


Psychosocial workplace factors and alcohol-related morbidity: a prospective study of 3 million Swedish workers

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Background: Psychosocial workplace factors may be associated with alcohol-related morbidity, but previous studies have had limited opportunities to take non-occupational explanatory factors into account. The aim of this study is to investigate associations between job control, job demands and their combination (job strain) and diagnosed alcohol-related morbidity while accounting for several potentially confounding factors measured across the life-course, including education. **Methods:** Job control, job demands and job strain were measured using the Swedish job exposure matrix measuring psychosocial workload on the occupational level linked to over 3 million individuals based on their occupational titles in 2005 and followed up until 2016. Cox regression models were built to estimate associations with alcohol-related diagnoses recorded in patient registers. **Results:** Low job control was associated with an increased risk of alcohol-related morbidity, while high job demands tended to be associated with a decreased risk. Passive and high-strain jobs among men and passive jobs among women were also associated with an increased risk of alcohol diagnoses. However, all associations were found to be weakened in models adjusted for other factors measured prospectively over the life-course, especially in models that included level of education. **Conclusion:** The associations between low job control and high job demands, and the risk of alcohol-related morbidity reflect underlying socioeconomic differences to some extent. Lower job control, however, remained associated with a higher risk of alcohol-related morbidity.

Introduction

Over 4% of the global burden of disease can be attributed to harmful alcohol use, which is also related to additional psychosocial consequences including violence, child neglect and work absenteeism.¹ In Sweden, it was estimated that alcohol use disorders affected 11% of the adult population.²

While alcohol-related morbidity is common and far reaching, it tends to be distributed unequally in the population. Even though alcohol consumption is similar between social classes, alcohol-related harm tends to be higher among lower socioeconomic groups, indicating that the consequences of alcohol consumption are worse among these groups.^{3,4}

Psychosocial factors of the workplace may also be important in understanding differences in alcohol-related morbidity. For example, Karasek's job strain model describes the balance between the psychological demands experienced at work and the control that a person has over the structure and pace of their work tasks.⁵ Jobs with high demands and low control are known as high-strain jobs, and this has been found to be associated with a variety of negative health outcomes.^{6,7} It has been argued that jobs with high demands, including high-strain jobs, may be related to alcohol use through the pathway of tension release and self-medication.^{8,9}

Observed differences in alcohol-related morbidity among different socioeconomic groups are likely related to a complicated interplay between genetic factors, education, income, occupational

status, access to resources and work social culture. The psychosocial environment at work, however, may be one important and potentially modifiable factor related to alcohol-related morbidity.

Several previous studies have reported associations between psychosocial workplace factors and various measures of harmful alcohol use or alcohol-related morbidity.^{10–14} Some studies, however, have reported that no longitudinal associations were found between psychosocial workplace exposures and harmful alcohol use.^{15,16} Other studies found notable differences between men and women or specifically only found associations among men.^{9,17} These studies varied in their study populations, study design and measures.

Three of the above-mentioned studies looked at longitudinal associations between psychosocial workplace factors and alcohol-related morbidity while also controlling for at least one dimension of socioeconomic status.^{9,12,17} One Canadian study using questionnaire data found that lower demands were associated with higher self-reported alcohol consumption among men while the opposite pattern was found for women.⁹ An English study, which was also questionnaire based, found that low job control was associated with alcohol dependence among women while high demands were associated with a reduced risk among men.¹⁷ One study of Swedish men using register and military conscription data found that low-control and passive jobs were associated with alcoholism diagnoses.¹²

This study aims to investigate the association between occupation-based job control, job demands and their combination (job strain) and diagnosed alcohol-related morbidity while

accounting for several potentially confounding factors measured across the life-course, including education.

Methods

Study population and design

This study is based on the Swedish Work, Illness, and labour-market Participation (SWIP) cohort which includes all individuals between the ages of 16 and 65 who were registered in Sweden during the baseline year 2005 (around 5.4 million).^{18,19} Data are linked from several different Swedish administrative and medical registers including the Swedish total population register, the Longitudinal Integrated Database for Health Insurance and Labour Market Studies register (LISA), the Swedish National Patient Register, as well as information from earlier population censuses. These registers have been commended for their accuracy and completeness.^{20–22} Additionally, the occupations registered to the index persons were used for estimating the individuals' psychosocial workplace exposures.

The present study includes those between the ages of 30 and 60, as this group was assumed to be established in a career and remaining in the labour market. This resulted in a cohort of around 3.8 million individuals of which around 3 million had information on occupation at baseline. Individuals with an alcohol-related diagnosis prior to baseline were further excluded (1.4%) which resulted in a final population of 2 973 987 of which 51% were women.

Linkages between registers were made by Statistics Sweden, and individual data are deidentified during the process. Ethical approval was further obtained by the Regional Ethics Review Board in Stockholm reference number 2017/1224-31 and 2018/1675-32.

Measures

Exposures

The psychosocial workplace exposures of job control, job demands and their combination (job strain) were measured using a psychosocial job exposure matrix (JEM) that measures psychosocial workload. This JEM is based on the Swedish Work Environment Surveys from around 90 000 respondents in around 350 occupations from 1997 to 2013. These survey responses are aggregated on the occupational level for men and women and linked to the study population based on occupational codes registered for each individual based on the Swedish ISCO-88 four-digit classification of occupations.

Job control is measured using four questions measuring decision authority, which is defined as the amount of influence people have in making decisions about the way their work is done. Job demands are measured using three questions focused on the stress, time and level of concentration of the job. These measures were scored as a mean for each occupation and further categorized into quintiles separately for men and women. Job strain is defined as the combination of job control and job demands split at their medians. These factors were combined to create four categories (passive jobs with low demand and low control, low-strain jobs with low demand and high control, active jobs with high demand and high control, and high-strain jobs with high demand and low control). The job strain variable was also dichotomized in order to compare high-strain jobs with all other categories. This is in line with previous systematic reviews and influential studies.^{6,7}

Outcome

Alcohol-related morbidity was defined as diagnosed alcohol-related illnesses recorded in either the inpatient or the outpatient registers. ICD-10 diagnosis codes F10 (mental and behavioural disorders due to alcohol), K70 (alcoholic liver disease) and T51 (toxic effect of alcohol) were used for the inpatient register and the same codes with

the addition of E24.4, G31.2, G62.1, G72.1, I42.6, K29.2, K85.2, K86.0, O35.4, P04.3, Q86.0, R780, Z040, Z71.4, Z72.1²³ were used in the outpatient register due to the availability of more specific ICD diagnostic information. Cases were considered as those with one of these diagnoses as the main or contributing diagnosis in the patient registers.

Covariates

Covariates were chosen *a priori* based on potential associations with both a person's labour market position and thus their occupational exposures, as well as their risk for receiving an alcohol-related diagnosis. Information on birth year and country were obtained from the population register and LISA register, respectively. The latter was categorized to reflect whether the individual was born in Sweden. Information on civil status and the number of children was also obtained from the LISA register. Civil status was categorized as married, unmarried, divorced or widowed. The number of children under the age of 20 who are living in the household were categorized as no children, one to two children, and three or more children. These covariates have also been used in previous studies investigating job strain and alcohol-related morbidity.^{9–11,13}

Previous psychiatric diagnoses were obtained from the inpatient register and this variable was defined as having any psychiatric diagnosis with the ICD-10 codes F00 to F99 or their equivalent in ICD-8 and 9 before the baseline year.

Individuals were also linked to their parents' census information from when the index person was between the ages of 5 and 15 during the year 1960, 1970 or 1980 to estimate their childhood socioeconomic situation. The parents' socioeconomic position was classified based on their occupation as non-manual employees at a higher level, non-manual employees at an intermediate level, assistant non-manual employees, skilled manual workers, non-skilled manual workers, farmers or those with no parental occupation reported. Information was taken primarily from the father, but the mother's information was used in case this information was missing. Index persons were also linked to their parents' inpatient records in order to indicate whether one of the index person's parents received a psychiatric diagnosis after 1973 and prior to the age of 65.

Highest attained education at baseline was reported in the LISA register and categorized as (i) primary and lower secondary school or less (≤ 9 years), (ii) secondary (10–11 years), (iii) upper-secondary (12 years), (iv) post-secondary/university, 2 years or less (13–15 years) and (v) more than 3 years of post-secondary/university (> 15 years).

All exposures and covariates were measured at a single time point and are not time varying.

Statistical analysis

The distribution of baseline covariates was explored according to the presence of an alcohol-related diagnosis, separately for men and women.

Cox proportional hazard regression models with age as the underlying timescale were built for men and women separately to estimate hazard ratios (HRs) and 95% confidence intervals for the associations between exposure to different levels of job control, job demands and job strain in 2005 and an alcohol-related diagnosis during the follow-up period. Person-time was counted from 1 January 2006, until an alcohol-related diagnosis, emigration, death or the end of the follow-up period on 31 December 2016.

Model 1 shows crude associations, though age was accounted for as the underlying time scale. Model 2 was adjusted for birth year and country, civil status, number of children living at home, any previous psychiatric diagnosis, parents' socioeconomic position and parents' psychiatric diagnoses. Model 3 was further adjusted for education.

It is not entirely clear where the family factors of civil status and children may lie on the causal pathway between the psychosocial work environment and alcohol-related morbidity, so additional models were built excluding these covariates.

Because our aim was to estimate the weighted average HR over time in our study population, testing the proportional hazards assumption was not a part of our research question. However, as age was the underlying timescale, we investigated potential effect modification according to age by stratifying the original models according to 10-year age intervals. We found some variation, but no major divergence to the main results presented. We also conducted similar models to the main models but reduced the follow-up time to end in 2010 rather than 2016. We found estimates to be almost identical.

To see whether results were robust among different socioeconomic groups, adjusted models were stratified according to whether individuals had attended university or not.

Finally, because the oldest individuals would likely exit the labour market during the follow-up period, we looked at estimates separately according to whether individuals were over or under 50 years old at baseline.

Results

During the follow-up period, 2.6% of men and 1.4% of women received an alcohol-related diagnosis. Among men and women and in both inpatient and outpatient records, 86% to 91% of these cases corresponded with the diagnosis F10, 'mental and behavioural disorders due to alcohol'.

Analyses of the distribution of covariates revealed that alcohol-related morbidity was more common among older and unmarried men and women, those without children, with lower education, a previous psychiatric diagnosis and those whose parents had a previous psychiatric diagnosis or a lower socioeconomic position (table 1).

For men (table 2), those with lower job control were more likely to develop an alcohol-related diagnosis during the follow-up period (HR 1.77 for the lowest job control group compared with the highest). These associations were attenuated after adjusting for background sociodemographic characteristics, and further when adjusting for education (HR 1.26 for the lowest job control group compared with the highest). Higher job demands were associated with a decreased risk in alcohol-related morbidity, but this was also attenuated when adjusting for all covariates. In the unadjusted models, passive and high-strain jobs (which both are types of jobs with low control) were associated with an increased risk of alcohol diagnoses (HR 1.30 for passive and HR 1.12 for high strain), but these associations were also attenuated after adjusting for all covariates. High-strain jobs compared with all other jobs showed weak associations.

The patterns of associations were similar for women (table 3), in that lower job control compared with the highest category was associated with an increased risk of alcohol-related morbidity in the unadjusted models, especially for the medium-low group (HR 1.66). Associations were attenuated after adjusting for the sociodemographic background characteristics in Model 2 and were further attenuated after adjusting for education (HR 1.30 for the medium-low group compared with the highest). For job demands, medium-low demands were associated with a slight increase in risk of alcohol-related morbidity (HR 1.08), while all other groups showed a decreased risk compared with the lowest demands. This association grew slightly stronger when adjusting for all covariates (HR 1.12). Passive jobs compared with low-strain jobs were associated with an increased risk of alcohol-related diagnoses, while active and high-strain jobs were associated with a decreased risk. When comparing high-strain jobs to all other jobs, high-strain jobs had a decreased risk of alcohol-related morbidity.

Table 1 Baseline covariates according to diagnosis of alcohol-related morbidity during the follow-up period for men and women

Alcohol diagnosis	Men				Women			
	Yes		No		Yes		No	
Baseline characteristics	N	%	N	%	N	%	N	%
Age								
30–39	10 516	28	485 188	34	6069	30	483 853	32
40–49	12 958	34	458 960	32	7428	36	485 505	33
50–60	14 575	38	474 195	33	6985	34	521 769	35
Birth country								
Sweden	33 861	89	1 256 398	89	17 863	87	1 304 259	87
Other	4181	11	161 759	11	2618	13	186 745	13
Civil status								
Unmarried	16 399	43	538 273	38	7052	34	447 691	30
Married	13 594	36	719 877	51	7806	38	803 350	54
Divorced	7762	20	153 500	11	5211	25	218 572	15
Widowed	294	1	6693	0	413	2	21 514	1
Number of children								
0	25 033	66	727 023	51	10 262	50	674 155	45
1–2	10 663	28	562 561	40	8381	41	672 359	45
≥3	2353	6	128 759	9	1839	9	144 613	10
Psych diagnosis								
No	34 038	89	1 379 159	97	17 011	83	1 431 852	96
Yes	4011	11	39 184	3	3471	17	59 275	4
Parents' SEP ^a								
Higher	1904	5	86 879	6	1071	5	86 939	6
Intermediate	6208	16	253 787	18	3270	16	256 420	17
Assistant	4162	11	146 956	10	2184	11	151 207	10
Skilled	8513	22	294 522	21	4451	22	310 241	21
Unskilled	11 127	29	374 469	26	5998	29	392 909	26
Farmer	1182	3	78 779	6	555	3	85 690	6
No SEP	4953	13	182 951	13	2953	14	207 721	14
Parents' psych diagnosis								
No	36 468	96	1 379 661	97	19 474	95	1 451 497	97
Yes	1563	4	38 682	3	1008	5	39 630	3
Education years ^b								
>15	4310	11	282 320	20	3092	15	363 618	24
13–15	4100	11	211 904	15	2731	13	251 674	17
12	5587	15	224 098	16	3064	15	237 999	16
10–11	15 303	40	479 570	34	8330	41	481 197	32
≤9	8749	23	220 451	16	3265	16	156 639	11

a: Socioeconomic position: higher = non-manual employees at higher level, intermediate = non-manual employees at intermediate level, assistant = assistant non-manual employees, skilled = skilled manual workers, unskilled = unskilled manual workers, no SEP = no parental occupation reported.

b: >15 = more than 3 years of university, 13–15 = <3 years of university, 12 = 3 years of upper secondary school, 10–11 = <3 years of upper secondary school, ≤9 = compulsory school or less.

The sensitivity analysis excluding the family-related covariates of civil status and number of children from the adjusted models showed that among both men and women, estimates were only slightly stronger, indicating that these variables did not have very much influence on the associations (not shown).

In models stratified by whether or not individuals had a university education, patterns of association were consistent with the main models. The most notable difference was that passive jobs for men and women and high-strain jobs for men showed stronger associations among the higher educated (Supplementary table S1).

Stratified analysis according to whether individuals were over or under 50 years old at baseline indicated that associations were consistent according to age group, though associations were slightly weaker among older women (Supplementary table S2).

Table 2 Hazard ratios and 95% confidence intervals for risk of alcohol-related morbidity diagnosis according to job control, job demands and job strain among men

JEM	Quintiles	N cases (%)	Model 1	Model 2	Model 3
Job control	Low	8645 (2.97)	1.77 (1.71–1.83)	1.52 (1.47–1.58)	1.26 (1.22–1.31)
	Med low	8816 (3.04)	1.79 (1.73–1.86)	1.54 (1.49–1.60)	1.23 (1.19–1.28)
	Med	8555 (2.95)	1.73 (1.67–1.79)	1.52 (1.47–1.58)	1.22 (1.17–1.27)
	Med high	7259 (2.38)	1.39 (1.33–1.44)	1.31 (1.26–1.36)	1.12 (1.08–1.17)
	High	4869 (1.71)	1	1	1
Job demands	Low	10 268 (3.47)	1	1	1
	Med low	7999 (2.84)	0.82 (0.79–0.84)	0.87 (0.85–0.90)	0.90 (0.88–0.93)
	Med	6335 (2.14)	0.62 (0.60–0.64)	0.69 (0.67–0.72)	0.80 (0.78–0.83)
	Med high	7315 (2.47)	0.70 (0.68–0.73)	0.78 (0.76–0.80)	0.89 (0.86–0.91)
	High	6227 (2.14)	0.60 (0.59–0.62)	0.71 (0.68–0.73)	0.89 (0.86–0.92)
Job strain	Passive	15 039 (3.20)	1.30 (1.26–1.34)	1.18 (1.15–1.22)	1.09 (1.06–1.12)
	Low strain	6801 (2.48)	1	1	1
	Active	9284 (2.00)	0.79 (0.77–0.82)	0.84 (0.81–0.86)	0.93 (0.90–0.96)
Job strain	High strain	7020 (2.78)	1.12 (1.08–1.16)	1.07 (1.03–1.10)	1.09 (1.06–1.13)
	High strain	7020 (2.78)	1.08 (1.05–1.11)	1.05 (1.02–1.07)	1.08 (1.05–1.11)
	Other	31 123 (2.58)	1	1	1

Model 1 is adjusted for age.

Model 2 is adjusted for age, birth year, immigrant status, civil status, number of children, previous psychiatric diagnosis, parents' socioeconomic position and parents' psychiatric diagnoses.

Model 3 is adjusted for age, birth year, immigrant status, civil status, number of children, previous psychiatric diagnosis, parents' socioeconomic position, parents' psychiatric diagnoses and attained education.

Table 3 Hazard ratios and 95% confidence intervals for risk of alcohol-related morbidity diagnosis according to job control, job demands, and job strain among women

JEM	Quintiles	N cases (%)	Model 1	Model 2	Model 3
Job control	Low	3224 (1.28)	1.28 (1.21–1.34)	1.23 (1.17–1.29)	1.15 (1.09–1.20)
	Med low	6229 (1.68)	1.66 (1.59–1.73)	1.50 (1.44–1.57)	1.30 (1.25–1.36)
	Med	3918 (1.38)	1.37 (1.31–1.43)	1.29 (1.23–1.35)	1.19 (1.14–1.25)
	Med high	4047 (1.35)	1.33 (1.27–1.40)	1.25 (1.19–1.31)	1.13 (1.08–1.19)
	High	3081 (1.01)	1	1	1
Job demands	Low	4651 (1.59)	1	1	1
	Med low	5199 (1.71)	1.08 (1.04–1.12)	1.09 (1.04–1.13)	1.12 (1.07–1.16)
	Med	4540 (1.46)	0.91 (0.87–0.95)	0.95 (0.91–0.99)	1.00 (0.96–1.05)
	Med high	3248 (1.08)	0.67 (0.64–0.70)	0.72 (0.69–0.76)	0.91 (0.86–0.95)
	High	2861 (0.94)	0.59 (0.56–0.62)	0.66 (0.63–0.69)	0.92 (0.87–0.97)
Job strain	Passive	8005 (1.72)	1.15 (1.11–1.19)	1.13 (1.09–1.17)	1.09 (1.05–1.13)
	Low strain	4982 (1.49)	1	1	1
	Active	4551 (1.07)	0.72 (0.69–0.75)	0.76 (0.73–0.79)	0.91 (0.87–0.95)
Job strain	High strain	2961 (1.02)	0.68 (0.65–0.71)	0.73 (0.70–0.77)	0.95 (0.91–1.00)
	High strain	2961 (1.02)	0.71 (0.68–0.74)	0.75 (0.73–0.79)	0.97 (0.93–1.01)
	Other	17 538 (1.43)	1	1	1

Model 1 is adjusted for age.

Model 2 is adjusted for age, birth year, immigrant status, civil status, number of children, previous psychiatric diagnosis, parents' socioeconomic position, and parents' psychiatric diagnoses.

Model 3 is adjusted for age, birth year, immigrant status, civil status, number of children, previous psychiatric diagnosis, parents' socioeconomic position, parents' psychiatric diagnoses, and attained education.

Discussion

In this study of around 3 million Swedish workers, job control was associated with an increased risk of alcohol-related morbidity while high job demands tended to be associated with a decreased risk. Passive and high-strain jobs among men and passive jobs among women were also associated with an increased risk of alcohol diagnoses. All associations, however, were attenuated when adjusting for a combination of life-course characteristics including education.

A previous study of Swedish men also found that passive jobs were associated with an increased risk of alcoholism.¹² This study did not adjust for education, however. A French study of around 2000 individuals found that greater autonomy at work was associated with a lower likelihood of alcohol abuse even after adjusting for sociodemographic factors, psychiatric factors and education.¹¹

Other studies have reported results that were not necessarily in line with those in the present study. For example, one Norwegian

study found that higher job demands were associated with an increase in problematic alcohol use.¹³ Another Norwegian study found a similar cross-sectional association between higher demands and greater alcohol use but did not find a longitudinal association.¹⁵ One study investigating job strain in relation to a combination of negative lifestyle factors, including alcohol consumption in multiple European countries, found a cross-sectional increased association among those with high-strain and active jobs compared with low-strain jobs, but not for passive jobs, though there were no clear longitudinal associations.²⁴ One previous Finnish study found considerable occupational differences in severe alcohol-induced outcomes, but still found that most of the variation was explained by other factors.²⁵

An important finding from the present study is the attenuation when adjusting for previous factors measured across the life-course including birth country, childhood socioeconomic position previous mental health and family factors, followed by education. In a

previous study of job strain factors in relation to depression using the same population, the additional attenuation from adjusting for education was negligible.¹⁸ This indicates the specific importance of education in relation to alcohol-related morbidity. The observed associations likely reflect underlying socioeconomic differences. Most other previous studies have not fully accounted for these aspects of social position in different phases of the life course.^{12,14,15,17}

Another important finding is that passive jobs were related to an increased risk of alcohol-related morbidity among university educated men and women. High educated individuals in passive jobs may share certain characteristics which result in a selected group. Jobs with low control in particular, especially passive jobs, and especially among those who are higher educated, may be related to feelings of boredom or failure without the potential to advance or develop in one's career.²⁶ Individuals may use alcohol in the form of coping or stimulation.²⁷

The associations between job demands and alcohol-related morbidity are more difficult to interpret. Higher demands tended to be associated with a decreased risk of alcohol-related diagnoses. This is at least partially explained by education, indicating that higher demand jobs are likely to be more prestigious, challenging and higher paying jobs. The remaining reduced risk from higher demands may also be related to the potential feelings of boredom described above. In fact, a previous meta-analysis identified a distinction between challenge stressors and hindrance stressors, indicating that challenge stressors can be positive because they allow for development and growth.²⁸ However, that women in the medium-low demand group showed a consistently increased risk of alcohol-related morbidity compared with the lowest demand group is somewhat unexpected. There may be other unmeasured risk factors related to the occupations included in this group which are related to alcohol-related morbidity.

Beyond socioeconomic selection into different labour market positions based on opportunities, individuals with higher vulnerability to alcohol problems may tend to choose certain occupations, and this may be perpetuated by some occupations having a higher tolerance for alcohol consumption and its effects. Thus, there may be important factors which select individuals into certain occupations and allow them to remain in certain occupations. This is supported by a previous study which found that new recruits into high-risk occupations had similar risks of alcohol-related morbidity compared with individuals who had worked in the same occupations for long periods of time.²⁹ It should also be noted that these high-risk occupations tended to be manual occupations. Jobs with high control and demands may be protective against alcohol-related morbidity because it may be more difficult for individuals to drink heavily or be hungover in these particular jobs.

The population-based design utilizing information from all Swedish workers between the ages of 30 and 60 is a strength of this study. This limits issues of selection into and attrition from the cohort which tend to be especially problematic in alcohol-related studies.³⁰ This also provided the power to closely look at different patterns of associations among different groups by stratifying by education. The use of patient registers allowed us to exclude those with previous alcohol-related diagnoses and to adjust for any other psychiatric diagnosis prior to baseline. The ability to adjust for socioeconomic status in childhood, parents' psychiatric diagnoses and education was also a strength.

This study, however, has several limitations. JEMs represent what is experienced on average in a certain occupation rather than what an individual experiences. This can result in non-differential misclassification of the exposure, which could result in an underestimation of the associations. While patient registers may be more reliable than self-report in some ways, registers only capture the more severe cases of alcohol-related morbidity among those who sought treatment. We cannot rule out that help-seeking behaviour may differ according to different occupational and class norms, which could bias our results in either direction. Diagnoses of alcohol-related morbidity have also not explicitly been validated, but the inpatient

register shows high validity for psychiatric diagnoses in general.²¹

We also used a single baseline measure for occupational exposure, which assumes that individuals stayed in the same occupation during follow-up and does not account for changes in occupation and exposure. However, restricting the population to those between 30 and 60 was an attempt to select individuals who were more stable in their careers. Additionally, stratifying according to age group did not reveal major differences in results even among those who approached retirement during follow up. Future studies should, however, look closer at the accumulation of exposure over time. Though we adjusted for many childhood and demographic factors and attained education and saw large attenuation, unmeasured confounding could still potentially explain the remaining associations. Further, the covariates used were based on broad categories and were not time varying. Finally, the generalizability of this study may be limited to some extent as labour market policies and alcohol behaviour tend to vary in different contexts.

Alcohol problems are related to genetic and socioeconomic factors from childhood.³¹ Individuals may be selected into educational, and eventually occupational groups based partly on these early life factors, both of which have been found to predict later alcohol use disorder.³² Further patterns may be perpetuated by educational and occupational culture and norms. It appears that the psychosocial workplace factors of job control, job demands and their combined job strain are only a small piece of this complicated picture. That there were still significant associations for low job control after adjusting for many life-course factors indicates that job control still may be one point of intervention which could reduce the risk of alcohol-related morbidity.

Supplementary data

Supplementary data are available at *EURPUB* online.

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Data availability

The data used in this analysis are based on national register data held by Statistics Sweden (SCB).

Conflicts of interest: None declared.

Key points

- This population-based study used a job exposure matrix connected to register data on health and socioeconomic information.
- Low job control was associated with an increased risk of alcohol-related morbidity.
- High job demands were associated with a decreased risk of alcohol-related morbidity.
- Associations were attenuated after adjusting for covariates, including education.

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