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Unemployment at a young age and later sickness absence, disability pension and death in native Swedes and immigrants

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Background: Youth unemployment is an increasing problem for societies around the world. Research has revealed negative health effects of unemployment, and this longitudinal register-based cohort study examined the relationship between unemployment and later sickness absence, disability pension and death among youth in Sweden. **Method:** The study group of 199 623 individuals comprised all immigrants born between 1968 and 1972 who immigrated before 1990 (25 607) and a random sample of native Swedes in the same age-range (174 016). The baseline year was 1992, and the follow-up period was from 1993 to 2007. Subjects with unemployment benefit in 1990–91, disability pension in 1990–92, severe disorders leading to hospitalization in 1990–92 and subjects who emigrated during follow-up were excluded. **Results:** Those who were unemployed in 1992 had elevated risk of ≥ 60 days of sickness absence (OR 1.02–1.49), disability pension (HR 1.08–1.62) and all except native Swedish women had elevated risk of death (HR 1.01–1.65) during follow-up compared with non-unemployed individuals. The risk of future sickness absence increased with the length of unemployment in 1992 (OR 1.06–1.54), and the risk of sickness absence increased over time. A larger part of the immigrant cohort was unemployed at baseline than native Swedes. Selection to unemployment by less healthy subjects may explain part of the association between unemployment and the studied outcomes. **Conclusion:** Unemployment at an early age may influence the future health of the individual. To a society it may lead to increased burdens on the welfare system and productivity loss for many years.

Introduction

Youth unemployment has become an increasing problem for many countries of the world, and the worldwide financial crisis in recent years has further worsened the situation. To some extent, youth unemployment is a matter of political choices, and there are large variations between countries in this regard. The unemployment rate among youth (15–24 years) was as an average for all European Union countries in the last quarter of 2011 above 22%, compared with just below 9% for older workers (25–74 years).¹ Sweden entered an economical recession in the beginning of the 1990s, which in many ways was similar to the situation in many European countries today. The unemployment rate in Sweden among young individuals, aged 18 to 24 years, increased from a few percentage in 1990 to $>20\%$ in 1993. For immigrants, the situation was even worse.^{2,3} Many studies show that unemployed persons have worse health, both mentally and physically, compared with employed persons.^{4,5} The causal relationship between unemployment and ill-health has been debated. Does unemployment lead to illness or does illness lead to unemployment?

The main body of research on health effects of unemployment has focused on direct health outcomes.^{5–8} To our knowledge, there are no studies of exposure to unemployment and later sickness absence and only few studies of unemployment in relation to later disability pension. In a study from Finland, persons on both short-term and long-term unemployment in 1998 had an elevated risk of disability pension because of depression in 2003.⁹ A study from Iceland revealed an increased incidence of disability pension because of

mental and behavioural disorders 1 year after a peak in the unemployment rate.¹⁰ The association between unemployment and premature death has been studied more. In a meta-analysis on 20 million persons, a hazard ratio (HR) of 1.63 for death from any cause was found for unemployed individuals compared with persons in employment.¹¹ A longitudinal study from Sweden examined newly unemployed individuals in an economic downturn and found a slightly elevated risk of premature death during the follow-up period. Adjustment for socio-economic factors and previous sickness absence erased, however, most of the risk difference for death between unemployed and non-unemployed individuals.¹²

Sweden has, compared with many other countries, a relatively large immigrant population. In the 1950s and 1960s, immigration was mainly labour-driven, but after 1970, this changed to immigration of refugees and family members seeking reunification. Immigrants have a higher unemployment rate than native Swedes. A study on integration concluded that young immigrants in Sweden had a higher prevalence of mental illness than young native Swedes.¹³ Time since immigration and arrival at a young age have been seen to be a decisive factor for future health status.¹⁴ Disability pension was more common among immigrants than in the native population, both in Sweden and in Norway.^{15,16} The research on work and health in the native compared with immigrant population is fragmentary.¹⁷

Aim

The aim of the study was to examine if exposure to unemployment during a recession period was associated with later sickness absence,

Table 1 Distribution of unemployment in 1992 for individuals in the study

	Total	No days of unemployment	1–99 days of unemployment	≥100 days of unemployment
Native Swedes				
Women	83.406	59.397 (71.2%)	15.278 (18.3%)	8.731 (10.5%)
Men	90.610	60.042 (66.2%)	16.403 (18.1%)	14.165 (15.6%)
Immigrants				
Women	13.544	8.471 (62.5%)	2.781 (20.5%)	2.292 (16.9%)
Men	12.063	6.756 (56.0%)	2.400 (19.9%)	2.907 (24.1%)
Total	199.623	134.666	36.862	28.095

disability pension and death for young immigrants and native Swedes.

Methods

Study population

The study group comprised all foreign-born individuals aged 20 to 24 years who were living in Sweden in 1992 and had immigrated before 1990 ($n=25\,607$). A random sample of native Swedes in the same age-group ($n=174\,016$) was also included in the study (table 1).

The rationale for the age span of the study population was to investigate people just when entering the labour market. The main part attended upper secondary school until age 19 years, and the official upper limit for 'youth' is 24 years. Immigrant in this study 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.

To form as healthy a cohort as possible, the following were excluded from the analyses: subjects who received unemployment benefit in 1990 and 1991, disability pension in 1990 to 1992 and were hospitalized because of pulmonary, cardiovascular, musculo-skeletal and psychiatric diagnoses in the period from 1990 to 1992. Approximately 17 000 persons, both immigrants and native Swedes, emigrated temporarily or permanently from Sweden during the follow-up period. We have chosen to exclude those individuals because their time under risk for sickness absence and disability pension are uncertain, and death in another country is not reported to Sweden.

The baseline year was 1992; a year of deep recession and rapidly increasing unemployment, and the cohort was followed from 1993 to 2007 in three 5-year periods. To be classified as unemployed, the person must be enrolled as a possible recipient for support from the National labour office and instantly be ready to take a job in 1992. Persons with short periods of unemployment were included because of the potential stigma of being unemployed even during short periods.¹⁸ Persons classified as having no days of unemployment had a paid work, studied, received sickness benefit or were outside the labour market.

Outcomes

- (i) Sixty days or more sickness absence in each 5-year period. During the study period, ≥ 60 days of sick leave were an official time limit for long-term sickness absence at the Swedish National Insurance Office and often used in official reports.
- (ii) Disability pension in the follow-up period from 1993 to 2007.
- (iii) Death in the follow-up period from 1993 to 2007.

Statistical analysis

Hazard ratios and odds ratios with 95% confidence intervals were obtained by Cox regression and logistic regression using SAS version 9.2. 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), region of origin (12 regions), place of residence in Sweden (25 areas) and educational background (three levels). Most of the analyses were made separately for men and women, and separately for native Swedes and immigrants. When the results were calculated for the whole cohort, adjustments were also made for sex and origin (native Swedes/immigrants).

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 and native country, date of immigration and residence. Mortality data (1993–2007) were collected from the cause of death register. The national patient register provided data on hospitalization.

Results

Sickness absence

Persons in long-term unemployment (≥ 100 days) in 1992 had a higher probability of sickness absence in the follow-up period compared with persons not registered as unemployed (table 2). Persons on short-term unemployment (1–99 days) had just a slightly elevated risk of sickness absence in the follow-up. The odds ratio (OR) for sickness absence increased for most groups over time. The risk of ≥ 60 days of sickness absence in the follow-up increased with the length of the period of unemployment in 1992 (table 3). No differences were found between unemployed immigrants and unemployed native Swedes with regard to sickness absence.

Disability pension

There was a higher risk of disability pension between 1993 and 2007 among unemployed individuals compared with non-unemployed individuals in 1992 for all groups except women unemployed 1–99 days in 1992 (table 4). The elevated risk of disability pension was in general higher among individuals on long-term unemployment (≥ 100 days) than among individuals on short-term unemployment (1–99 days). The increased risk of disability pension was equivalent for unemployed immigrants and unemployed native Swedes.

Death

There was an increased risk of death in the follow-up among unemployed compared with non-unemployed in 1992, for every group except native Swedish women and native Swedish men unemployed 1–99 days in 1992; the numbers of dead were, however, low (table 4). The elevated risk of death was rather similar for subjects on long-term unemployment (≥ 100 days) and subjects on short-term unemployment (1–99 days).

Table 2 Adjusted OR* (CI 95%) for ≥ 60 days of sickness absence for individuals unemployed 1–99 or ≥ 100 days in 1992 compared with individuals with no unemployment in the same year

	1993–97		1998–2002		2003–07	
	N	OR	N	OR	N	OR
Native Swedes						
Women						
1–99 days	1.543	1.04 (0.97–1.11)	3.163	1.10 (1.05–1.15)	3.530	1.15 (1.10–1.20)
≥ 100 days	1.237	1.27 (1.19–1.37)	2.243	1.30 (1.23–1.38)	2.462	1.36 (1.29–1.44)
Men						
1–99 days	979	1.08 (1.00–1.17)	1.396	1.23 (1.15–1.32)	1.489	1.21 (1.13–1.29)
≥ 100 days	1.114	1.25 (1.15–1.34)	1.580	1.49 (1.40–1.59)	1.676	1.48 (1.39–1.58)
Immigrants						
Women						
1–99 days	305	1.02 (0.88–1.19)	707	1.11 (1.00–1.24)	841	1.34 (1.21–1.48)
≥ 100 days	324	1.34 (1.16–1.55)	649	1.24 (1.11–1.38)	712	1.33 (1.20–1.48)
Men						
1–99 days	159	1.03 (0.84–1.26)	300	1.25 (1.08–1.46)	315	1.22 (1.06–1.42)
≥ 100 days	231	1.10 (0.92–1.32)	393	1.28 (1.11–1.47)	460	1.45 (1.27–1.65)

Within each group, zero days of unemployment are reference category.

* Adjusted for: age, income in 1991, education, residence in Sweden 1992, native country and sickness absence in 1991–92.

Table 3 Adjusted OR* (CI 95%) for ≥ 60 days of sickness absence for individuals, both native Swedes and immigrants, exposed to different lengths of unemployment in 1992 compared with individuals with no exposure to unemployment in the same year

	1993–97		1998–2002		2003–7	
	N	OR	N	OR	N	OR
1–49 days	1.498	1.03 (0.97–1.09)	2.809	1.12 (1.07–1.17)	3.103	1.15 (1.10–1.20)
50–99 days	1.488	1.06 (1.00–1.13)	2.757	1.18 (1.13–1.24)	3.072	1.24 (1.19–1.30)
100–149 days	1.118	1.18 (1.10–1.27)	1.985	1.26 (1.20–1.33)	2.247	1.35 (1.29–1.43)
150–199 days	748	1.28 (1.18–1.40)	1.269	1.42 (1.33–1.52)	1.353	1.43 (1.34–1.52)
200–249 days	526	1.30 (1.18–1.44)	841	1.44 (1.32–1.56)	896	1.46 (1.35–1.58)
250–299 days	298	1.29 (1.13–1.48)	463	1.48 (1.33–1.65)	481	1.48 (1.33–1.64)
≥ 300 days	216	1.36 (1.16–1.60)	307	1.43 (1.25–1.64)	333	1.54 (1.35–1.76)

Zero days of unemployment are reference category.

* Adjusted for: sex, origin, age, income in 1991, education, residence in Sweden 1992, native country and sickness absence in 1991–92.

Table 4 Adjusted HR* (CI 95%) for disability pension and death under the whole follow-up period of 15 years; individuals unemployed 1–99 or ≥ 100 days in 1992 compared with individuals with no unemployment

	Disability pension		Death	
	N	HR	N	HR
Native Swedes				
Women				
1–99 days	798	1.05 (0.96–1.14)	75	1.15 (0.88–1.50)
≥ 100 days	801	1.53 (1.41–1.66)	43	1.02 (0.73–1.43)
Men				
1–99 days	451	1.23 (1.10–1.37)	142	1.18 (0.97–1.44)
≥ 100 days	617	1.62 (1.46–1.79)	177	1.56 (1.30–1.87)
Immigrants				
Women				
1–99 days	248	0.98 (0.85–1.14)	26	1.59 (0.98–2.60)
≥ 100 days	276	1.26 (1.09–1.45)	23	1.65 (0.99–2.75)
Men				
1–99 days	158	1.08 (0.89–1.32)	37	1.01 (0.68–1.51)
≥ 100 days	250	1.38 (1.16–1.63)	53	1.15 (0.81–1.64)

Within each group, zero days of unemployment are reference category.

* Adjusted for: age, income in 1991, education, residence in Sweden 1992, native country and sickness absence in 1991–92.

Discussion

This study revealed that both long-term unemployment (≥ 100 days) and short-term unemployment (1–99 days) at a young age were associated with sickness absence, disability pension and death. The association was found 15 years after exposure to unemployment. The unemployment rate was higher at baseline for immigrants, but no major risk differences were found for any of the studied outcomes between unemployed native Swedes and unemployed immigrants.

Sickness absence and disability pension

There was a dose-response relationship between unemployment and later sickness absence; more days of unemployment in 1992 meant higher risk of sickness absence in the follow-up. Very few studies have, to our knowledge, studied exposure to unemployment and used sickness absence and disability pension as outcomes. Some studies show, however, an association between unemployment and poor well-being, a state that can be associated with disability,^{4,5} and depression.⁹ A study from Iceland has on an aggregated level found a relationship between a peak in unemployment rate and peak in disability pension some years later.¹⁰ It is however in ecological studies impossible to distinguish between unemployed and employed persons. In a study from Finland, the unemployed have an elevated risk of disability pension because of depression.⁹

Sickness absence and disability pension in Sweden may be regarded as health measures because illness is the predominant reason for receiving those benefits. Disability pension was granted to individuals near to retirement age (60 to 65 years) in regions with high unemployment until 1997, but was practically used for longer time, and there was a spillover effect to other age-groups, but in this young cohort, such considerations should be rare.¹⁹ In Sweden, you can receive sickness benefit for all forms of diseases; thus, the severity and character of illness can hence differ substantially. In the group of non-unemployed in 1992, there are persons who are neither working and studying nor registered as unemployed at the national labour office. Some of them are probably exposed to unemployment, which can give an underestimation of the risk of being unemployed.

From 1st January 1992, the employers were imposed to pay the first 2 weeks of every period of sickness absence; this period is not present in the official registers. Therefore, sickness absence due to the mildest diseases should in part have been 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. This means that unemployed individuals may end up with more days in the registers for short-term sickness absence compared with individuals with an employer. On the other hand, individuals with unemployment benefit will lose 1 day of benefit when reporting sick because of a qualifying day in the sickness insurance. Therefore, they have no incitement to report short-term sickness; instead, they will profit from remaining on unemployment benefit. There was, regarding number of sickness periods in the follow-up, no substantial difference in absolute numbers between unemployed and non-unemployed in 1992.

Death

This study showed a slight increase of death for unemployed individuals compared with non-unemployed individuals for all groups except Swedish women. One should bear in mind that our cohort is rather young, and not so many have died during the follow-up. Roelfs *et al.* show a similar elevated OR for death among unemployed individuals compared with employed, especially among young individuals, in a meta-analysis of worldwide data. The reasons discussed behind these findings were the latent sickness hypothesis, health-related behaviours and/or coping/stress hypothesis.¹¹ Lundin *et al.* found that the elevated risk of death among unemployed individuals compared with employed almost disappears when adjusting for e.g. previous sickness absence, income and education.¹² In this study, the elevated risk of death remained also after adjustment for these variables. A reason for this can be the young population in this study.

Causation or selection

The relationship between unemployment and health is complex, and the question about causation or selection to future unemployment, poor health or death is debated. A study from Sweden investigates five groups of theories in search for the most plausible causal link between unemployment and poor health.²⁰ The economic deprivation models assume that unemployment means having less money, and this will affect the pre-requisites for good health. The control models assume that the passive situation means low control over the life which is a risk factor for ill-health. The stress models focus on how individuals can cope with the situation of unemployment, and 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; thus, when an individual loses the job, those protective functions will be lost. The conclusion is that all models correlate fairly well to poor health and support the causation theory.²⁰ A meta-analysis of 104 studies also concludes a causation effect; the conclusion was based on longitudinal studies where health status

deteriorates in times of unemployment, but improves in times of reemployment.⁵ However, two studies from Sweden and Finland, respectively show evidence for a selection effect; individuals on sick leave or with poor health have an elevated risk of future unemployment.^{12,21}

Thus, there is evidence in the literature of both a causation effect and a selection effect when explaining the relationship between unemployment and ill-health. The recession in the beginning of the 1990s led to unemployment rates not seen since the 1930s and affected almost all branches in Sweden. The increase in unemployment rate was a direct consequence of the recession, and who got affected was not solely explained by previous health, even if some of those unemployed individuals of course may have a history of poor health. Adjustment for sickness absence in the 2 preceding years before 1992 did not change the risk between unemployed and non-unemployed more than marginally on any of the outcomes. This may be an indication that the causation effect between unemployment and later sickness absence, disability pension and death was strong in this young cohort.

In our study, the repercussions could be seen on social security payments up to 15 years after exposure to unemployment. Measures to prevent and mitigate the bad effects of unemployment among young individuals should be a priority, not least in a global perspective. To include individuals with poor health in the active work force is also an important key challenge to societies to avoid exclusion. There is evidence of better public health in countries with extensive social security to offset economic consequences of unemployment, and in countries with extensive active labour market programmes that will prevent long periods of inactivity.^{22,23}

Immigrants

This study not only showed that immigrants *per se* had a higher general risk of unemployment than native Swedes but also showed that unemployed immigrants followed the same pattern as native Swedes when exposed to unemployment, i.e. immigrants were not more vulnerable to exposure to unemployment than were native Swedes. Previous research has indicated that the mental health of young immigrants in general is worse than the mental health of young native Swedes.¹³ Immigrants and native Swedes participated equally in the labour force until the early 1980s. Thereafter, the gap between the unemployment rate of immigrants and that of native Swedes has gradually increased.² The potential reasons for this are many, e.g. changed pattern of immigration and a changed labour market. Changed attitudes towards immigration in society can also be an explanation.²⁴ This study comprises a young cohort; the discrepancy between native Swedes and young immigrants may have become diluted because most of them came to Sweden in early or late childhood and have attended the Swedish education system. Arrival at young age and time since arrival is associated with better self-rated health as shown in previous studies.¹⁴ Time since arrival to Sweden (more or less than 10 years) seems to have no effect in this young cohort.

Gender

The current study showed no consistent differences between men and women. A recent Swedish study concludes the same, no differences in health outcome between men and women when exposed to unemployment.²⁵ There is an ongoing debate about gender differences in health after 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 well-being after unemployment than do men,⁵ whereas the other concludes the opposite.⁴ The differences are, however, small.

Other concerns

A majority of the study population has completed both elementary and upper secondary school at baseline. There are, however, individuals who have ongoing studies and hence are not at risk for unemployment in 1992. This may lead to an underestimation of the effect of unemployment. Education is further self-reported for immigrants, if they never attended the Swedish school system. Missing values and misclassification of educational level is therefore common.

Some people may have worked in the informal sector. However, this is rather uncommon in Sweden and had probably not biased the results.²⁶

Conclusion

Unemployment among young persons was associated with sickness absence, disability pension and death as long as 15 years after the beginning of the unemployment period. This emphasizes the importance of making efforts to reduce unemployment among young individuals, to avoid individual suffering, preserve economic growth and reduce future spending on health care and welfare systems. Young immigrants had a higher general risk of unemployment at baseline, but they followed the pattern of native Swedes, i.e. the risk of all studied outcomes were similar in all groups when exposed to both short-term (1–99 days) or long-term unemployment (≥ 100 days). Health selection, sickness in early years in connection with unemployment probably explained at least part of later sickness absence, disability pension and death in the follow-up, but unemployment at a young age presumably explained most of the elevated risks of these outcomes.

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Conflicts of interest: None declared.

Key points

- Unemployment among young adults was associated with elevated risk of sickness absence, disability pension and death in a follow-up period of 15 years.
- Unemployment is more prevalent among young immigrants than native Swedes, but the risk estimates for future sickness absence, disability pension and death are similar.
- It is important to reduce unemployment among young individuals to avoid individual suffering and reduce future spending on health care and welfare systems.

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