Class differences in the social consequences of illness?

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Study objective: To investigate adverse social consequences of limiting longstanding illness and the modifying effect of socioeconomic position on these consequences.

Design: Cohort study on the panel within the annual Swedish Survey of Living Conditions where participants were interviewed twice with eight years interval 1979–89 and 1986–97. Sociodemographic characteristics, self reported longstanding illness, employment situation and financial conditions were measured at baseline. Social consequences (economic inactivity, unemployment, financial difficulties) of limiting longstanding illness were measured at follow up eight years later.

Setting: National sample for Sweden during a period that partly was characterised by high unemployment and reduction in insurance benefits.

Participants: Participants were 13 855 men and women, economically active, not unemployed, without financial difficulties at the first interview and aged 25–64 years at the follow up.

Main results: Persons with limiting longstanding illness had a higher risk of adverse social consequences than persons without illness. The effect was modified by socioeconomic position only for labour market exclusion while the effects on unemployment and financial difficulties were equal across socioeconomic groups.

Conclusions: Labour market policies as well as income maintenance policies that deal with social and economical consequences of longstanding illness are important elements of programmes to tackle inequalities in health. Rehabilitation within health care has a similar important part to play in this.

Sweden as well as most other rich countries has a highly developed system to protect the population from the economic effects of reduced working capacity because of illness. The Swedish system is characterised by a relatively high level of universalism and decommodification. Benefits have been mainly proportional to earlier earnings rather than a flat rate of basic benefits for all, which means that the economic effects of limiting longstanding illness (LLI) in principle should be equal across different socioeconomic strata. We have in earlier studies shown that despite the extensive protections system, those falling ill in LLI are still suffering from increased risk of adverse social and economic effects in terms of unemployment, labour market exclusion and poverty. These consequences are all at the same time social determinants of illness, which means that a feedback loop might exist where early stages of illness have social and economic consequences that might aggravate the further development of the illness. If the effect of illness on these social and economic consequences is differentially distributed across socioeconomic groups the mechanism might contribute to the inequalities in health across socioeconomic groups.

Figure 1 illustrates these potential pathways leading to social consequences of LLI. Firstly, low socioeconomic position may increase the risk of being exposed to a number of mediating causes of illness including some social and economic conditions and thereby generating the relation between social position and illness. The longstanding illness might then have social and economic consequences. Secondly, socioeconomic position may modify the effect of illness on social consequences. As some of the consequences of chronic illness also might act in the causal pathway there may be a feedback loop, as indicated in figure 1. It is important to notice that we are not indicating that long term illness changes the socioeconomic position of the individual, but rather that the illness changes some of the social determinants that are mediating the effect of social position on health.

Working life factors might provide an illustration. Manual workers have not only the highest risk for ill health but also report more (especially physical) job demands than non-manual employees. The work limitation of a chronic illness may be more severe for manual workers than for non-manual employees. The severity in terms of suffering from illness may also vary with socioeconomic position. For instance, Eachus et al showed that the severity of hip pain increases with higher age but also that persons in lower socioeconomic position experience a greater severity of hip disease and a greater comorbidity than persons in higher socioeconomic position.

Abbreviations: LLI, limiting longstanding illness; SES, socioeconomic status

Figure 1 Model for studying the relations between socioeconomic position, adverse socioeconomic conditions and LLI.
Blank has shown on Swedish material that lower socioeconomic position not only had higher prevalence of long term illness but also a higher degree of discomfort and suffering. Social and economic consequences of chronic illness are indeed dependent on social and labour market policies and employment protection. Sweden has a relatively strong employment protection and an active full employment labour market policy. The Job Security Act regulates redundancies applicable to people in the labour market. These regulations provide persons with chronic illness a relatively strong protection against labour market exclusion. A complementary policy of medical and vocational rehabilitation in Sweden intends to provide persons with LLI the possibility to earn their own living in regular or sheltered employment. 

The demand for low qualified labour has been steadily decreasing for decades but this process accelerated during the 1990s. This has reduced the employment opportunities for low qualified manual workers and particularly for persons with chronic illness. The effect of illness on employment is stronger in lower than in higher socioeconomic groups, but that interaction seems to be very much stronger in some countries (for example, Britain) than in others (for example, Sweden). These regulations provide persons with chronic illness a relatively strong protection against labour market exclusion. A complementary policy of medical and vocational rehabilitation in Sweden intends to provide persons with LLI the possibility to earn their own living in regular or sheltered employment. 

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The modifying effect of socioeconomic position on the risk of adverse social consequences of LLI was analysed in the following steps.

Firstly, odds ratios (OR) of social consequences of LLI were estimated with 95% confidence intervals (CI) using logistic regression multivariate models with adjustment for age, sex, SES, marital status, region of living and being foreign born, stratified for manual workers and non-manual employees. Persons with LLI were compared with a reference group of persons without LLI at the second interview.

In a second step we analysed whether socioeconomic position modified the effect of LLI on adverse social consequences among persons with LLI. Manual workers and non-manual employees with LLI were compared with a reference group of non-manual employees without LLI. The regression models were adjusted for age, sex, marital status, region and being foreign born.

In a third step analyses stratified by age (25–44 years and 45–64 years) and sex were carried out, adjusted for marital state, region, foreign born.

Finally, we analysed the mediating effect of labour market position on the risk of financial difficulties as a consequence of LLI among manual and non-manual employees. Non-manual employees without LLI were the referents. Three different definitions of adverse labour market position (unemployment, early retirement pension and either of these situations) were applied in the logistic regression model.

RESULTS

The cumulative risk of adverse social consequences at T2 (during eight years of follow up) among persons with and without LLI is shown in table 1. The risk of adverse social consequences was generally higher among those with LLI compared with those without and in general also higher among manual workers (independent of age and sex), than among non-manual employees.

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Table 1  The cumulative incidence of adverse social and economic consequences at the eight years follow up among persons with and without limiting longstanding illness (LLI) in the total sample, among manual and non-manual employees (self employed excluded) stratified by age and sex

<table>
<thead>
<tr>
<th></th>
<th>Number</th>
<th>Cumulative incidence (%) of the studied indicators of social consequences at T2</th>
</tr>
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<tbody>
<tr>
<td></td>
<td></td>
<td>Economic inactivity</td>
</tr>
<tr>
<td></td>
<td></td>
<td>LLI No LLI</td>
</tr>
<tr>
<td>Total sample 25–64 years</td>
<td>1620</td>
<td>12235</td>
</tr>
<tr>
<td>Manual workers</td>
<td>818</td>
<td>4630</td>
</tr>
<tr>
<td>25–44 years</td>
<td>269</td>
<td>2605</td>
</tr>
<tr>
<td>45–64 years</td>
<td>549</td>
<td>2025</td>
</tr>
<tr>
<td>Male</td>
<td>392</td>
<td>2332</td>
</tr>
<tr>
<td>Female</td>
<td>426</td>
<td>2298</td>
</tr>
<tr>
<td>Non-manual employees</td>
<td>665</td>
<td>6722</td>
</tr>
<tr>
<td>25–44 years</td>
<td>256</td>
<td>3464</td>
</tr>
<tr>
<td>45–64 years</td>
<td>409</td>
<td>3258</td>
</tr>
<tr>
<td>Male</td>
<td>286</td>
<td>3409</td>
</tr>
<tr>
<td>Female</td>
<td>379</td>
<td>3313</td>
</tr>
</tbody>
</table>

Table 2  Odds ratios with 95% CI for the modifying effect of socioeconomic position, adjusted for age, sex, marital state, being foreign born and living region

<table>
<thead>
<tr>
<th>Socioeconomic position</th>
<th>Economic inactivity</th>
<th>Unemployment</th>
<th>Financial difficulties</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No LLI</td>
<td>LLI</td>
<td>No LLI</td>
</tr>
<tr>
<td>Manual workers</td>
<td>1.44 (1.2 to 1.7)</td>
<td>6.78 (5.8 to 8.0)</td>
<td>1.81 (1.5 to 2.2)</td>
</tr>
<tr>
<td>Non-manual employees</td>
<td>1.0</td>
<td>4.07 (3.4 to 4.9)</td>
<td>1.0</td>
</tr>
</tbody>
</table>

Analysis

The modifying effect of socioeconomic position on the risk of adverse social consequences of LLI was analysed in the following steps.

Firstly, odds ratios (OR) of social consequences of LLI were estimated with 95% confidence intervals (CI) using logistic regression multivariate models with adjustment for age, sex, SES, marital status, region of living and being foreign born, stratified for manual workers and non-manual employees. Persons with LLI were compared with a reference group of persons without LLI at the second interview.

In a second step we analysed whether socioeconomic position modified the effect of LLI on adverse social consequences among persons with LLI. Manual workers and non-manual employees with LLI were compared with a reference group of non-manual employees without LLI. The regression models were adjusted for age, sex, marital status, region and being foreign born.

In a third step analyses stratified by age (25–44 years and 45–64 years) and sex were carried out, adjusted for marital state, region, foreign born.

Finally, we analysed the mediating effect of labour market position on the risk of financial difficulties as a consequence of LLI among manual and non-manual employees. Non-manual employees without LLI were the referents. Three different definitions of adverse labour market position (unemployment, early retirement pension and either of these situations) were applied in the logistic regression model.

RESULTS

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highest risk. Being a manual worker and having LLI acted synergistically in the sense that the excess risk of economic inactivity among those “exposed” to both factors (=6.78–1 =5.74) was higher than the sum of the excess risk among those “exposed” to only one of these factors (=1.44−1 + (4.07−1) = 3.51), table 2. A ratio—the so called synergy index, expressing this effect can be calculated (5.74/(0.44−3.07) = 1.61 95% CI 1.2 to 2.1).

Stratification by age showed that the statistically significant difference between manual and non-manual employees remained among those aged 45–64 but not among persons aged 25–44 years. In the younger age group the effect on financial difficulties was significantly higher among manual workers than among non-manual employees. The modifying effect of socioeconomic position was similar among men and women (data not shown).

Finally, we found that the economic effects of longstanding illness only partly is mediated through a changed position on the labour market, table 3.

**DISCUSSION**

Our study suggests that manual workers with chronic illness have a statistically significantly higher risk of economic inactivity than non-manual employees. The results seem to support the hypothesis that the risk of adverse social consequences among persons with LLI is greater among manual workers than among non-manual employees. This modifying effect of socioeconomic position varied only slightly by age and sex. Finally, we found that an adverse position in the labour market slightly increased the risk of financial difficulties among manual and non-manual employees with LLI.

There are some limitations to the study. One issue is whether the interpretation of the “exposure”, with respect to severity or duration of the LLI, differs between socioeconomic groups. As mentioned in the methods section we followed up the cohort (subjects 25–64 years at T1, with none of the outcome indicators at T1) eight years after the first interview, with regard to the outcome indicators. The number of persons with LLI had increased from 580 to 831 from the first to the second interview. These additional 251 persons may have acquired LLI at any time within the eight years. The duration of LLI may have affected the risk of social consequences, especially economic inactivity. Among the persons with LLI, 60% of manual workers and 53% of non-manual employees reported duration of LLI of one year or more. This difference may result in a bias, but would not change our conclusions.

LLI is a self reported measure. The prevalence of LLI may be overestimated among manual workers compared with non-manual employees because, for instance, a person with physically strenuous work may classify the disease to be more limiting of the work capacity than a person with less strenuous work. The proportion reporting more severe illness (defined as illness, strongly limiting the ability to work or daily activity) might then become higher among manual workers than among non-manual employees reporting LLI. However, the proportion of more severe illness was 33% among manual workers with LLI and 28% among non-manual employees. Hence, this misclassification does not seriously bias the results.

Being economically inactive was one of the indicators of social consequences. Economically inactive persons are a heterogeneous group including students, disability pensioners, voluntarily early retired pensioners, long term unemployed, housewives and others. Thus, the group includes persons for whom the economic inactivity may be a voluntary choice. In the group of economically inactive persons, the proportion of early retirement pensioners was higher (70%) among manual workers compared with non-manual employees (59%) with LLI. Among persons with LLI the main reason for being economically inactive was early retirement pension (including disability pension and voluntarily early retirement pension) (61%) but obviously not among persons without LLI (6%). Our analysis does not measure whether the economic inactivity is a consequence of a choice of one’s own or a forced consequence of working incapacity, for example, by LLI. In that way the measure could underestimate the adverse social consequences of LLI. One study from the Netherlands also shows a higher risk of economic inactivity among persons with ill health. Van de Mheen et al studied health in relation to mobility into and out of employment in a longitudinal study. Persons with less than good perceived health showed a higher risk for exclusion from employment, as a consequence of their ill health.24

The results of our study show higher odds ratios for social consequences of LLI among manual workers than among non-manual employees but the differences were statistically significant only for economic inactivity, which emphasises the importance to study these consequences separately. The results show the importance of labour market protection of persons with LLI to avoid the higher risk of unemployment particularly among manual groups where labour market demand is lower. The increased risk of financial difficulties was equally distributed across socioeconomic positions, which might indicate that the Swedish sickness insurance system works in a rather equitable way.

In order to reduce socioeconomic inequalities in the consequences of illness, efforts to prevent and ameliorate the

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**Table 3** The mediating effect of position in labour market on the OR for financial difficulties of LLI among manual and non-manual workers at T2. Reference group is non-manual employees without LLI (95% CI)

<table>
<thead>
<tr>
<th>Region</th>
<th>Model 1: OR adjusted for age, sex, marital status, foreign born, region</th>
<th>Model 1 + unemployment</th>
<th>Model 1 + early retirement pension</th>
<th>Model 1 + unemployment and early retirement pension</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manual workers with LLI</td>
<td>2.24 (1.8 to 2.8)</td>
<td>2.06 (1.7 to 2.6)</td>
<td>2.29 (1.9 to 2.8)</td>
<td>2.11 (1.7 to 2.6)</td>
</tr>
<tr>
<td>Non-manual employees with LLI</td>
<td>1.57 (1.2 to 2.1)</td>
<td>1.47 (1.1 to 1.9)</td>
<td>1.61 (1.2 to 2.1)</td>
<td>1.50 (1.2 to 2.0)</td>
</tr>
<tr>
<td>Manual workers without LLI</td>
<td>1.44 (1.3 to 1.7)</td>
<td>1.38 (1.2 to 1.6)</td>
<td>1.44 (1.2 to 1.7)</td>
<td>1.38 (1.2 to 1.6)</td>
</tr>
<tr>
<td>Non-manual employees without LLI</td>
<td>1.0</td>
<td>1.0</td>
<td>1.0</td>
<td>1.0</td>
</tr>
</tbody>
</table>

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**Policy implications**

Tackling inequalities in social and economic consequences of illness is a major objective of social policies and rehabilitation. They might even contribute to the reduction of inequalities in morbidity as the social consequences of illness feed back into the further development of illness and disability. This study shows that universal social policies and health care in Sweden have not been able to tackle social inequalities of consequences in terms of exclusion from the labour market but seems to protect against inequalities in economic consequences of illness. Health care and particularly rehabilitation therefore has a potentially important part to play in reducing inequalities in disability.
adverse social consequences of LLI should include increasing the possibilities for manual workers with LLI to stay in work. Those efforts should be concentrated to those groups where labour market exclusion is detrimental for health, which is particularly true for people with mental problems. Despite labour market regulations and social policy protecting for example persons with LLI, the study shows higher risks of unemployment and financial difficulties among persons with LLI compared with persons without illness, which could lead to further ill health. However, these mechanisms seem to work equally among different socioeconomic groups, which confirms our earlier finding that socioeconomic position in Sweden, at least compared with Britain, is much less important for the susceptibility to social consequences of longstanding illness. The study therefore indicates that policies that deal with social consequences of illness are of great importance in tackling social inequalities in health, including policies for labour market regulations, vocational rehabilitation and income maintenance. This gives health care and social policy an important role in policies for health equity.

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Conflicts of interest none.

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