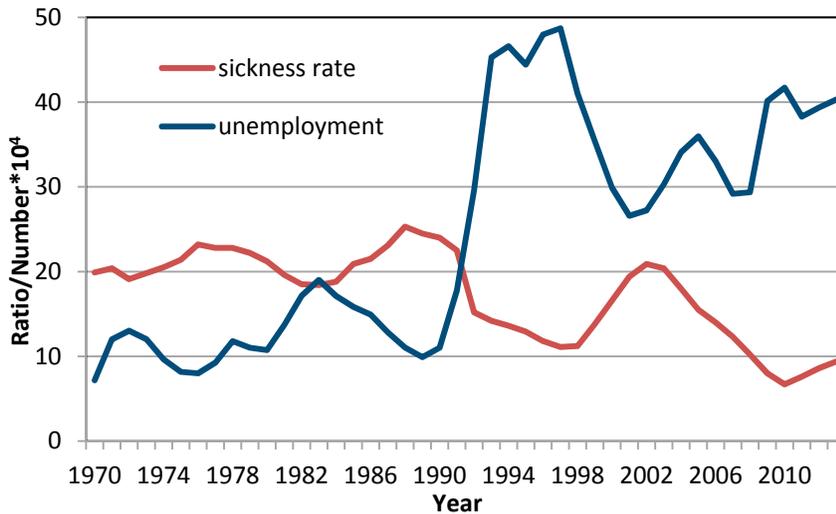
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Introduction

For most people, work is an essential factor for economic self-support and hence also a factor for maintained health and wellbeing. Most people want to work and thereby do something meaningful and at the same time contribute to the development of the society. In societies where employment is the norm, work plays a great psychosocial role. When a person, for different reasons, does not work, this may have consequences for e.g. their social life, sense of coherence and, not least, social status [1]. This stigma may be more or less pronounced depending on the context. In some areas and in some branches it can be very hard to be outside the labour market, while other fields are more forgiving regarding work absence [2, 3]. Work provides the means for economic self-support and independence, but also for other essential functions which give meaning to life. Jahoda formulated the theory of latent functions of work, according to which, a job provides: a time structure, collective purposes, social contact, status, and activity. A loss of these latent functions may lead to negative consequences for wellbeing and also for mental health [4]. There is a historic covariance with the level of unemployment and the sickness rate in Sweden: when there is an increase in sickness rate, there is a decrease in unemployment, and vice versa (Figure 1). Unlike many other European countries, in Sweden it is possible to be on sick leave also when unemployed. Regulatory factors have therefore created flows foremost from unemployment to sick leave; and sick leave may in some cases be hidden unemployment [5]. Unemployment and sick leave have in some studies been regarded as two sides of the same coin – benefits for work absence [5, 6]. A comparison between two municipalities in the north of Sweden regarding welfare payments shows that total expenditure per citizen is the same, but there are vast differences in the proportion of e.g. sick leave, unemployment, and municipal livelihood support [7]. It is therefore of great importance to keep this relationship in mind when assessing the total burden from exposure to unemployment and sick leave. Just taking into account one of the welfare payments will not give the whole picture of the total burden or expenditure. Sick leave may be hidden unemployment, and exposure to sick leave may in many respects be similar to exposure to unemployment.

Figure 1. Sickness rate¹ and unemployment² in Sweden, 1970–2012.



¹Days of sickness benefit per insured person. ²Yearly averages of number of people x 10,000, taken from weekly surveys.

Source: Statistics Sweden and Swedish Social Insurance Agency.

Unemployment

To be outside work may be harmful to both physical and mental health, and the risk of premature mortality is increased. The main body of research on health effects of unemployment has focused on direct health outcomes [8-10]. Only a few research studies have exclusively focused on young adults [11-13]. According to a Swedish study, unemployed young adults have worse mental health than both young employed individuals and unemployed adults [13]. The probability of future spells of unemployment is also higher for individuals who are young when they experience their first period of unemployment [14]. Youth generally have better initial health compared with adults, but possible negative life style changes, like alcohol consumption, drug abuse, eating habits, etc correlated to unemployment can deteriorate the health relatively fast [13, 15, 16].

There are very few studies with the outcomes sickness absence/disability pension after a period of unemployment. A Finnish study has found an elevated risk of disability pension due to depression in 2003 among individuals exposed to unemployment in 1998 [17]. An ecological study from Iceland has revealed an increased incidence of disability pension due to mental and behavioural disorders 1 year after a peak in the unemployment rate. Aggregated data, however, give no possibility to disentangle unemployed persons

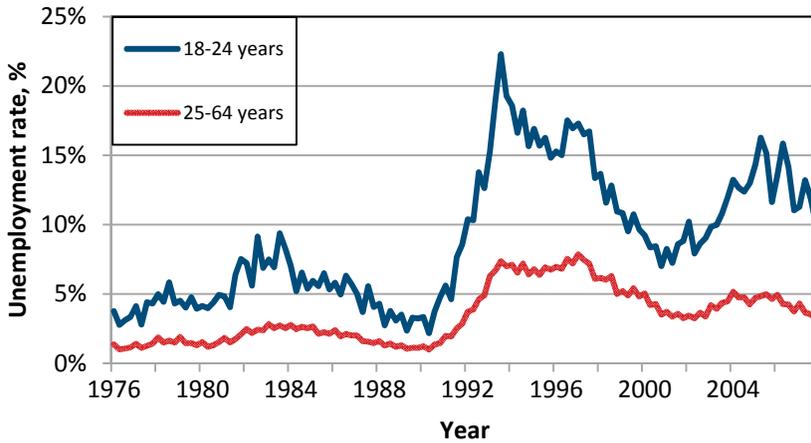
from others among those who have been granted disability pension. They may just reflect a general susceptibility to illness during recessions [18].

Mortality is a more common outcome in studies on unemployment. A meta-analysis of 20 million individuals from the USA, but also including data from European studies, reports that unemployed individuals had 63% higher risk of mortality during the follow-up compared with employed persons [19]. The risk associated with unemployment is also somewhat higher in men and among persons nearing retirement age. One longitudinal study from Sweden investigates newly unemployed individuals in an economic downturn [20]. Its authors report an elevated risk of mortality during the 8-year follow-up period. However, adjustment for socioeconomic factors in childhood and adolescence, along with sickness absence in the years preceding exposure to unemployment, equalizes the risk between persons on unemployment and persons in employment to a great extent. This may indicate a selection into unemployment for individuals with health problems and persons with a socioeconomic disadvantage – both known risk factors for both unemployment and ill health. It is therefore difficult to identify a causal direction between unemployment and ill health. Does unemployment lead to bad health, or, rather, is it health problems which make it harder to succeed on the labour market?

The unemployment rate in Sweden, especially among young individuals, increased substantially in the early 1990s, from a few per cent in 1990 to >20% in 1993 (Figure 2). With rising unemployment rates, the number of persons who were not covered by social insurance increased. Benefits from unemployment insurance presuppose earlier work. This affects the financial situation of many of the young persons facing periods of unemployment. Unemployment seems also to be predictive of future unemployment. Longitudinal studies, from Sweden and Norway, have concluded that periods of unemployment during late adolescence increase the risk for future unemployment [21-23].

Active labour market programmes (ALMPs) have been seen to mitigate the health consequences of unemployment [24, 25], while making it possible for unemployed individuals to remain near the labour market and thereby maintain skills and social contacts [26]. There is, however, no unambiguous positive effect on future job participation. There is a risk of a lock-in effect which may lead to persons in a programme to not seek regular work [27, 28]. There may also be a selective effect into the programmes from persons relatively far away from the labour market due to health problems or low education. A study from Norway concludes, however, that persons in a labour programme have better mental health compared with unemployed individuals not in an ALMP. Whether this is transferable to Swedish conditions is unclear [29].

Figure 2. Unemployment rate in Sweden, 1976–2007.



Source: Statistics Sweden.

Sick leave

Sickness absence is a common and widely used treatment, intended to give patients time to recover. In countries with extensive welfare benefits, individuals can be on sick leave without losing their financial security while ill. The sickness absence rate in Sweden has historically fluctuated substantially and regulations and benefit rates have changed relatively often compared with other European countries [30]. Furthermore, the short-term economic consequences, for individuals, of sickness have been very low in Sweden as well as in other Nordic countries, with low barriers to access and a high level of compensation. From an economic viewpoint, there are few economic incentives to go to work when ill and to return to work after spells of sickness. It has been debated whether generous and easy accessible sickness benefits may increase the propensity to take sick leave. The regulation on compensation grade has changed several times since the introduction of the public sickness insurance system in 1955. A Swedish study has found evidence for an increased propensity to be on sickness absence and a longer average time on benefits in periods when the level of compensation has been relatively generous. There was a corresponding decrease in the propensity to be on sickness absence when the level of compensation was relatively low [31]. Since the early 1990s, when Sweden entered a deep recession, the compensation level in the social insurances, especially in unemployment insurance, has gradually declined. Until the 1990s the employment rate was high and therefore most individuals were covered by sickness and unemployment benefits. Coverage in sickness insurance presupposes work in the period

before the claim of benefits. An increasing number of people have had no coverage by either unemployment or sickness insurances since the economic recession at the beginning of the 1990s.

Ill health is an important factor for exclusion from the labour market, but the sickness period itself may also be a risk factor for illness and later exclusion from the labour market [32-34]. Illness is required in order to have sickness benefit, but to have many sickness periods in the résumé may hamper later employability. One Swedish study concludes that sickness absence also has an impact with regard to later sickness, which goes beyond the effect of ill health [32]. In a qualitative study from Sweden, sick-listed individuals initially regarded sickness absence to be a relief. As time went by, however, the isolation and inactivity created emotional problems and alienation [35]. Some individuals also believed that they were losing their independence when much of the decision making about their life was transferred to professionals [33]. Long-term sickness absence is connected to permanent work disability [36, 37], but the risk for future spells of sickness absence appears to be high also among persons with repeated spells of short-term sickness absence. Even persons with just a few short spells of sickness absence have been reported to be at increased risk of future sickness absence [32]. There is also an association between sickness absence and all-cause mortality [38-40]. The same is true for disability pension; it is the risk of all-cause disability pension which is increased, not necessarily disability pension for the cause that leads to the sick leave period [41]. There are to our knowledge no studies that have investigated exposure to accumulated sick leave ≤ 1 year and its implications for later work absence.

Individuals on sickness absence have a higher risk for unemployment than do individuals with no, or low, sickness absence [42, 43]. Health selection, i.e. the fact that illness makes it harder to get and maintain a job, may partly explain the association between sick leave and work absence [20]. In one study, among persons with >6 months of sickness absence in 1995, only about 11% of women and 13% of men were in employment at the end of the 13-year follow-up period [44]. A life on social benefits will decrease a person's income in the short run; but long periods without work may also lower the income in the long run. This will have profound consequences for the everyday life. Persons with long-term sickness absence have lower economic margins [45] and will therefore in many cases face a life in relative poverty.

In assessing the consequences of sick leave it is also important to know whether there are differences between groups. This may give an indication whether there is a need to have targeted interventions to some groups. In Sweden there have been an increasing proportion of women on sick leave since the 1980s. Today, women account for around two-thirds of all days of sick leave [46]. Furthermore, high educational level has been seen to mediate the risk for sick leave. One reason for this may be that persons with low education have physically more demanding jobs [23].

Immigrants

Compared with many other countries, Sweden has a relatively large immigrant population. Disability pension has been more common among immigrants than in the native population, both in Sweden and in Norway [47, 48]. In the 1950s and 1960s, immigration was mainly labour-driven, but after 1970 this changed to immigration of refugees and family members seeking reunification. The research on work and health in the native compared with immigrant population is fragmentary [49-52]. A study on integration of young individuals in four countries (Sweden, Finland, Germany and France) concludes that in Sweden, young immigrants have a higher prevalence of mental illness compared with the native population [53]. There is, however, heterogeneity in the immigrant group, so land of origin may be of great importance [54]. The theories behind different health status between immigrants and the native population are largely based on three hypotheses. The first states that experiences before emigration are the reason why immigrants have worse health than natives. According to the second, socioeconomic conditions after emigration are decisive for immigrants having worse health compared with natives. The third hypothesis states that there may be a selection among persons that leave the native country, the so-called "healthy immigrant effect". Individuals that emigrate are more prone to change and are healthier compared with persons remaining in their native country. This would explain why in some cases immigrants are healthier than the native population [52, 55]. Immigration early in life, time in the new country and affiliation with the culture in the new country are also decisive factors for better self-rated health among immigrants [56]. Which direction the health difference may take is therefore highly dependent on which cohort is studied. There may also be large differences within the immigrant group.

Materials and Methods

Study population

All four papers were prospective cohort studies based on registers and consisted of all immigrants born between 1968 and 1972 who had immigrated before 1990, and a matched control group of native Swedes. The term “immigrant” refers to a person born outside Sweden with two non-Swedish-born parents. “Native Swede” refers to a person born in Sweden with two Swedish-born parents.

Papers I and II

The study group comprised all foreign-born individuals aged 20–24 years who were living in Sweden in 1992 and had immigrated to Sweden before 1990. A random sample of native Swedes in the same age group were also included in the study (Table 1). The baseline year was 1992, a year of deep recession and rapidly rising unemployment in Sweden. The cohort was followed from 1993 to 2007. To be classified as unemployed, a person had to be enrolled as a possible recipient for support from the National Labour Office, and be ready to take a job immediately in 1992. Persons classified as having no days of unemployment had paid work, were studying, were receiving sickness benefit or were outside the labour market. In order to form a cohort as healthy as possible the following were excluded from the analyses: individuals who received unemployment benefit in 1990 and 1991, individuals who received disability pension in 1990–1992, and individuals who were hospitalized with a pulmonary, cardiovascular, musculoskeletal or psychiatric diagnosis in 1990–1992. We have chosen to exclude individuals who emigrated, temporarily or permanently, from Sweden during the follow-up period because their time under risk for sickness absence and disability pension was uncertain, and mortality in another country is not reported to Sweden.

Table 1. Study population

	Native Swedes		Immigrants		Total
	Women	Men	Women	Men	
Papers I and II	83,406	90,610	13,544	12,063	199,623
Paper III	109,924	116,053	20,002	18,205	264,184
Paper IV	62,020	59,064	8,152	6,271	135,507

Papers III and IV

The study group comprised all immigrants aged 21–25 years who were living in Sweden in 1993 and had immigrated to the country before 1990. A random sample of native Swedes of the same age group were also included (Table 1). The cohort was followed from 1994 to 2008. To form a cohort who was as healthy as possible and to reduce health selection of the cohort, the following were excluded from the analyses: individuals who received disability pension from 1990 to 1993, and individuals who were hospitalized between 1990 and 1993 with a pulmonary, cardiovascular, musculoskeletal or psychiatric diagnosis. Individuals who emigrated from Sweden during the follow-up period were removed from the study at the time when they left Sweden because we had no sufficient data concerning their whereabouts. In paper IV we also excluded individuals who were on unemployment in 1993 in order to reduce the number of persons with register data on sick leave from day 1 already.

Outcomes

Unemployment was defined as being enrolled at the Swedish National Labour Office on a full-time basis.

Sick leave was defined as receiving sickness benefit from the Swedish National Insurance Office. The first weeks of every sick spell was excluded as these are covered by the employer, register data on this period are therefore missing. The employer period has mostly been 14 days, except for short periods where the employer has been obligated to pay up to 28 days of sick leave. Part-time sick leave was converted into full days: 2 days with a half day of sick leave equals one full day.

Disability pension was granted until 2008 to individuals who were expected to have work disability for >1 year.

The follow-up period in papers I and II was divided into three periods, 1993–1997, 1998–2002 and 2003–2007. For papers III and IV, the follow-up period was divided into the periods 1994–1998, 1999–2003 and 2004–2008.

Paper I

- 1) ≥ 60 days of sickness absence in each of three 5-year periods
- 2) Granted disability pension in the follow-up period 1993–2007
- 3) Mortality in the follow-up period 1993–2007

Paper II

100 days of unemployment in each of three 5-year periods

Paper III

- 1) ≥ 60 days of sickness absence in each of three 5-year periods
- 2) Granted disability pension in the follow-up period 1994–2008
- 3) Mortality in the follow-up period 1994–2008
- 4) ≥ 100 days of unemployment in each of three 5-year periods
- 5) Average annual income from 1994 to 2008

Paper IV

Accumulated work absence from 1994 to 2008, which was summed up based on (1) full days of unemployment; (2) sickness absence; and (3) days on disability pension.

Statistical analysis

Papers I and II

Odds ratios (ORs) and hazard ratios (HRs) with 95% confidence intervals (CIs) were analysed for the studied outcomes using logistic, Cox regression and SAS version 9.2 (SAS Institute Inc, Cary, NC, USA). Potential confounders included in the analyses were age (continuous), income from work in 1991 (continuous) and income from sickness absence in 1990 and 1991 (continuous), as well as region of origin among immigrants (twelve regions), place of residence in Sweden (25 areas), and educational background (three levels). Most of the analyses were performed separately for men and women, and separately for native Swedes and immigrants. When the results were calculated just for immigrants and native Swedes, adjustments were also made for sex.

Paper III

Hazard ratios with 95% CIs were calculated for the studied outcomes using Cox regression in SAS version 9.3. Potential confounders included in the analyses were age (continuous), income from work in 1992 (continuous), income from sickness absence from 1990 to 1992 (continuous), days of unemployment in 1992 (continuous), region of origin among immigrants (twelve regions), place of residence in Sweden (25 areas) and educational background (three levels). All analyses were performed separately for men and women, and separately for native Swedes and immigrants.

Paper IV

To describe the association between sick leave in 1993 and work absence during 1994–2008, sick leave was categorized into 13 classes. Mean and median work absence, with 95% CIs based on the normal distribution, was calculated within each class.

To investigate whether gender, education and origin have an impact on the association between sick leave and work absence, models including pairwise interactions with sick leave were estimated. Because of the low number of individuals on sick leave for ≥ 120 days among individuals with a university education and immigrants, the interaction analyses including immigrants and university-educated persons were limited to individuals with sick leave ≤ 119 days.

Sick leave (i.e. the sick leave registered for sickness benefit claims, which excludes the first 14 days of sick leave as these are covered by the employer) was included in the models as a class variable (0, 1–7, 8–14, 15–28, 29–59, 60–89, 90–119, 120–149, 150–179, 180–239, 240–299, 300–364 and 365

days) and all models were adjusted for age and county. We used gender, age, country of origin, and education as inflation variables in the logit model for predicting excess zeros. We applied the Bonferroni adjustment for multiple comparisons. For the seven pairwise tests comparing immigrants with native Swedes, the differences are statistically significant if $p < 0.007$. For education and gender, the differences were considered statistically significant if the p -value was < 0.004 . The statistical analyses were performed using SAS version 9.3.

Registers used

Data were obtained from the *Longitudinal Integration Database for Health Insurance and Labour Market Studies* (LISA database) for unemployment, sickness absence, education, disability pension, income, native country, and residence. Mortality data were collected from the Cause of Death Register, which includes all deceased persons who were registered in Sweden at the time of death, whether death occurred in Sweden or abroad. The National Patient Register provided data on hospitalization. The LISA database is hosted by Statistics Sweden while the Cause of Death Register and the National Patient Register are hosted by the Swedish Board of Health and Welfare.

Aims

The overriding aim of this study was to explore the relationship between exposure to unemployment and sick leave at a young age and later unemployment, sick leave, disability pension, income development, and mortality.

Specific aims:

- I The main aim of paper I was to examine if exposure to unemployment during a recession period was associated with later: (1) sickness absence, (2) disability pension and (3) mortality for young immigrants and young native Swedes. Another aim was to explore whether there was a dose-response relationship between unemployment and the risk of ≥ 60 days of sick leave in the follow-up.
- II The main aim of paper II was to examine whether exposure to unemployment in a recession period was associated with future unemployment for native Swedish and immigrant young men and women living in Sweden. Other aims were to investigate: (1) if there was a dose-response relationship between unemployment and the risk of ≥ 100 days of unemployment in the follow-up; (2) whether participation in ALMPs affected future unemployment for individuals on long-term unemployment (≥ 100 days); (3) whether education at baseline moderated future unemployment; and (4) whether attainment of education after a long period of unemployment affected future unemployment among individuals on long-term unemployment (≥ 100 days) in 1992.
- III The aim of paper III was to investigate whether exposure to ≥ 60 days of sickness absence was associated with future: (1) sickness absence, (2) disability pension, (3) mortality, (4) unemployment and (5) income.
- IV The main aim of paper IV was to assess the impact of the length of accumulated sick leave on later work absence. A further aim was to explore whether there were differences in the pattern of later work absence between subgroups categorized by gender, origin (immigrant or native Swede) and education (elementary, upper secondary, university).

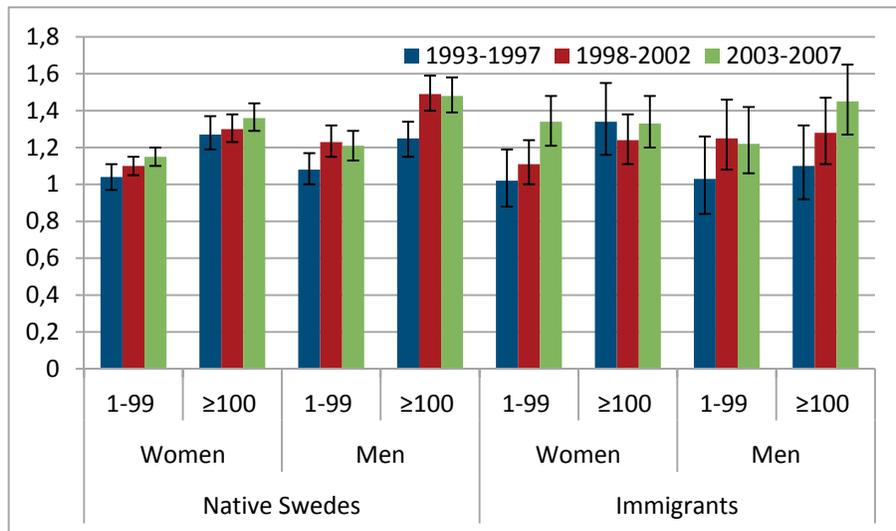
Results

Paper I

Sickness absence and disability pension

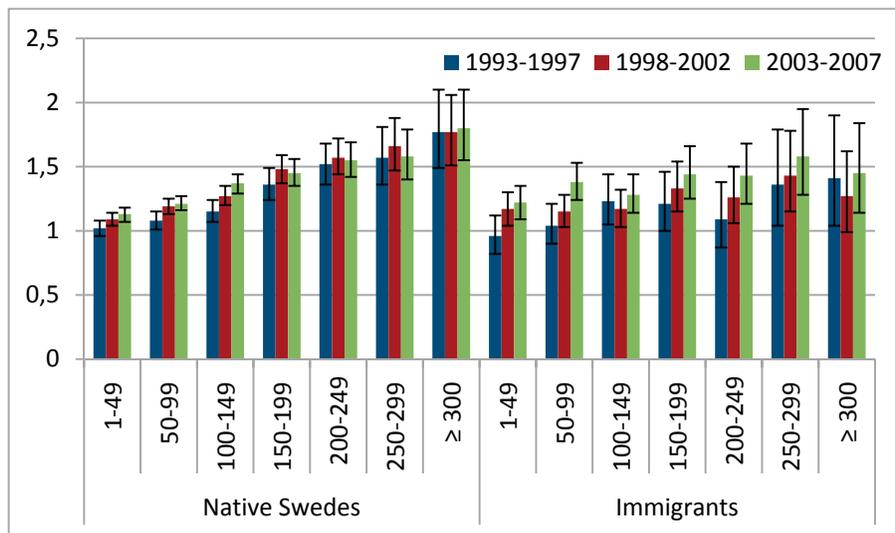
Individuals with ≥ 100 days of unemployment in 1992 had a higher probability of sickness absence compared with individuals not unemployed; the elevated risk increased slightly among all studied individuals except immigrant women until the second and third period of follow-up (Figure 3). Individuals on 1–99 days of unemployment in 1992 had just a slightly elevated risk, if any, of sickness absence in the first period of follow-up. The risk increased, however, during the second and third period of follow-up.

Figure 3. Adjusted odds ratio (OR)* (95% confidence interval (CI)) for ≥ 60 days of sickness absence for individuals unemployed for 1–99 or ≥ 100 days in 1992 compared with individuals with no unemployment in the same year.



*Adjusted for age, educational level, income in 1991, residence in Sweden in 1992, native country, and sickness absence in 1991–1992.

Figure 4. Adjusted odds ratio (OR)* (95% confidence interval (CI)) for ≥ 60 days of future sickness absence for individuals exposed to different lengths of unemployment in 1992 compared with individuals with no unemployment in the same year.



* Adjusted for age, educational level, sex, income in 1991, residence in Sweden in 1992, native country, and sickness absence in 1991–1992.

The risk for ≥ 60 days of sickness absence increased with the length of the period of unemployment in 1992, but there was a fairly low association. It was most pronounced among native Swedes (Figure 4).

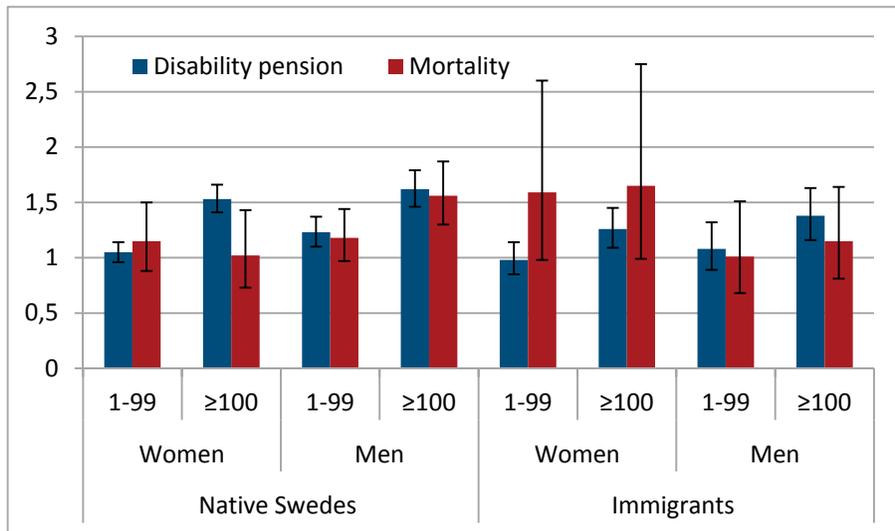
Disability pension

The elevated risk of disability pension was increased for individuals on ≥ 100 days of unemployment and slightly increased for men on 1–99 days of unemployment (Figure 5). The increased risk of disability pension was slightly lower among immigrants compared with native Swedes.

Mortality

There was a slightly increased risk of mortality in the follow-up among immigrant women and among men on ≥ 100 days of unemployment. The number of deaths were, however, low (Figure 5). The elevated risk of mortality among immigrants was just slightly higher for individuals unemployed for ≥ 100 days compared with individuals unemployed for 1–99 days.

Figure 5. Adjusted hazard ratio (HR)* (95% confidence interval (CI)) for disability pension and mortality during follow-up; individuals unemployed for 1–99 or ≥100 days in 1992 compared with individuals with no unemployment.



*Adjusted for age, educational level, income in 1991, residence in Sweden in 1992, native country, and sickness absence in 1991–1992.

Paper II

Unemployment

A higher proportion of immigrants than of native Swedes had ≥ 100 days of unemployment, both at baseline and in the follow-up. During the follow-up, Swedish-born men had the lowest risk of being unemployed for ≥ 100 days compared with Swedish-born women and immigrants (Table 2).

Individuals who were unemployed in 1992 had a higher risk of ≥ 100 days of unemployment during the follow-up (Figure 6). This was true both for individuals who were unemployed for 1–99 days and for individuals unemployed for ≥ 100 days. The association was seen in every time period, but decreased over time.

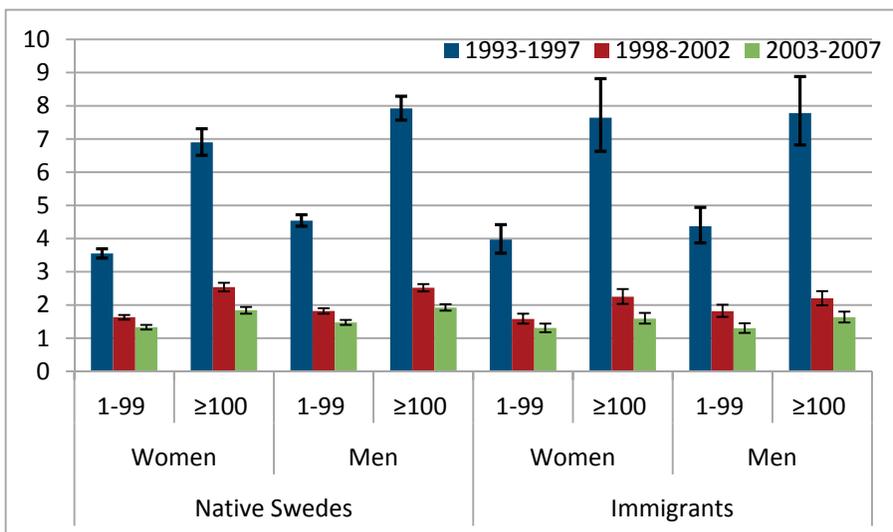
There was an increasing risk of future unemployment for every additional 50 days of unemployment until the maximum exposure to unemployment noted in this study, of ≥ 300 days (Figure 7). Even exposure to 1–49 days of unemployment substantially increased the risk for ≥ 100 days of future unemployment, particularly in the first period of follow-up.

Table 2. Adjusted odds ratio (OR)* (95% confidence interval (CI)) for ≥ 100 days of future unemployment in immigrants and Swedish women compared with native Swedish men

	1993–1997	1998–2002	2003–2007
	OR	OR	OR
Swedish-born women	1.0 (1.0–1.1)	1.3 (1.2–1.3)	1.3 (1.2–1.3)
Swedish-born men	1.0	1.0	1.0
Immigrant women	1.5 (1.2–1.9)	1.9 (1.5–2.5)	1.4 (1.0–1.8)
Immigrant men	1.6 (1.2–2.0)	1.7 (1.3–2.2)	1.4 (1.0–1.8)

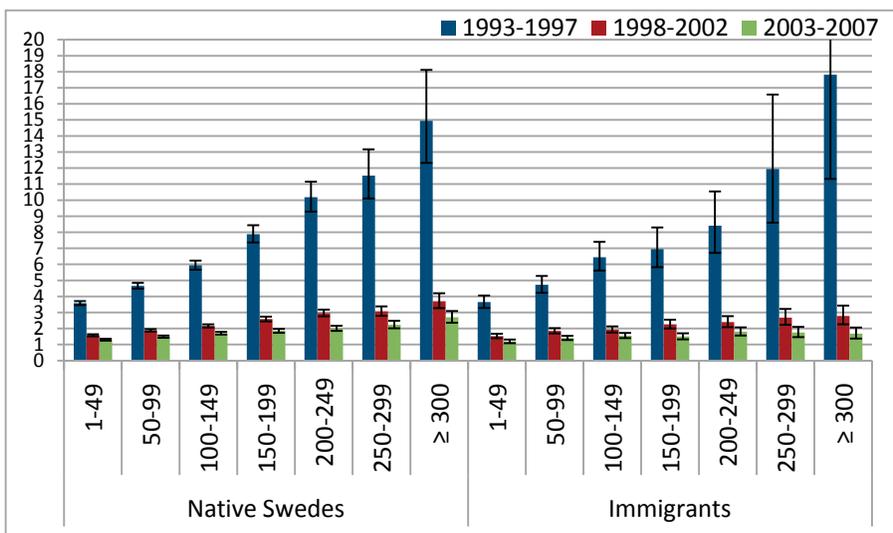
*Adjusted for age, educational level, income in 1991, residence in Sweden in 1992, native country, and sickness absence in 1991–1992.

Figure 6. Adjusted odds ratio (OR)* (95% confidence interval (CI) for ≥ 100 days of future unemployment in individuals unemployed for 1–99 or ≥ 100 days in 1992 compared with individuals with no unemployment in the same year.



* Adjusted for age, educational level, income in 1991, residence in Sweden in 1992, native country, and sickness absence in 1991–1992.

Figure 7. Adjusted odds ratio (OR)* (95% confidence interval (CI) for ≥ 100 days of future unemployment for individuals, both native Swedes and immigrants, exposed to different lengths of unemployment in 1992, compared with individuals with no unemployment in 1992.



* Adjusted for age, educational level, sex, income in 1991, residence in Sweden in 1992, native country, and sickness absence in 1991–1992.

There were no particular differences between immigrants and native Swedes regarding future unemployment. Both groups had the same pattern when exposed to unemployment, though showing different levels. Adjustments for previous sickness absence as an indicator of sickness did not alter the ORs more than marginally for any of the outcomes.

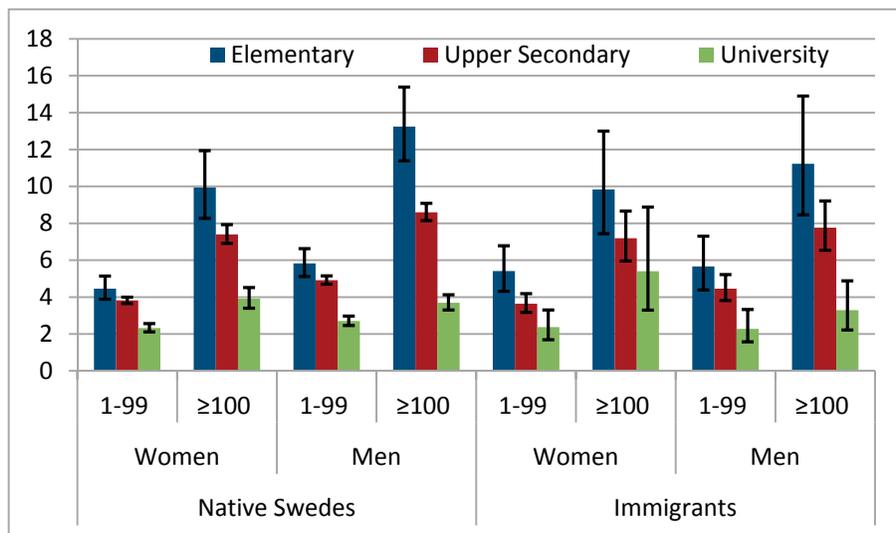
Education

During the first 5-year interval of follow-up, educational level at baseline had an effect on the results (Figure 8). In all groups except Swedish men, individuals who attained higher education between 1993 and 1997 had a slightly decreased risk of future unemployment in the period 1998–2002 (Figure 9).

Active labour market programmes

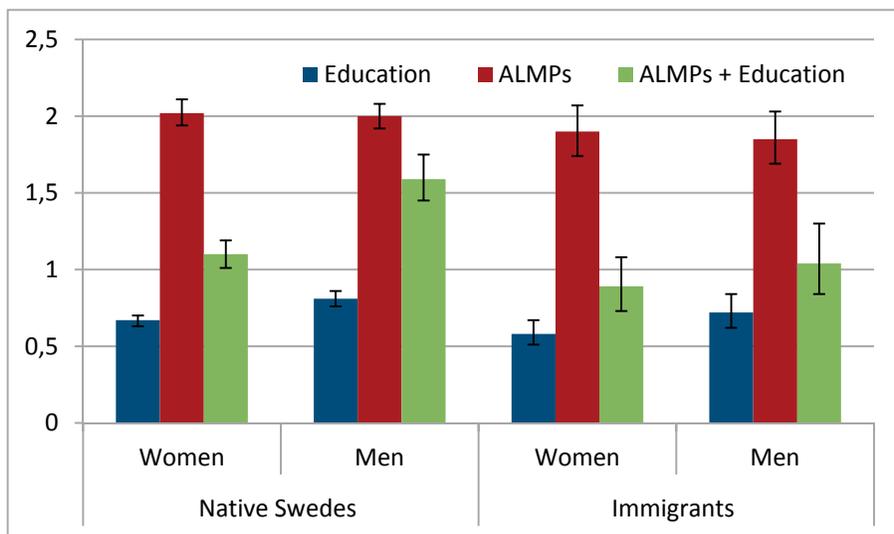
Participation in an ALMP increased the risk of future unemployment in the period 1998–2002 (Figure 8).

Figure 8. Adjusted odds ratio (OR)* (95% confidence interval (CI)) for risk of ≥ 100 days of future unemployment during the period 1993–1997, by educational background, for individuals who were unemployed for 1–99 or ≥ 100 days in 1992, compared with individuals with no unemployment in 1992.



*Adjusted for age, income in 1991, residence in Sweden in 1992, native country, and sickness absence in 1991–1992.

Figure 9. Adjusted odds ratio (OR)* (95% confidence interval (CI)) for ≥ 100 days of future unemployment during the period 1998–2002, for unemployed individuals who participated in active labour market programmes (ALMP) in 1992/1993 or whose educational level changed between 1992 and 1997, compared with individuals who neither participated in ALMPs nor furthered their education during the same period.



* Adjusted for age, income in 1991, residence in Sweden in 1992, native country, and sickness absence in 1991–1992.

Paper III

Sick leave

Among native Swedes, individuals with ≥ 60 days of sickness absence in 1993 had more than four times (women) and seven times (men) as much future sickness absence compared with individuals with no sickness absence in 1993 (Figure 10). Women had more future sickness days than men, and immigrants had more sickness days on average compared with native Swedes. Among immigrants, the difference between persons on sick leave and persons without sick leave was lower.

The HR for ≥ 60 days of sickness absence during each 5-year follow-up period was increased for individuals exposed to ≥ 60 days of sickness absence compared with individuals without any sickness absence in the same year (Figure 11). The risk for future sickness absence was higher among men than among women, at least in the first follow-up period. The risk for sickness absence was lower in the last two periods compared with the first period, but still significantly higher among persons on sick leave in 1993.

Disability pension

The HR for disability pension in the follow-up period was increased among persons on sick leave in 1993. It was lower among women and immigrants compared with men (Figure 12).

Mortality

The HR for mortality in the follow-up period was increased for all groups. It was lowest among immigrant women (Figure 12).

Figure 10. Average days of sick leave in 1994–2008 among persons with ≥ 60 days of sick leave in 1993 and among individuals with no sickness absence in the same year.

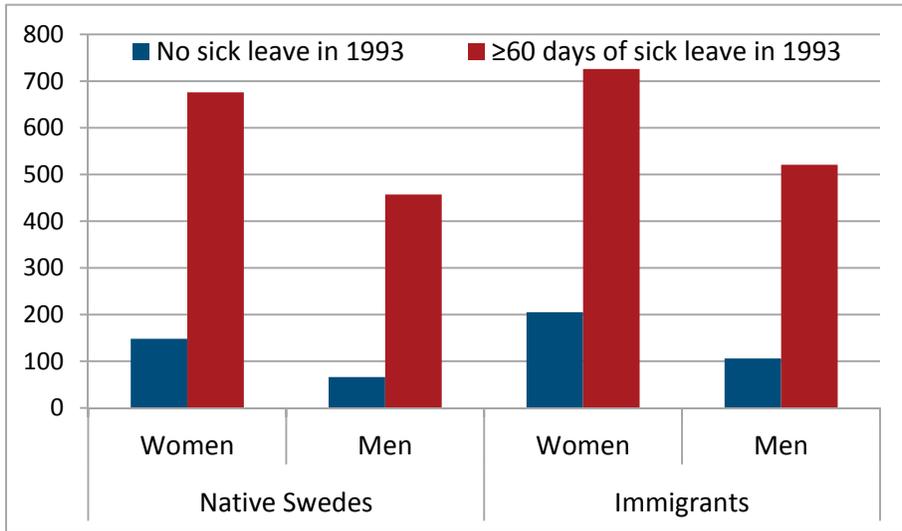
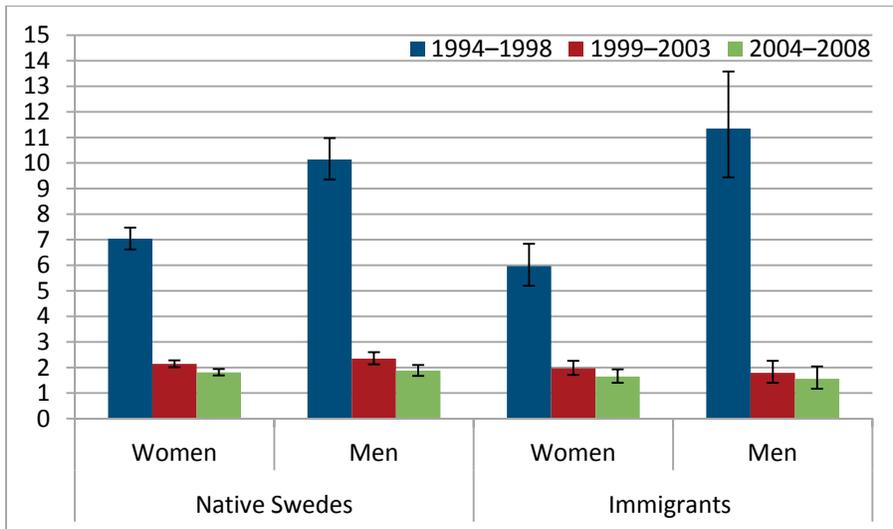
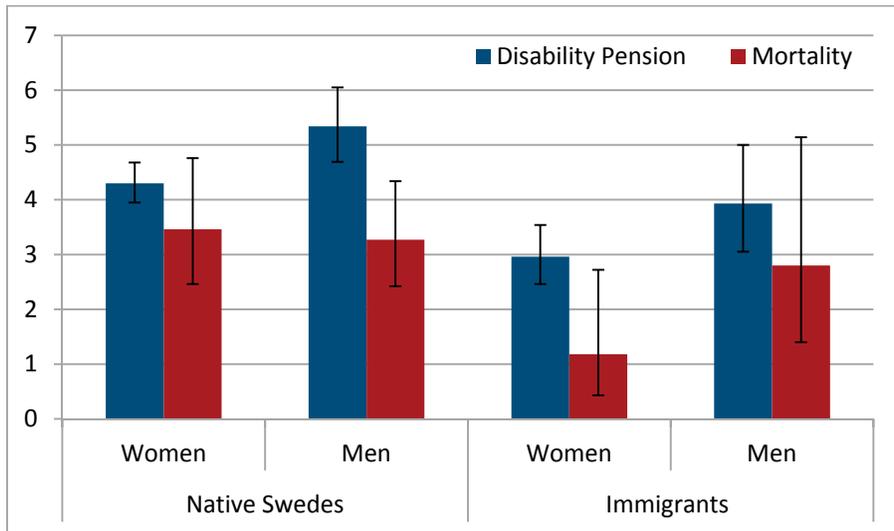


Figure 11. Adjusted hazard ratio (HR)* (95% confidence interval (CI)) for ≥ 60 days' future sickness absence in individuals with ≥ 60 days' sickness absence in 1993 compared with individuals with no sickness absence in the same year.



* Adjusted for age, income in 1993, sick leave in 1990–1992, unemployment in 1992, region of origin, residence in Sweden, and educational background.

Figure 12. Adjusted hazard ratio (HR)* (95% confidence interval (CI)) for disability pension and mortality for individuals on ≥ 60 days of sickness absence in 1993 compared with individuals with no sickness absence in the same year.



*Adjusted for age, income in 1993, sick leave in 1990–1992, unemployment in 1992, region of origin, residence in Sweden, and educational background.

Unemployment

Native Swedes who had ≥ 60 days of sickness absence in 1993 had about twice as many days of unemployment compared with individuals with no sickness absence (Figure 13). The difference in numbers of days of future unemployment between immigrants who had ≥ 60 days of sickness absence in 1993 and immigrants with no unemployment in the same year was fairly small.

Exposure to ≥ 60 days of sickness absence in 1993 slightly increased the risk for ≥ 100 days of unemployment over a 5-year period (Figure 14). The risk difference between men and women and between immigrants and native Swedes was fairly small.

Income

In the follow-up period, the average monthly income from work in 1994–2008 for individuals with ≥ 60 days of sickness absence in 1993 was approximately two-thirds of the income of individuals without sickness absence in the same year across all groups (Figure 15). Immigrants and women generally had a lower income compared with native Swedes and men.

Figure 13. Average days of unemployment in 1994–2008 among persons who had ≥ 60 days of sick leave in 1993 and among individuals with no sickness absence in the same year.

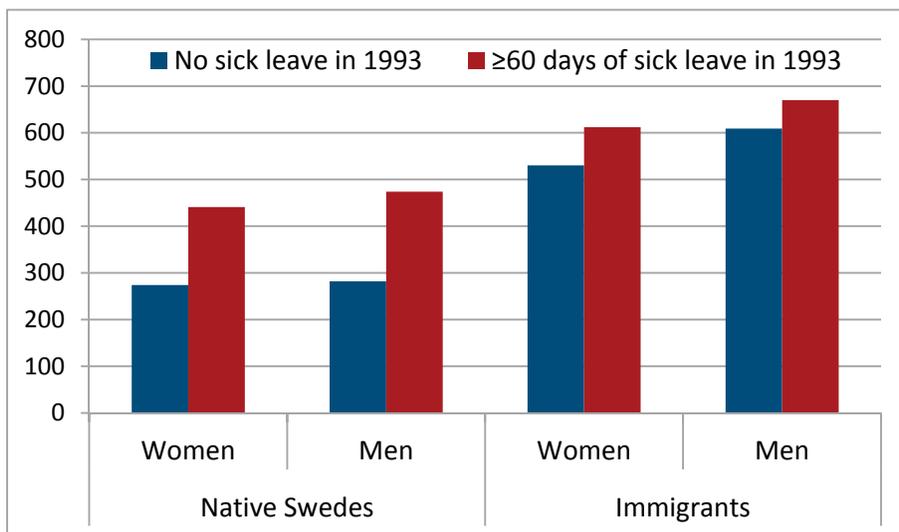
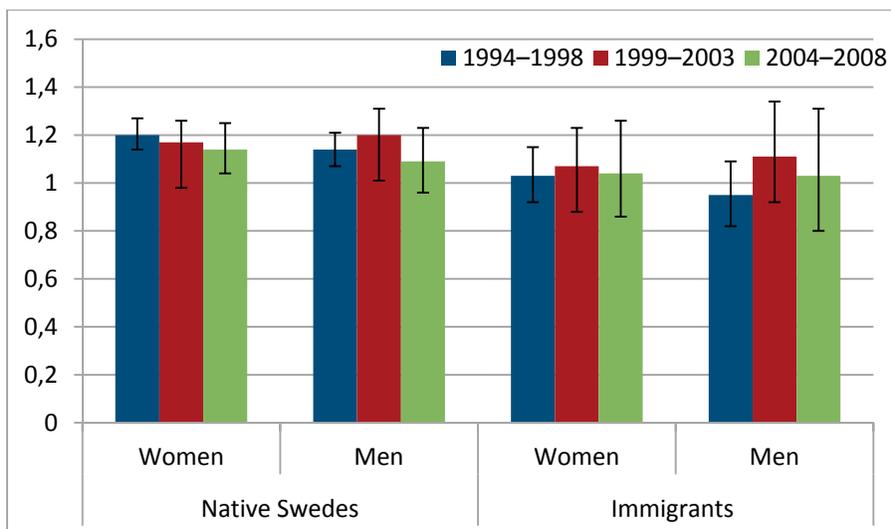
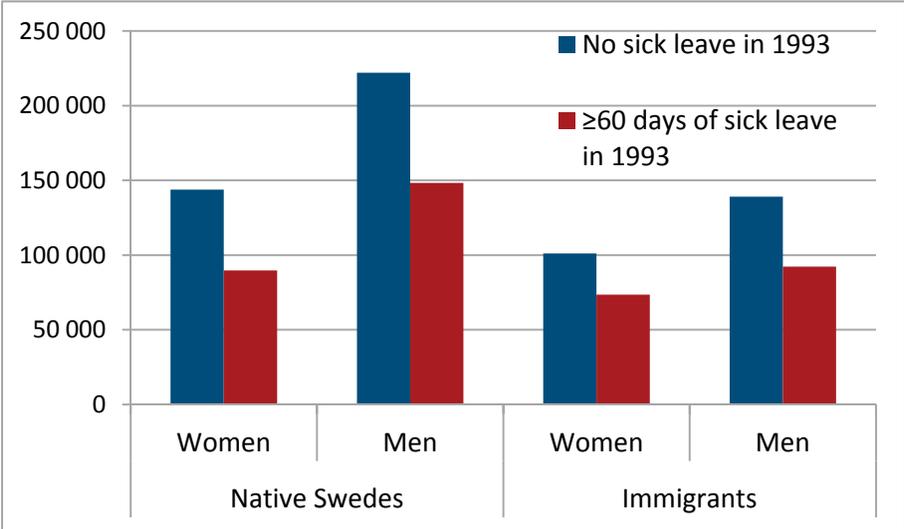


Figure 14. Adjusted hazard ratio (HR)* (95% confidence interval (CI)) for ≥ 100 days of unemployment during 1994–2008 for individuals on ≥ 60 days of sickness absence in 1993, compared with individuals with no sickness absence in the same year.



*Adjusted for age, income in 1993, sick leave in 1990–1992, unemployment in 1992, region of origin, residence in Sweden, and educational background.

Figure 15. Average income in 1994–2008 among persons with ≥ 60 days of sick leave in 1993 and among individuals with no sickness absence in the same year.



Paper IV

Total sick leave

There was a steep increase in future work absence with all sickness benefit claimed for ≤ 7 days (Figure 16). From days 8–14, the increase became more gradual, followed by another steep rise after 300 days of sickness benefits claimed. Most individuals had low values on later work absence, and hence the median value was lower than the mean value.

Gender

Sick leave was associated with significantly more days of later work absence among women compared with men for every given level of claimed sickness benefit up to 120–149 days, with the exception of 90–119 days (significant interaction between gender and sick leave, $p = 0.011$) (Figure 17).

Figure 16. Relation between mean (black) and median (grey) accumulated days of sick leave in 1993 and number of days of work absence during 1994–2008, with 95% confidence intervals (CIs) shown. The points in the graph refer to 0, 1–7, 8–14, 15–28, 29–59, 60–89, 90–119, 120–149, 150–179, 180–239, 240–299, 300–364 and 365 days of sick leave taken in 1993.

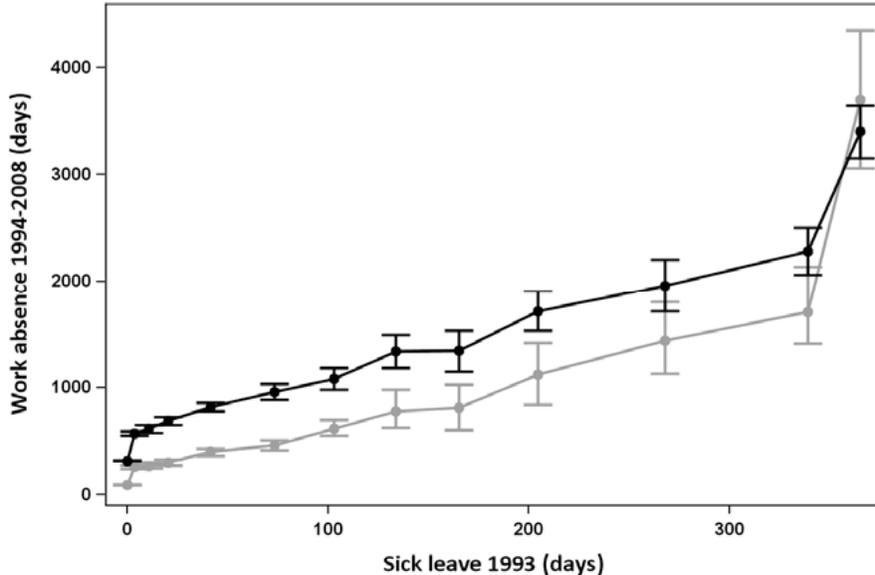
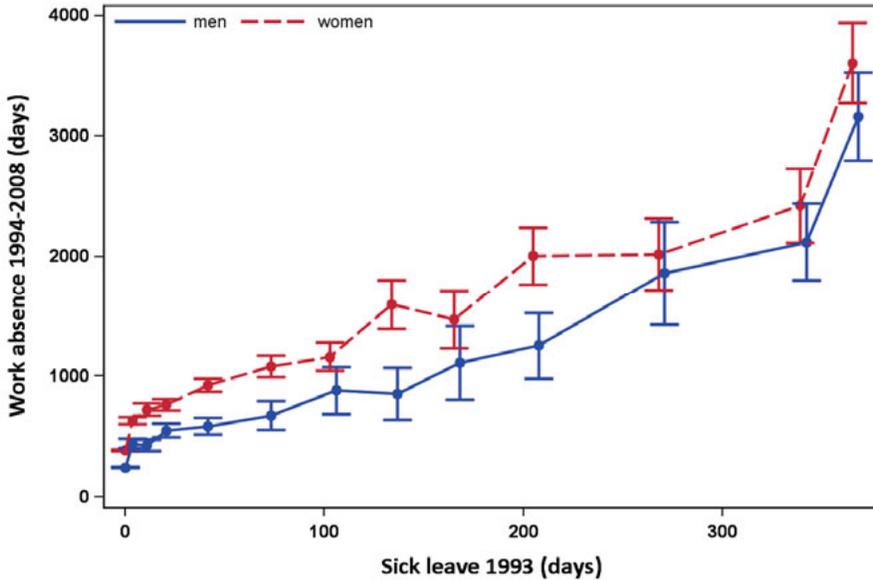


Figure 17. Relation between accumulated days of sick leave in 1993 and mean number of days of work absence during 1994–2008, by gender, with 95% confidence intervals (CIs) given. The points in the graph refer to 0, 1–7, 8–14, 15–28, 29–59, 60–89, 90–119, 120–149, 150–179, 180–239, 240–299, 300–364 and 365 days of sick leave taken in 1993.



Origin

Sick leave was associated with significantly more days of later work absence among immigrants compared with native Swedes for every given level of claimed sickness benefit up to 29–59 days (significant interaction between origin and sick leave, $p < 0.001$) (Figure 18).

Education

Individuals with a university education had fewer days of work absence for every given level of sick leave taken in 1993 up to 90–119 days, compared with persons with elementary school education (significant interaction between origin and sick leave, $p < 0.001$). Individuals with a university education had fewer days of work absence for every sick leave interval up to 15–28 days, compared with individuals with upper secondary school education (Figure 19). Individuals with upper secondary schooling had fewer days of work absence for sick leave up to 60–89 days compared with individuals with elementary school education only.

Figure 18. Relation between accumulated days of sick leave in 1993 and mean number of days of work absence during 1994–2008, by individuals' country of origin (immigrants versus native Swedes), with 95% confidence intervals (CIs) given. The points in the graph refer to 0, 1–7, 8–14, 15–28, 29–59, 60–89, 90–119, 120–149, 150–179, 180–239, 240–299, 300–364 and 365 days of sick leave taken in 1993.

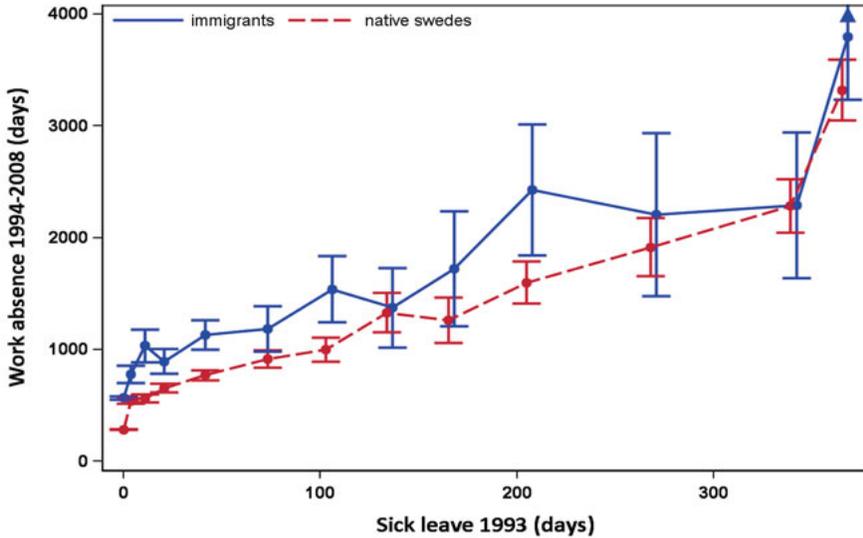
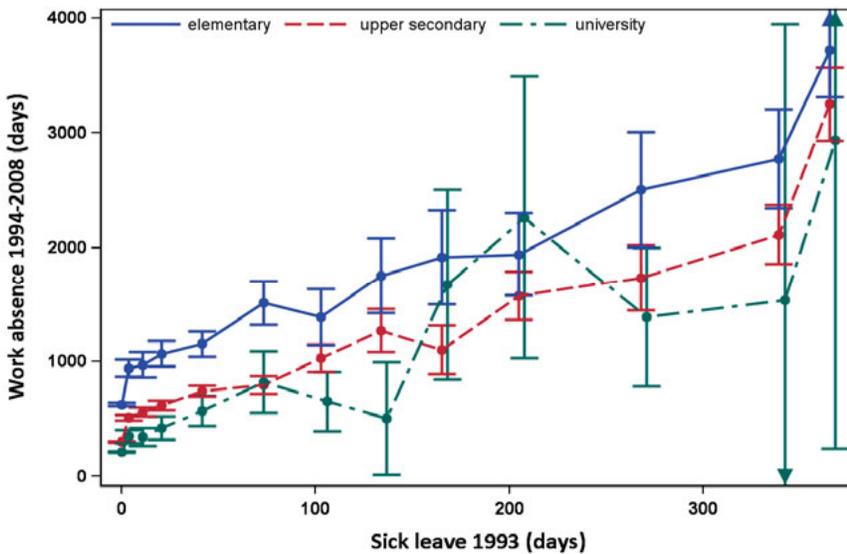


Figure 19. Relation between accumulated days of sick leave in 1993 and mean number of days of work absence during 1994–2008, by educational level, with 95% confidence intervals (CIs) shown. The points in the graph refer to 0, 1–7, 8–14, 15–28, 29–59, 60–89, 90–119, 120–149, 150–179, 180–239, 240–299, 300–364 and 365 days of sick leave taken in 1993.



Discussion

Exposure to unemployment

Sickness absence and disability pension

Very few studies have, to our knowledge, investigated exposure to unemployment, with sickness absence and disability pension as outcomes. Some studies, however, show an association between unemployment and poor wellbeing, a state that can be associated with decreased capacity for work [9, 10]. The recession in Sweden at the beginning of the 1990s led to unemployment rates not seen since the 1930s and affected almost all employment sectors in Sweden. The rise in unemployment rate was a direct consequence of the recession. Moreover, the health of individuals with good initial health was affected by unemployment. It has been reported previously that the health of persons in employment also decreases during recessions [12]. Our study showed a moderately increased risk of later sick leave and disability pension for persons exposed to ≥ 100 days of unemployment in 1993 compared with persons who had no unemployment in the same year. Adjustment for sickness absence 2 years before baseline did not more than marginally change the ORs between unemployed and employed, which has been seen in another Swedish study in an older study group [20]. This may also indicate that relevant health variables for young persons are lacking in the registers.

There was a dose–response relationship between exposure to unemployment and later sickness absence, which was most pronounced in native Swedes. This was seen for all three time periods, but was fairly moderate. A study from Australia shows that individuals unemployed for ≥ 9 months reported less wellbeing compared with individuals who were unemployed for shorter periods, which indicates that longer spells of unemployment are associated with more health problems [57]. A British study shows that individuals may adapt to the situation of unemployment. The wellbeing is lowest in unemployment periods of 6–18 months but better in periods both < 6 months and > 18 months [58]. In the current study, sickness absence was less pronounced in the latter two time periods; however, this may not be an indicator that the wellbeing is better. It may be due to the fact that some persons were granted disability pension in the later periods.

Sickness absence and disability pension may be regarded as health measures, because illness should be the sole reason for receiving these bene-

fits for people in this young age group. In Sweden until 1997, disability pension was granted to individuals nearing retirement age (60–65 years) in regions with high unemployment. In the young cohort of this study, this would, however, be rare [59]. Still, we cannot preclude that sick leave may to some extent be hidden unemployment.

In Sweden it is possible to receive sickness benefit for all forms of disease. The severity and character of illness for individuals on sick leave can therefore differ substantially. Employers in Sweden have since 1 January 1992 been obliged to pay for the first 2 weeks of every period of sickness absence; this period therefore is not recorded in the official registers. It is therefore expected that sickness absence due to milder diseases should be reduced during the follow-up among individuals with an employer. Among individuals without an employer, payments come directly from the National Insurance Office and are registered from day 2 of sickness. This may lead to a situation where unemployed individuals end up with more days in the registers for short-term sickness absence, and hence reach the limit of ≥ 60 days in our study more easily. There is, however, no financial incentive for unemployed persons to report sick in short periods of sickness as they will lose 1 day of payment due to a waiting day in the sickness insurance.

Mortality

There was a slightly increased risk of mortality for unemployed individuals compared with employed individuals for all groups except Swedish women. This elevated risk was highest in native Swedish men and immigrant women who had ≥ 100 days of unemployment in 1992. It should be borne in mind that our cohort was fairly young; only a small number died during the follow-up. In a meta-analysis of worldwide data, Roelfs and co-workers have shown a similar, elevated OR for mortality among unemployed compared with employed individuals, especially among young individuals. The reasons discussed behind these findings were the latent sickness hypothesis, health-related behaviours and/or the coping/stress hypothesis [19]. Lundin and co-workers found that the elevated risk of mortality among unemployed compared with employed individuals disappeared when adjusting for previous sickness absence [20]. In our study, adjusting for previous sickness absence did not alter the results.

Unemployment

In the current study population, unemployment during early working life affected future unemployment during the entire follow-up period of 15 years. This finding was in line with studies from Sweden and Norway [21, 23], where exposure to unemployment affected future unemployment in a follow-up of 5–8 years. In the Swedish study [21], individuals who became unem-

ployed directly after compulsory school had a more than a twofold risk of unemployment during the 5-year follow-up compared with individuals in work or in labour market programmes. In the Norwegian study [23], previous unemployment was reported to substantially increase the risk of future unemployment, and to have a much larger effect than, e.g., education and school dropout.

There was also a dose–response relationship between number of days of unemployment in 1992 and later unemployment. This was seen for every 50-day follow-up interval of unemployment. A British study had a similar outcome, reporting that the longer the period of unemployment at age 16–23 the higher the number of months spent out of employment later on [60]. The similarity with the UK is interesting as there are relatively large regulatory differences in labour market and social insurance policies between Sweden and the UK.

Since the 1970s, companies in the Western world have continuously reorganized in order to become more flexible and better adapted to market fluctuation. The core–periphery theory is a way to explain why unemployment leads to further unemployment. The “core” of a company consists of managers and other key positions in the company. Around this core there is a “periphery” of workers who have temporary job contracts and who are the first to be dismissed when the need for workers decreases [61]. There is also a connection between temporary work contracts and poor self-rated health [62], but there may also be a selection into temporary work contracts from persons with vulnerabilities and low socioeconomic status, which factors are also associated with poor health. Around 14% of the workforce in Europe are considered to be in the peripheral labour market [62]. However, the labour market laws and regulations between employer associations and trade unions in Sweden protect workers from easy dismissal so this theory may be of less importance in this country.

Previous unemployment can be a stigma and a signal to employers that “something is wrong” and that the productivity of the worker may be low. Employers may therefore not be willing to take the risk of hiring such a person and unemployment becomes a vicious circle [63]. According to a study from the Swedish Confederation for Professional Employees (TCO), an umbrella organization for white-collar unions in Sweden, only 12% of employers are positive to hire persons who are unemployed long-term [64]. In Sweden the regulatory laws concerning the labour market have been debated. Extensive state regulation paired with centralized bargaining on wages and high minimum wages can push up employers’ thresholds for hiring. This has a potential to mostly affect young, inexperienced workers [65].

Health selection can be an explanation for the association between present unemployment and future unemployment. We tried to exclude unhealthy individuals at baseline as far as possible, using information from our registers, to minimize this potential bias. Sickness absence 2 years prior to meas-

urement of unemployment and psychiatric illness in early adulthood has an effect on later unemployment, according to a Swedish study. It is also harder for people with poor health to get a job [20]. Workers with high exposure to temporary job contracts have worse perceived health compared with other workers. For individuals with impaired health, there is a probable selection, not only to unemployment but also to short-term contracts [66].

Active labour market programmes

Participation, by long-term unemployed individuals, in ALMPs increased the risk of future unemployment compared with non-participation. There is evidence from Norwegian and German studies that participation in programmes, especially among young people, leads to an increased risk of further participation in other programmes, and later unemployment [28, 29, 67]. There are, however, differences between such programmes. Works with wage subsidies seem to be a way back onto the labour market in Sweden [27]; also, short programmes seem to be effective, according to a German study [28]. Unfortunately we could not differentiate between different ALMPs in this study. Participation in programmes may, however, in general not be beneficial for future work participation. One reason may be lock-in effects, i.e. participation in ALMPs decreases the search process for a real job, and hence delays return to the regular labour market [26]. Participation in one ALMP tends to increase the risk for participation in another ALMP later on [27, 28, 68]. It seems especially difficult to develop successful programmes for young people and immigrants [28].

In a Norwegian study, those who took part in ALMPs had better psychological health compared with the rest of unemployed individuals [29]. If this result can be generalized the negative effect of ALMPs is underrated. If there is a selection into ALMPs for individuals who are far from the labour market, this can partly explain the unfavourable results in this study.

Education

In the current study there was a negative relation between education at baseline and the risk for future unemployment. Young individuals with low educational level were particularly at risk of being unemployed. Hammer found no significant effect of educational level on future unemployment [23]. The cohort in Hammer's study was 17–20 years of age when education was measured, which excludes a university education. Long-term unemployed individuals who had a higher educational level in 1997 compared with 1992 had a decreased risk of future unemployment [23]. In the current study, the population were 25–29 years old when educational attainment was measured; most of them would have had time to finish both upper secondary and university studies. Therefore, education may have a stronger impact on future unemployment in the current study.

The labour market in all Western countries has changed since the prosperous times of the 1950s and the 1960s when there was an abundance of manual labour jobs. An example is the forest industry in Sweden where machines have almost erased the need for manual labour since the 1990s. Most jobs on the labour market of today require some sort of education; without skills and education, an individual has far fewer opportunities [69].

Gender

There were no consistent differences, in any of the outcomes, between men and women after exposure to unemployment. A recent Swedish study concludes the same, reporting no differences in health outcome between men and women when exposed to unemployment [70]. There has been an ongoing debate about gender differences in health following periods of unemployment. Two meta-analyses show contrasting results in mental health between men and women when exposed to unemployment: one of them states that women have less psychological wellbeing following unemployment compared with men [9] while the other concludes the opposite [10]. The differences were, however, small.

Exposure to sick leave

Sick leave and disability pension

In our study, sick leave at baseline increased the risk for sick leave in all follow-up periods. This may be a consequence of a natural progression of a disease but it could also be a consequence of the sick leave itself. Sickness absence may lead to isolation and loss of essential factors for wellbeing, such as social support and structure in the person's everyday life [33, 35, 71].

In one Swedish study the risk for further sickness absence was increased among persons on long-term sickness absence but also among persons with repeated short spells of sickness absence [32]. Elsewhere it was reported that older individuals, but not younger ones, on permanent employment with ≥ 15 days of sickness absence had a twofold risk of future sickness absence compared with individuals with no sickness absence [38]. In our study we found a higher risk among young persons. One reason for this may be that they were exposed to a longer period of sickness absence in this study.

Sickness absence is a strong predictor of disability pension, as shown in several studies [36, 72]. This may also be a plausible explanation as to why the risk of sickness absence decreased in the last two periods in our study. Some of the individuals on sickness absence were granted disability pension or died. In our study we found an increased risk for disability pension among individuals on sickness absence. Disability pension in Sweden mostly im-

plies benefits for the rest of the person's working life, when the decision is taken that the chance of the person returning to the labour market is minimal. As with unemployment and sickness absence, disability pension per se may have detrimental effects on health. Most disability pensions are granted for non-fatal diseases; however, disability pensioners have been reported to have three times increased risk of premature mortality as well as higher utilization of health care [73].

Mortality

The risk of mortality among individuals with ≥ 60 days of sickness absence at baseline was more than doubled in all groups studied except immigrant women. Similar results indicating premature mortality have been reported from both a Swedish and a Norwegian study [39, 74]. Sick leave due to musculoskeletal and psychiatric diagnoses, in most cases non-fatal diseases, represents $>70\%$ of the total number of total sickness absence days in Sweden. Despite this finding, there was an increased risk of mortality among persons with musculoskeletal diagnoses [75]. This may suggest that the sickness period, with lost social support and lower economic margins, may lead to development of more severe diseases. Another plausible explanation is an increased propensity to take sick leave due to musculoskeletal diagnoses among persons with more severe diseases.

Unemployment

Sickness absence increases the risk of unemployment in the follow-up period, but to a fairly low extent. Employers sometimes have problems dealing with ill workers; they prefer employing healthy workers if available. Furthermore, economists have revealed that in good economic times there are more persons on sickness absence than during a recession [31]. Reasons for this can be both behavioural (since in a boom, your work is not as much at risk as during a recession) and also a selection effect (as in a boom time, a greater number of less healthy individuals are also employed) [6, 43, 76]. This suggests that there is an interrelationship between unemployment insurance and sickness insurance.

Income

The income, over the 15-year follow-up period, of persons with ≥ 60 days of sickness absence at baseline on average was about two-thirds of the mean income of persons with no sickness absence at baseline. Another study from Sweden shows that persons with long-term sickness absence have lower economic margins after the sickness period compared with persons with no such sickness absence [45]. Economic deprivation is a possible reason for

decreased wellbeing and disease. In an English study, unemployed persons suffered persistent economic scarring lasting almost three decades after the unemployment period [60]. In our study we found that during the 15-year follow-up period, individuals on sickness absence had a much lower income from work compared with individuals with no sickness absence.

Accumulated work absence

Accumulated days of sick leave in 1993 were found to be linked to work absence in the follow-up period, with a steep increase at the beginning which then levelled off with further sick leave taken. The reasons for an increase in the risk for future work absence for persons with spells of sick leave seem to be multi-faceted, with many factors involved in the process, from individual abilities to societal structures. The vast majority of sicknesses will heal naturally without any intervention and without future negative outcomes. Short spells of sick leave should therefore, from a health perspective, not be decisive for future work absence. Based on the notion that most diseases will spontaneously improve, early rehabilitation has been questionable from a return to work perspective. Two Swedish studies evaluated rehabilitation early in the sick leave period and found an increased risk of work absence in the future as well as a prolonged time until return to work [77, 78]. Moreover, it is important to prevent short-term or repeated short spells of sick leave from leading to long spells of sick leave [32, 79]. In our study cohort, there seemed to be a steady increase in future days of work absence with every day of extra sick leave taken in 1993. This underlines the complexity of intervening in the sick leave period, as it seems important to give the right intervention to the right person at the right time (or, in some cases, to not give any intervention).

Women's share of total days of sick leave has increased steadily during the last decades. Reasons for this may be inequality between the sexes and that women have more responsibility at home, etc while working full-time. Another reason may be the differentiated labour market in Sweden, where women more often work in the public sector doing physically and also psychologically more demanding work [80]. Women in gender-segregated workplaces, both male- and female-dominated, have higher risk of sick leave compared with men [81].

Immigrants on sick leave in 1993 had higher work absence in the follow-up period with every additional day of sick leave compared with native Swedes. This was, however, true for only about the first 28 days of claimed sick leave. For longer periods of sick leave, there were fewer, or no, differences. Among immigrants there was no difference in days of unemployment between individuals exposed to ≥ 60 days of sickness absence in 1993 and individuals with any sickness absence. This may be an indication of a weak causal link between sickness absence and unemployment in Sweden. There

may be differences in health between immigrants and natives, as suggested in a study from the Netherlands [82]. This may also be due to the “healthy migrant effect”, as individuals who can leave their country are those with the best health [52]. Disability pension claims have been more common among immigrants than among the native population, both in Norway and in Sweden [47, 48]. Socioeconomic factors have been put forward as a reason for immigrants to have more days of hospitalization compared with native Swedes [55]. In a study from Canada, immigrants often work well below their formal competence, if they work at all. This, too, is a stressor leading to health issues [83]. There may furthermore be structural discrimination, which can double the burden among immigrants on sick leave [84]. Notably in our study, for sick leave periods >29–59 days, there were no differences between immigrants and native-born Swedes. The cohort was young, and the majority of the immigrants had immigrated at school age. According to one Swedish study, arrival in Sweden at an early age is associated with increased self-rated health [56].

Educational level seems to be important with regard to sick leave and the associated risk of future work absence. In our study, this applied especially to shorter periods or shorter repeated spells of sickness absence. In our cohort, persons with lower education were over-represented in the group of persons on sick leave. Individuals with a university education, but also individuals with an upper secondary school education, may be better able to adjust their workload and working time in periods of sickness compared with persons with elementary schooling only. For instance, they may be able to work from home and catch up on work by making up for lost time on another day as their adjustment latitude is higher. Persons with lower education in general have manual jobs and, hence, fewer possibilities to work from home [85]. With longer periods or spells of sick leave, educational level did not moderate future work absence and the educational categories in our study seemed to be more equal.

Sick leave and motivation

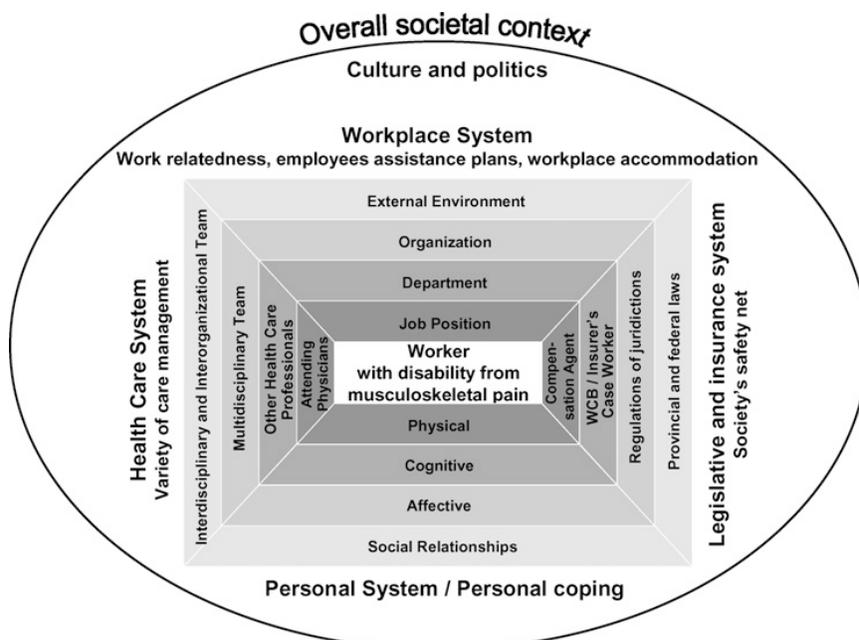
The concept of “sick role” was introduced by Parsons in the mid-20th century and focuses on the “benefits” and the “obligations” of being sick [86]. One of the benefits is that the person is entitled to support by others due to ill health. This situation can go on until the person is well again, and may act as a disincentive for getting well again if there is no reasonable chance of return to work. The obligations of being sick, on the other hand, imply that the period of sickness shall be considered as temporary and the person shall do everything in his or her power to get well again [86]. But then there must be something that is worth being healthy for, such as a reasonable chance to get back into the labour market. Our study indicates that sick leave per se may be of importance for future work absence because there is a fairly large dif-

ference between 0 (zero) and 8–14 days of publicly financed sick leave. In a study from the TCO, only 7% of all employers were positive about hiring a person who has been on long-term sick leave [64]. Structural factors on the labour market may act as a hindrance for persons on sick leave returning to work. Reasons may include slimmed organizations where every employee has to work at full pace, and where support to persons with disabilities is hard to give. Previous unemployment has been seen to act as a stigma, and is often a signal to employers that productivity may be low for this person [63]. The same is probably true for sick leave; staying on sick leave, if possible, may then be the most rational decision.

Motivation and self-efficacy are strong factors as to why people return to work. In a study from Sweden, only 4% of individuals who believed that they were too sick to work were at work 1.5 years later [87]. When the self-efficacy is low the probability of return to work is decreased [88]. It may also be hard to return to work before complete recovery if there are no possibilities for adjustment of work tasks and working time. Persons with a high score on adjustment latitude will have a better chance to return to work earlier during the sick spell [89]. The crucial point is also to stay at work for a longer period once a person has returned to work. Often the support from health care and occupational care is reduced as soon as the person has returned to work. A study from the Netherlands shows that an intervention aiming, in a structured manner, to identify barriers and try to overcome them after a person has returned to work has been seen to decrease the likelihood of recurrent spells of sick leave [90]. The employer therefore has a great impact on how successful a return to work will be.

About 70% of all individuals in Sweden have some form of illness (i.e. subjective symptoms), and about 40% have some form of disease (i.e. a diagnosed disease). The sick leave rate (sickness) is, however, much lower [91]. In people with pain, there is a difference in, e.g., fear avoidance and pain catastrophizing between persons who go on sick leave for pain and persons who stay on the job despite the pain [71]. Self-reported psychiatric well-being has been seen to be related to longer periods of sickness absence [92]. The arena of illness and sickness absence which faces persons with illness, as described by Loisel and colleagues in Canada, gives an idea of the complexity of the issue of sickness absence (Figure 20) [93]. They studied patients with low back pain and revealed that pain in itself was not the only decisive factor for sick leave; other factors like problems at work with supervisors or colleagues, problems in relations, and problems with coping were also decisive regarding who ends up on long-term sick leave and who does not. Moreover, the regulative context had an impact [93]. The age between 18 and 25 seems to be a decisive period in terms of beliefs about

Figure 20. The arena of illness and sickness absence.



Source: Loisel et al., Journal of Occupational Rehabilitation, 2005.

future employability [94] and in some cases, long-term sickness absence becomes an end point where return to work is unlikely. Sick leave due to musculoskeletal and psychiatric diagnoses represents over 80% of the total number of total sickness absence days in Sweden. For a successful recovery, it is often better to be active and stay at work [38]. In this study we have tried to avoid selection bias at baseline by excluding individuals with earlier in-patient care and adjusting for previous unemployment and sickness absence. In Sweden in a recent randomized controlled trial (RCT), an intervention in the form of cognitive behavioural therapy reduced subjects' psychological symptoms and increased their wellbeing, but did not reduce the days of sick leave [79]. This finding should sound the alarm for administrators and policy makers. It is not always enough to get well again, because something seems to happen to the employability of persons who go on sick leave.

Connections between unemployment and poor health

Causation or selection

The relationship between unemployment and poor health is complex. The question about causation and selection is a matter of debate and is fundamental to the understanding of the relationship between ill health, sickness

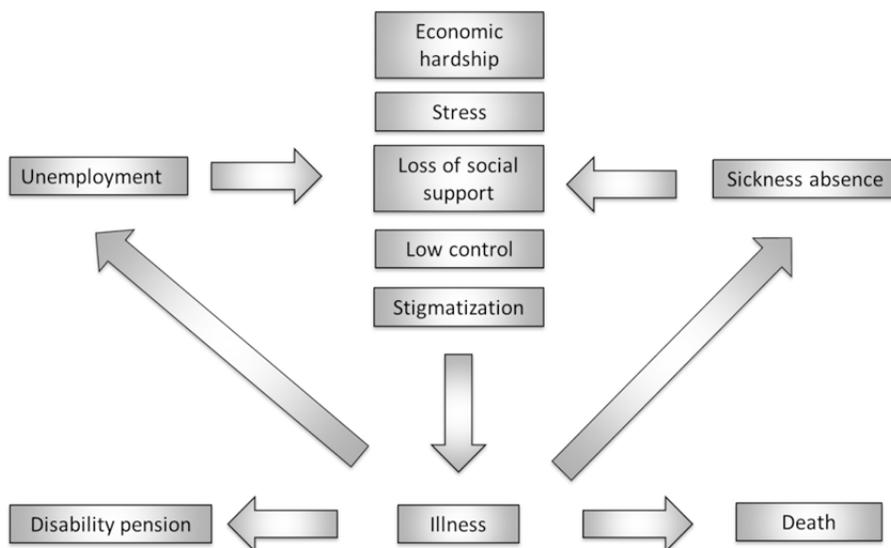
absence and unemployment. Rothman argues that a sufficient cause will inevitably produce an effect, and a sufficient cause is made up by component or contributing causes [95]. Unemployment can be one component cause and together with other component causes, e.g. chronic illness, the welfare system, earlier outbreak of mental or physical illness, lacking coping strategies, high sensibility to stress, bad eating habits, low socioeconomic status, propensity for alcohol and/or drug abuse, in different constellations can form necessary causes of illness.

Figure 21 shows a model of a possible causal pathway between illness, unemployment and sickness absence. The arrow pointing from illness to unemployment shows a possible selection effect for ill persons into the unemployed group. There may be a circular movement between unemployment, sickness absence and illness, whereby individuals get further and further removed from the labour market. The worst case scenario may be economic and social exclusion [96]. This vicious circle may eventually lead to disability pension and even premature mortality. There is of course a chance of re-employment, but this decreases with time.

There is evidence in the literature of both a causal effect from unemployment to illness and a selection effect (reversed causation) whereby illness leads to unemployment due to difficulties in finding and maintaining a job. A study from Sweden investigates five groups of theories in search for the most plausible causal link between unemployment and poor health [97]. The economic deprivation models assume that unemployment means having less money and that this will affect the prerequisites for good health. The control models assume that the passive situation means low control over life, which is a risk factor for poor health. The stress models focus on how individuals cope with the situation of unemployment, while the social support models assume that human contact means that individuals can handle stress in a better way. Finally, the models of latent functions assume that work, almost without restrictions, will have a profound effect on health so when an individual loses their job these protective functions will be lost. The most well-known theory of latent functions was developed by Jahoda already in the 1930s [4]. The conclusion is that all models correlate fairly well to unemployment and poor health, and thereby support the causation theory [97].

A meta-analysis of 104 studies concluded that there is evidence of a causal effect of both mental and physical poor health on unemployment; the

Figure 21. Theoretical causal pathway between illness, unemployment and sickness absence.



conclusion was based on longitudinal studies in which health status was reported to deteriorate in times of unemployment but improve in times of re-employment [9]. Also a Swedish study concludes that a causal effect exists between unemployment in a recession and later suicide [98].

A Swedish study concludes a selective effect, where individuals on sick leave before assessment have an elevated risk of unemployment [20]. Another study from Sweden reveals, however, that poor mental health is associated with unemployment also after adjustment for previous sickness absence, with longer spells of unemployment giving the highest significance [99]. A Finnish study shows a health selection effect when comparing unemployed individuals in a boom and in a recession. Unemployed individuals in a boom have poorer health compared with unemployed individuals in a recession. In prosperous times, mostly those with poor health will remain unemployed, while in recessions, also “healthier” individuals become unemployed [100]. Other studies argue that predictors of future unemployment can already be seen in childhood and adolescence [101, 102].

In our study we found that exposure to unemployment was associated with later sick leave, disability pension and mortality to a fairly small extent but to unemployment to a greater extent. At the same time, exposure to sick leave in our study population was similarly associated with later sick leave, disability pension and mortality to a greater extent and with later unemployment to a fairly small extent. A report from the Swedish Social Insurance Inspectorate demonstrates a low flow from sickness benefit to unemployment benefits, and vice versa. One reason may be the low transparency be-

tween the two benefits, which makes it hard for an individual to know whether they are entitled to benefits from the other and therefore to stay with the first as this is easier [103]. This lock-in effect may be a reason as to why unemployed persons may have sickness benefit and, to a lesser extent, why sick persons have unemployment benefit when instead they should have the other benefit.

Regulatory aspects of social security in Sweden

Unemployment benefit and sickness benefit have, in studies from Sweden, been regarded as different sides of the same coin, i.e. both are benefits for work absence [6]. There is a clear interaction between unemployment and sickness benefits, as seen in earlier studies [5]. Regulations, e.g. regarding ceilings for replaced income loss, time limits, etc can have a great impact on claiming, and being granted, benefits. Finland and Sweden, fairly similar with regard to both the welfare system and the labour market, have different use of sickness absence and unemployment benefits. In Finland, individuals are more likely to be on unemployment benefit while in Sweden, individuals are more likely to be on sickness benefit [104]. In Sweden, it has been profitable to migrate from unemployment benefit to sickness benefit [5]. Sick leave may therefore be hidden unemployment and not an indication of deterioration in health status in the population. The increase in sickness absence and unemployment may also be indicative of a labour market where persons with vulnerabilities have difficulties to maintain a stable position. Sick leave may therefore be a rational way to escape a too demanding working life, even if there is a work capacity and work would be possible if adjustments in the work environment were made.

Immigrants

In our study we did not find any major differences, for any of our studied outcomes, between immigrants and native Swedes. The differences between native Swedes and immigrants were remarkably low if we take into account research results suggesting that the mental health of young immigrants in general is worse compared with the mental health of young native Swedes [53] and that immigrants in all age groups were hit harder by the economic crisis in the early 1990s [105]. Immigrants had a higher general risk of both unemployment and being on long-term sickness absence at baseline than did native Swedes. The study showed, however, that young immigrants matched the pattern of native Swedes during follow-up. Immigrants exposed to ≥ 100 days of unemployment or ≥ 60 days of sickness absence were not more vulnerable than were native Swedes, compared with unexposed individuals in every group. Immigrants had slightly more days of work absence during

follow-up compared with native Swedes, ≤ 28 days of accumulated sick leave in 1993.

Until the early 1980s, immigrants and native Swedes participated equally in the labour force. Since then the gap between the unemployment rate of immigrants and unemployment of native Swedes has gradually increased [106]. The potential reasons for this are many, e.g. the changed pattern of immigration and a changed labour market. Changed attitudes towards immigration in society can also be an explanation [84]. Foreign-born residents in Sweden of all ages also have, according to a Swedish study, a higher risk of premature mortality and severe morbidity compared with native Swedes. The difference disappears, however, when adjusting for education and socioeconomic factors [55]. Sick leave may also lead to feelings of shame, especially for immigrants from outside the Nordic countries with psychiatric diagnoses. These can lead to prolonged periods on sick leave [107]. This study was performed in a young cohort; therefore, the discrepancy between native Swedes and young immigrants may have become diluted because most young immigrants came to Sweden in early or late childhood and have attended the Swedish education system. Time in the country, and immigration early in life, have been seen to be decisive for successful integration [56]. In this study, no difference was seen either before or after baseline adjustments for education and income. The study population were young at baseline, and many of them had not yet finished eventual university studies.

Confounders

Confounders adjusted for in this study were age, income, place of residence in Sweden, native country, education, and sickness absence before baseline. The age span in the study population was not very wide; nevertheless, relative differences in work experience can be fairly large even in young age groups. Young individuals, 18–20 years old, have less quality of life (QoL) compared with 21–24-year-olds [11]. Socioeconomic background has been reported to affect the health outcomes of individuals exposed to unemployment. Less income often means worse health [108]. Immigrants to Sweden in general have a lower income compared with native Swedes; these differences are greatest between native Swedes and non-European immigrants. Such differences tend to increase during a recession [109]. Furthermore, there are differences in sickness absence rates between different parts of Sweden: e.g. the sickness absence rate is higher in the north of Sweden [110]. Also, there are labour market differences between regions and this polarity has increased during the study period, when some industries have downsized or moved their production out of Sweden [69]. Country of origin has an impact on labour market outcomes; the impact increases with the extent of the difference in culture and language between the land of origin

and the immigration country [111]. A study from Norway has concluded that the level of education plays a major role in determining the incidence of poor health [112]. We have also adjusted for previous sickness absence, as in Sweden, sickness absence explains most of the risk difference in mortality between unemployed and employed individuals [20].

Strengths and weaknesses

Sweden has a well-developed register system, which allows a comprehensive longitudinal approach. There is also considerable scope to make adjustments for a number of confounding factors. In our investigation we followed cohorts, established in 1992 and 1993, for 15 years and measured the number of days of unemployment and sick leave year by year. The studies making up this investigation had a very large study population of immigrants and native Swedes. This has given our study great power and provided the opportunity to study subgroups.

As with all register studies there are, however, shortcomings. Data on educational background were self-reported when immigrants had never participated in the Swedish school system. The information was therefore more uncertain for this group and missing values were more common compared with the Swedish groups.

In terms of absence from work, some of the same mechanisms as may affect unemployed individuals also affect individuals on sickness absence. It was not possible in our study to distinguish those on long-term sickness absence at the baseline year. If people on long-term sickness absence were affected by being out of work in a similar way as were the unemployed, e.g. they lost income and social support, then the risk of future unemployment, sickness absence and disability pension was underestimated in our study because people on sickness absence were counted as employed.

There were about 7,000 individuals at baseline who did not work, at least not on the regular labour market, and who did not receive any benefits from society. These individuals were classified as being outside the labour market and were therefore included in the reference group of people who were employed. If the group of people outside the labour market were in fact unemployed, however, the ORs may be underestimated.

Information about poor health and, foremost, poor mental health, is not comprehensive in registers for a young population. Therefore it is not possible to exclude all health selection into unemployment.

Conclusion

Exposure to unemployment among young individuals was associated with later sickness absence, disability pension, mortality and future unemployment 15 years after exposure. Health selection probably explained part of the result; however, regardless of whether results are due to such selection, the costs to individuals and societies are the same. This emphasizes the importance of making efforts to reduce both unemployment and sick leave among young individuals in order to maintain a high employment rate and thereby preserve economic growth and reduce future spending on social insurance. Higher education had a protective effect on future unemployment, showing that individuals with low education are especially vulnerable. Active labour market programmes were not associated with decreased risk of future unemployment, but can have positive effects on wellbeing, etc.

Exposure to sickness absence was associated with future sickness absence, disability pension, unemployment and mortality and also with lower income 15 years after exposure. The number of days of future work absence increased after just a few days of claimed sick leave. In our study it is difficult to disentangle the effect that the sick leave period per se had on later possibilities to remain in the labour market. We cannot, however, preclude that sick leave in itself can have a detrimental effect on both health and work participation. Future studies may probe deeper into the question whether there is a causal relation between sick leave per se and later work participation.

Young immigrants had a higher general risk of unemployment and a higher propensity to be on long-term sick leave at baseline, but they followed the pattern of native Swedes during follow-up. The risk of future unemployment, sickness absence and disability pension was almost similar between immigrants and native Swedes as well as between men and women when exposed to both unemployment and sick leave.

Sammanfattning

Ungdomsarbetslösheten har ökat kraftigt runt om i världen de senaste 20 åren. I Sverige ökade arbetslösheten kraftigt bland unga i början av 1990-talet och har sedan dess varit på en relativt hög nivå. För länder med utbyggda välfärdssystem betyder arbetslöshet ökade utgifter. För de arbetslösa individerna betyder det förutom en låg inkomst även svårigheter att långsiktigt etablera sig på arbetsmarknaden. Andelen sjukskrivna har under vissa perioder de senaste 20 åren varit mycket hög och studier har visat att sjukskrivning kan vara början till en gradvis utslagning från arbetsmarknaden bland personer som finns långt ifrån arbetsmarknaden. Sjukskrivning kan i viss utsträckning vara dold arbetslöshet. Sverige har en relativt generös sjukförsäkring jämfört med många andra länder, även om en omfattande skärpning av reglerna genomfördes under 2008.

Denna registerbaserade kohortstudie har undersökt sambandet mellan exponering för arbetslöshet respektive sjukskrivning bland unga personer och senare arbetslöshet, sjukfrånvaro, förtidspension och död. I den andra delstudien var ett delsyfte att undersöka om deltagande i ett arbetsmarknadspolitiskt program eller om man hade förvärvat en utbildning modifierade risken för senare arbetslöshet. I den tredje delstudien undersöktes även exponering för sjukskrivning med senare medelinkomst. I den fjärde delstudien undersöktes vad olika nivåer av ackumulerad sjukskrivning hade för samband med senare arbetsfrånvaro.

Studien var även en jämförelse mellan immigranter och infödda svenskar eftersom Sverige har en relativt stor andel av befolkningen som är född utanför Sverige. Definitionen för att vara utlandsfödd var i vår studie att vara född utomlands av två föräldrar som även de är födda utomlands. Med infödda svenskar menas att vara född i Sverige av två föräldrar som även de är födda i Sverige.

Basåret för studien var i de två första delstudierna 1992, och 1993 för de två sista delstudierna. Båda var år av kraftig ekonomisk nedgång i Sverige. Uppföljningsperioden var 15 år, uppdelat i tre femårsperioder. Studiepopulationen omfattade alla utlandsfödda personer födda mellan 1968 och 1972 som kommit till Sverige innan 1990 samt ett slumpmässigt urval av infödda svenskar i samma åldersgrupp. Studiepopulationen bestod av unga personer som ska etablera sig på arbetsmarknaden. Personer med arbetslöshetsersättning under två år innan baslinjen, förtidspension under baslinjen samt två år innan eller om man varit inlagt på sjukhus under basåret samt två år innan

uteslöts för att skapa en så frisk kohort som möjligt och så långt som möjligt minimera en selektion av redan sjuka. I den fjärde studien exkluderades även personer med arbetslöshet under basåret för att minimera att personer som får sjukpenning från Försäkringskassan redan från dag ett finns med i kohorten.

De som var arbetslösa under 1992 hade förhöjd risk för ≥ 60 dagar av sjukfrånvaro, förtidspension, ≥ 100 dagars arbetslöshet och alla, utom svenskfödda kvinnor, hade förhöjd risk för död under uppföljningstiden. Risken för framtida arbetslöshet sjönk till sista uppföljningsperioden, medan den förhöjda risken för framtida sjukfrånvaro var ungefär densamma under alla tre uppföljningsperioder. Högre utbildningsnivå vid baslinjen minskade risken för framtida arbetslöshet. Individer som deltog i aktiva arbetsmarknadsåtgärder hade en ökad risk för framtida arbetslöshet jämfört med personer som inte deltog i program. Uppnådd utbildning mellan 1993 och 1997 minskade risken för framtida arbetslöshet och minskade risken för sjukfrånvaro bland invandrare. Risken för både arbetslöshet och sjukfrånvaro ökade med längden på arbetslösheten 1992. Invandrare hade högre risk för arbetslöshet både vid baslinjen och vid uppföljning jämfört med infödda svenskar, men följde mönstret för infödda svenskar.

Personer som var sjukskrivna under 1993 hade ökad risk för ≥ 60 dagar av sjukfrånvaro, förtidspension, ≥ 100 dagars arbetslöshet men även för ca en tredjedels lägre medelinkomst de påföljande 15 åren jämfört med personer som inte hade någon sjukskrivning under 1993. Räknat i antal dagar hade de som hade ≥ 60 dagar under 1993 i medeltal fem gånger så många dagar av sjukskrivning under uppföljningsperioden. Skillnaden i antal dagar av arbetslöshet var inte lika stor mellan de som hade ≥ 60 dagar av sjukskrivning under 1993 jämfört med de som inte hade någon sjukskrivning. Den största riskökningen för senare arbetsfrånvaro sker under den första veckan av sjukpenning som ansöks hos Försäkringskassan, dvs. efter att sjuklöneperioden som arbetsgivaren ersätter är slut. Sedan är det en stadig uppgång av senare arbetsfrånvaro för varje ökning av grupperad sjukpenning ända upp till maximal sjukpenning som kan erhållas under året. För de som har maximal sjukpenning under året ökar återigen senare arbetsfrånvaro kraftigt.

Slutsatsen är att det finns samband mellan exponering för både arbetslöshet och sjukskrivning och en förhöjd risk för framtida arbetslöshet, sjukfrånvaro, sjukpension och död femton år efter exponering. Sjukskrivning är även associerat med en lägre medelinkomst under de efterföljande 15 åren. Arbetslösheten betyder förutom kostnader för arbetslöshetsförsäkringen även kostnader på längre sikt i form av ökade utgifter för sjukdom och sjukfrånvaro. Selektion till arbetslöshet bland individer som är sjuka, kan åtminstone förklara en del av sambandet mellan arbetslöshet och de studerade utfallen. Oavsett om sjukdom och arbetslöshet är en direkt följd av exponering för arbetslöshet eller beror på omvänd kausalitet så kommer samhället att få en ökad kostnad för de individer som inte kan beredas en plats i arbetslivet.

Acknowledgements

This study was conducted at the Department of Medical Sciences; Occupational and Environmental Medicine, Uppsala University, and was funded by the Swedish Council for Health, Working Life and Welfare (Forte).

I especially want to express my gratitude to my main supervisor Eva for all her support during my time as PhD student. You provided me, as well as my fellow research colleagues, with an excellent research environment. You have shared your wisdom and vast knowledge with me and we had so many fruitful discussions on different aspects of illness, working life and social insurance, not only relating to this thesis. Eva, I hope that you remain a “quasi-pensioner” for a long time still.

I also want to express my gratitude to:

Ingvar Lundberg, my co-supervisor, for his always precise and wise feedback. We share another common interest – that of cross-country skiing; hopefully we can meet in “Vasaloppsspåret” some time.

Bosse Johansson, for always sharing his knowledge about migration, and the historic background to migration and for valuable feedback on the papers and thesis.

Tobias Nordqvist, Erik Lampa and Lisa Wernroth, for their statistical support.

All my fellow PhD students and all colleagues at Occupational and Environmental Medicine in Uppsala.

Nigel Tooke and Karin Fischer-Buder for correcting my not always perfect English

Peter Westerholm. It has been a pleasure to work alongside you and you have given me many insights in the field of social security.

Monika Rönn, for all our discussions about our research projects as well as numerous discussions about other important issues.

My mother and father, who have made this thesis possible by providing care for our children. They made it possible for me to recover by skiing during winter time and going on mountain hikes, forest walks and travels during the rest of year.

Finally, but not the least, my wife Elisabeth and my children Ebba and Emanuel. I love you, my 3Es!

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