

Harmful alcohol habits did not explain the social gradient of sickness absence in Swedish women and men

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ABSTRACT

BACKGROUND: the aim of this study was to examine the prevalence and socioeconomic distribution of harmful alcohol habits in sick-listed women and men, and whether the social gradient in sickness absence could be explained by the socioeconomic distribution of harmful alcohol habits.

METHODS: this cross-sectional questionnaire study included newly sick-listed individuals ($n=2\ 798$, 19-64 years, 66% women) from Sweden. The outcome variable, self-reported harmful alcohol habits, was measured with the Alcohol Use Disorder Identification Test. Registered socioeconomic variables (education, income, occupational class) were explanatory variables with age as confounder and self-reported health, symptoms, mental wellbeing, and self-efficacy as mediators. Chi²-tests and logistic regression models were applied.

RESULTS: 9% of sick-listed women and 22% of men had harmful alcohol habits. Women with a low annual income ($\leq 149\ 000$ SEK) had higher odds ratios (OR=2.47; 95% CI=1.43-4.27) of harmful alcohol habits than those with $\geq 300\ 000$ SEK/year. The significance of low income remained when mediators were introduced into the logistic regression model (OR=2.03, 95% CI=1.13-3.65). In the model including age, income was no longer significant. Men with low income were more likely to have harmful alcohol habits than men with high income (OR=2.59; 95% CI=1.45-4.62). When mediators were included low income remained significant (OR=2.88; 95% CI=1.56-5.31). Income was no longer significant when age was introduced. Education and occupational status were not significant.

CONCLUSIONS: harmful alcohol habits were common among sick-listed women and men. The socioeconomic differences in harmful alcohol habits did not explain the social gradient in sickness absence.

Key words: Socioeconomic differences; Harmful alcohol habits; Sickness absence; Sweden

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INTRODUCTION

There is a social gradient in sickness absence with lower socioeconomic positions being associated with an increased risk for sick leave than positions with higher socioeconomic status [1, 2]. In a Finnish study, on municipal employees, sickness absence was nearly three times more common among manual workers than among managers and professionals [3]. Education and occupational class have been found to be the most important socioeconomic measures associated with sickness absence [4]. Although health perception and work condition have been found to explain some of the heightened rates of sickness absence, the social gradient has not been fully explained [1-3]. A recent Swedish study found a small explanatory effect of physical work ability in the social gradient in sickness absence in women, but not in men [5]. A possible, but seldom studied, factor that might contribute to the social gradient is harmful alcohol habits.

A Swedish time series study covering 67 years found that economic indicators, such as real wages and unemployment, were of importance for the association between increased alcohol sale and sickness absence in men [6]. When analysing differences in alcohol habits in a general sample of incident sick-listed and a random population sample in Sweden, income was found to be a confounder in women [7]. A Finnish general population study found an association between low education, alcohol habits and sickness absence in low educated men [8]. In conclusion, these studies show that both alcohol habits and sickness absence are associated with economic structures, income and employment. However, few studies have specifically focused on whether alcohol habits can explain the social gradient found in sickness absence.

An intriguing factor is the differences in prevalence of harmful alcohol habits and sickness absence respectively in women and men; sickness absence is higher among women [9] whereas alcohol consumption is higher in men [10]. The aim was to examine the prevalence and socioeconomic distribution of harmful alcohol habits in sick-listed women and men, and whether the social gradient in sickness absence could be explained by the socioeconomic distribution of harmful alcohol habits.

METHODS

This cross-sectional study is part of the longitudinal Health Assets Project (HAP) performed in the Västra Götaland region (population of 1.6 million, approximately 17% of the Swedish population), Sweden. The World Medical Association's Helsinki Declaration was central to the study process. HAP was approved by the Ethical Review Board in Gothenburg, Sweden: registration number 039-08. The data collection was done by Statistics Sweden and delivered to the research group with a serial number to safeguard the identity of the participants. An information letter was enclosed with the mailed questionnaire. For more information see elsewhere [7].

Study population

The study sample (n=6 140; age span 19-64 years) was identified by the Swedish Social Insurance Agency as new sick-leave cases between 18th of February and 15th of April 2008 and invited to participate in the study by Statistics Sweden. In the Swedish sickness insurance scheme, gainfully employed individuals are covered from day 15 of a sick leave spell. The first 14 days of the sickness benefit are paid by the employer (i.e. sick pay). The first day of a sick leave spell is a qualification day and neither sick pay nor sickness benefit is paid. The study population comprised all consecutively registered sick-listed individuals (≥ 15 days) who completed the baseline questionnaire and the Alcohol Use Disorder Identification Test (AUDIT): 2 798 individuals (1 850 women and 948 men).

The response rate was 54% (66% women). The drop-out rate was a significantly higher for women and men in the youngest age group (19-30 years), with the lowest income level ($\leq 149\ 000$ SEK/year), and born outside Sweden (not shown in any table). Single women or men also had a higher drop-out rate, as had women living in urban areas.

Data collection and questionnaire

Data were collected through a mailed questionnaire followed by two reminders [7]. The

questionnaire contained questions concerning socio-demographic factors, physical and mental health, sick leave, working life, family conditions, health habits, leisure, and lifestyle.

Outcome variable. Self-reported alcohol habits were the outcome measure, which was measured with the Swedish version of the WHO's recommended questionnaire Alcohol Use Disorder Identification Test (AUDIT) [11]. AUDIT consists of ten questions covering three domains: 'alcohol consumption', 'signs of alcohol dependence' and 'alcohol-related harm' [11]. The complete AUDIT questionnaire, with a total AUDIT score of 40, was used and dichotomised into 'non-harmful alcohol habits' (men: 0-7 points and women: 0-5 points) and 'harmful alcohol habits' (men: ≥ 8 points and women: ≥ 6 points) [12].

Explanatory variables. In this study the registered socioeconomic variables from Statistics Sweden were explanatory variables: education level (up to primary education, secondary education, university or college), income ($\leq 149\ 000$ SEK, $150\ 000$ – $299\ 000$ SEK, and $\geq 300\ 000$ SEK), and occupational class (skilled/non-skilled, lower/intermediate non-manual, higher non-manual).

Confounder and mediator variables. The registered variable, from Statistics Sweden, identified as important in terms of confounding effects was age [13]. Owing to the time lag between inclusion and answering the questionnaire, individuals from the study population moved in and out of sickness absence. Confounding effect of current sick leave on alcohol habits was therefore examined in the analyses. Self-reported variables from the questionnaire identified as important for mediating effects were self-efficacy and perceived health measured as overall health, symptoms and mental wellbeing [13]. The WHO well-being scale [14], the Common Symptoms in the General Population of Women Instrument [15], and one question on general health perception [16] were used. To collect data on self-efficacy the General Self-Efficacy Scale was used [17, 18].

Analyses

The software used for the analyses was IBM SPSS Statistics version 19. All analyses

were conducted separately for women and men. The 95% confidence interval was calculated to examine differences in proportion between socioeconomic variables (education, income, and occupational class) for the participants with harmful and non-harmful alcohol habits. Logistic regression analyses were used in several models to confirm any differences in alcohol habits for the socioeconomic variables and to control for possible confounders [19] as well as to analyse the effects of possible mediators. Any associations between harmful alcohol habits and the socioeconomic variables education, income, and occupational class were examined through separate univariate logistic regression analyses. A multiple logistic regression model was constructed, with AUDIT as the dependent variable, any statistically significant socioeconomic variables as independent variables and with age and current sickness absence as confounder (Model 1). Model 2 dealt with any effect of possible mediators, mental well-being, level of symptoms, self-efficacy, and overall health. Sensitivity analyses were performed whereby women who were pregnant were excluded.

RESULTS

The mean age of the women in the study population was 46 years (SD=12) and that of the men was 47 years (SD=12) (Table 1). Over two-thirds of the women and the men reported good health.

Alcohol habits and socioeconomic differences for women

Of the sick-listed women, almost one out of ten (9.4%) had harmful drinking habits (Table 2). Initial socioeconomic differences were found for harmful alcohol habits amongst the sick-listed women (Table 2). Sick-listed women with secondary education had the highest prevalence of harmful alcohol habits (11.7%, 95% CI 10.2-13.2) compared with the other sick-listed women. Those women with the lowest annual income ($\leq 149\ 000$ SEK) had the highest prevalence of harmful alcohol habits (17.6, 95% CI 15.9-19.3) compared with women in higher income groups. Concerning occupational class, the prevalence for harmful

TABLE 1

BACKGROUND CHARACTERISTICS FOR THE STUDY POPULATION, SICK-LISTED WOMEN AND MEN IN THE VÄSTRA GÖTALAND REGION, SWEDEN, 2008		
	WOMEN % (n)	MEN % (n)
TOTAL	66.1 (1 850)	33.9 (948)
AGE		
19-30	11.4 (212)	12.7 (120)
31-40	21.6 (399)	15.9 (151)
41-50	26.6 (492)	23.7 (225)
≥51	40.4 (747)	47.7 (452)
EDUCATION		
Up to Primary education	17.5 (321)	29.3 (275)
Secondary education	40.7 (746)	49.0 (459)
University or college	41.8 (767)	21.7 (203)
COUNTRY OF BIRTH		
Nordic countries	94.0 (1 739)	90.6 (859)
Outside the Nordic countries	6.0 (111)	9.4 (89)
CIVIL STATUS		
Single	17.4 (319)	21.1 (197)
Married or co-living	80.7 (1 479)	78.2 (730)
Widow/-er	1.9 (34)	0.7 (7)
INCOME (SEK/YEAR)		
0 – 149 000	10.8 (199)	6.4 (61)
150 000 – 299 000	72.3 (1 337)	54.7 (518)
300 000 –	17.0 (314)	38.9 (369)
OCCUPATIONAL CLASS		
Skilled/non-skilled manual	44.5 (812)	65.6 (589)
Lower/ Intermediate non-manual	43.1 (788)	23.2 (208)
Higher non-manual	12.4 (226)	11.2 (101)
OVERALL HEALTH		
Good	70.8 (1 297)	70.4 (657)
Poor	29.2 (534)	29.6 (276)

Missing values are not included. Valid percentage is indicated

alcohol habits was the highest for sick-listed women in the lowest manual class (10.8%, 95% CI 9.4-12.2).

The univariate regression models confirmed that sick-listed women with the lowest annual income had a higher odds ratio (OR=2.47; 95% CI 1.43-4.27) of harmful alcohol habits compared with the women who had an annual income of at least 300 000 SEK (Table 3). Model 1 showed that when age and current sick leave were added as possible confounders income was no longer

significant for the outcome variable. In Model 2 health-related variables were added as possible mediators. Low income for sick-listed women had an odds ratio of 2.03 (95% CI 1.13-3.65), with higher level of symptoms as a significant mediator (Table 3).

In the sensitivity analyses, when pregnant women were excluded from the logistic regression models, similar results were shown for the univariate model (lowest income with an OR=2.84; 95% CI 1.61-5.02) and Model 1 (no differences) (not shown

TABLE 2

COMPARING THE PREVALENCE OF HARMFUL ALCOHOL HABITS IN DIFFERENT SOCIOECONOMIC VARIABLES WITHIN SICK-LISTED WOMEN AND MEN IN THE VÄSTRA GÖTALAND REGION, SWEDEN, 2008				
	N		PREVALENCE HARMFUL ALCOHOL HABITS ^a	
	WOMEN	MEN	WOMEN % (95% CI)	MEN % (95% CI)
TOTAL (n=381)	173	208	9.4	21.9
EDUCATION				
Up to Primary education	25	55	7.8 (6.6-9.0)	20.0 (17.5-22.5)
Secondary education	87	106	11.7 (10.2-13.2)	23.1 (20.4-25.8)
University or college	58	45	7.6 (6.4-8.8)	22.2 (19.6-24.8)
INCOME (SEK/YEAR)				
0 – 149 000	35	23	17.6 (15.9-19.3)	37.7 (34.6-40.8)
150 000 – 299 000	113	115	8.5 (7.2-9.8)	22.2 (19.6-24.8)
300 000 –	25	70	8.0 (6.8-9.2)	19.0 (16.5-21.5)
OCCUPATIONAL CLASS				
Skilled/non-skilled manual	88	136	10.8 (9.4-12.2)	23.1 (20.4-25.8)
Intermediate/low non- manual	63	45	8.0 (6.8-9.2)	21.6 (19.0-24.2)
Higher non-manual	19	19	8.4 (7.1-9.7)	18.8 (16.3-21.3)

Harmful alcohol habits: men \geq 8 points and women \geq 6 points on AUDIT;

a) Calculated using the total amount in the specific subvariable for the socioeconomic variables for men versus women

in any Table). In Model 2 no mediator was found to be significant and the odds ratio was 2.33 (95% CI 1.26-4.31) for the group with the lowest income.

Alcohol habits and socioeconomic differences for men

One out of five (21.9%) men who were sick-listed had harmful alcohol habits in this study (Table 2). For income, differences in prevalence of harmful alcohol habits were found. The sick-listed men with the lowest annual income (\leq 149 000 SEK) had the highest prevalence of harmful alcohol habits (37.7 %; 95% CI 34.6-40.8) compared with sick-listed men from the higher income groups. No differences in prevalence of harmful alcohol habits were found concerning education and occupational class.

The difference in harmful alcohol habits was confirmed with univariate logistic regression models for income amongst men. The group of sick-listed men with the lowest annual income had an increased odds ratio

(OR=2.59; 95% CI 1.45-4.62) of harmful alcohol habits compared with men with the highest annual income (\geq 300 000 SEK/year) (Table 3). In Model 1, when age and current sick leave were added to the model as confounders, income was no longer significant in terms of harmful alcohol habits. In Model 2 sick-listed men in the lowest income group still had a significant odds ratio of 2.88 (95% CI 1.56-5.31), with perceived low mental well-being and higher level of symptoms as significant mediators (Table 3).

DISCUSSION

This is the first study which investigates whether socioeconomic differences in harmful alcohol habits could explain the social gradient in sickness absence in women and men [1-4]. There were some differences in harmful alcohol habits among socioeconomic groups. These did, however, not explain the social gradient in sickness absence. Other important findings were the examination of prevalence of harmful alcohol habits as such among sick-listed women and men.

TABLE 3

DIFFERENCES IN HARMFUL ALCOHOL HABITS DUE TO SOCIOECONOMIC FACTORS AND CONTROL FOR CONFOUNDERS AND MEDIATORS WITH LOGISTIC REGRESSION MODELS AMONG SICK-LISTED WOMEN AND MEN IN THE VÄSTRA GÖTALAND REGION, SWEDEN, 2008						
INDEPENDENT VARIABLES	HARMFUL ALCOHOL HABITS					
	WOMEN			MEN		
	UNIVARIATE MODEL OR (95 % CI) (n=1 850)	MODEL 1 OR (95 % CI) (n=1 846)	MODEL 2 OR (95 % CI) (n=1 637)	UNIVARIATE MODEL OR (95 % CI) (n=948)	MODEL 1 OR (95 % CI) (n=945)	MODEL 2 OR (95 % CI) (n=845)
INCOME (SEK/YEAR)						
300 000 –	Ref	Ref	Ref	Ref	Ref	Ref
150 000 – 299 000	1.07 (0.68-1.68)	0.93 (0.59-1.47)	0.96 (0.59-1.54)	1.22 (0.87-1.70)	1.23 (0.80-1.58)	1.16 (0.81-1.65)
0 – 149 000	2.47 (1.43-4.27)	1.55 (0.86-2.81)	2.03 (1.13-3.65)	2.59 (1.45-4.62)	1.44 (0.75-2.78)	2.88 (1.56-5.31)
Age ¹	-	0.97 (0.96-0.98)	-	-	0.97 (0.96-0.99)	-
Current sickness absence ²	-	0.98 (0.71-1.35)	-	-	0.99 (0.73-1.36)	-
Low mental well-being ²	-	-	1.19 (0.79-1.79)	-	-	2.06 (1.36-3.13)
High level of symptoms ²	-	-	1.48 (1.00-2.17)	-	-	1.81 (1.20-2.72)
General self-efficacy ¹	-	-	0.99 (0.65-1.49)	-	-	1.07 (0.73-1.58)
High self-rated general health ²	-	-	1.37 (0.93-2.03)	-	-	0.74 (0.49-1.13)

Alcohol habits as dependent variable (harmful alcohol habits=1); Univariate model: only income as the independent variable; Model 1 adjusted OR for age and current sick-leave; Model 2 adjusted OR for mental well-being, level of symptoms, self-efficacy, and overall health; only final model presented;

1: continues variable;

2: dichotomous variable

Prevalence of alcohol habits among women and men with sickness absence

The prevalence of harmful alcohol habits amongst the sick-listed men (21.9%) was double that of the group of women (9.4%). Although it is generally acknowledged in several countries that men are more likely to drink more alcohol [20] harmful alcohol habits among sick-listed has not been a common focus in sickness absence research or practice. Amongst the sick-listed women, the highest prevalence of harmful alcohol habits for income and occupational class was found

among those with the lowest annual income or those from the lowest occupational class. In a Swedish longitudinal study high income was important when alcohol consumption was measured as total grams of alcohol consumed during a week [21]. In our study, sick-listed women with a secondary education had the highest prevalence of harmful alcohol habits compared with the other education levels. No significant differences in alcohol consumption owed to education, measured as binge drinking, was found among Swedish women in a study of 15 countries [22]. This was in contrast to countries like Germany,

the Netherlands, and France, where higher educated women have been shown to be more likely to drink heavily.

In a longitudinal Swedish study of men high income had an impact on alcohol consumption [21]. Considering harmful alcohol habits, however, our study showed that the sick-listed men in the group with the lowest annual income had the highest prevalence of harmful alcohol habits in the whole study sample at almost 38%. A Swedish public health report which included self-reported alcohol habits of men between 16 and 64 years old from the general population, the prevalence of harmful alcohol habits was approximately 25% for the men with the lowest annual income, despite occupational class [23]. Education has been seen as important in terms of participation in alcohol consumption amongst men in the general population [21]. Higher education meant less participation in alcohol consumption [21]. In our study, no differences in the prevalence of harmful alcohol habits concerning education and occupational class were found for the sick-listed men. In a study of 15 countries men with a lower education were, however, more at risk of heavy drinking [22].

In a longitudinal Finnish study heavy average, binge and problem drinking were associated with an increase in self-certified sickness of absence one to three days' duration for women and men [24]. This and the high level of prevalence concerning harmful alcohol habits our sick-listed sample, especially men with the lowest annual income, indicates a new arena for healthcare when it comes to preventive interventions concerning harmful alcohol habits. A recent Swedish review showed that it is successful to identify individuals with harmful alcohol habits early with a systematic or semi-systematic screening method [25]. The Swedish Social Insurance Administration has in-built opportunities to contact sick-listed individuals after a certain period of time. This could be an opportunity of early identification and brief interventions to prevent future alcohol problems. This could reduce the proportion of people with harmful alcohol habits, but according to our findings it would not influence the socioeconomic distribution of sickness absence.

The importance of socioeconomic variables for harmful alcohol habits among women and men with sickness absence

Initial results pointed to differences for harmful alcohol habits concerning education and income among sick-listed women. These differences disappeared when age was introduced as a confounder to the model of harmful alcohol habits and sickness absence among women. These results are not surprising since it has been established in a number of countries that increasing age has a strongly negative association with high-volume alcohol consumption by women [9, 20, 21, 26]. In relation to harmful alcohol habits and sickness absence, age has been shown to be of significance [7]. A Swedish public health report with self-reported alcohol habits (16 to 84 years) in 2007 reported that 25% of the young women (<30 years) had harmful alcohol habits [23].

Among the sick-listed men initial differences concerning level of income were found, but these also disappeared when age was introduced. As regards women, these findings are in line with the knowledge of the field. Results from a study including data from 25 countries showed that in Sweden heavy episodic drinking decreased with increasing age for men [20].

Socioeconomic differences can cause reduced levels of health-related outcomes for women and men [23, 27]. Although harmful alcohol habits have been shown to cause several adverse health effects among the most common of which are mental health problems and high blood pressure [23], it can also be argued that this association can be the other way around. In our study, the association between income and harmful alcohol habits decreased, but remained significant, when health-related mediators were introduced into the multiple analyses. It seems as if alcohol habits change as a results of health status, although this is seen for all socioeconomic groups.

Methodological considerations

Important strengths of this study are the selection procedure to and the use of the study sample. The study sample came from the

general population representing a wide variation of occupational groups avoiding a selection bias. This might otherwise have affected the results since alcohol problems have been seen to be over-representative in some occupations [28].

This study is cross-sectional and conclusions regarding causality cannot be drawn. There was a rather high and systematic drop-out rate when data were collected. The estimated numbers of those with harmful alcohol habits need to be interpreted with care, and cannot be considered as representative of the source population owing to the systematic drop-out of young men and individuals with low income. Young men are known to have the largest consumption of alcohol of all age groups [23]. Thus, an underreporting of the proportion of those with harmful alcohol habits might be a consequence of this drop-out. It is less plausible that the drop-out has influenced the analysis related to the social gradient in sickness absence. Rather the associations found would have been strengthened by a less biased drop-out.

One limitation of this study is related to the validity of self-reported data [29]. Since this study focuses on self-reported alcohol habits social desirability bias could exist. It seems, however, as if the under-reporting of alcohol habits is declining [10]. This might mirror a change in the Swedish alcohol culture whereby alcohol consumption is less associated with shame and stigma. Also, the WHO-recommended AUDIT instrument [11], a questionnaire with good psychometric properties [30], has been used.

When alcohol habits are studied in terms of sickness absence those who quit drinking because of health problems might introduce a bias. Since only consecutively sick-listed individuals are included the possible effects of sickness absence related to those who quit drinking owing to lingering health problems, long-term medication use, and economic strain following longer sick leave periods or for reasons related to social occasions at work were reduced.

CONCLUSIONS

Twice as many sick-listed men as sick-listed women reported harmful alcohol habits, with the highest prevalence amongst men in the lowest income group. The existing social gradient for sickness absence could not be explained by socioeconomic differences in harmful alcohol habits.

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