

Socio-demographic differences in alcohol-related work impairment

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ABSTRACT

Background and Aims The costs of alcohol-related presenteeism (being at work in an impaired state due to alcohol use) have been estimated as substantially larger than the costs of alcohol-related absenteeism. Past studies indicate that employees with lower socio-economic status experience more alcohol-attributable problems than employees in higher socio-economic strata. We aimed to estimate the prevalence of alcohol-related presenteeism among Norwegian adults and its association with sex, age, income and education. **Design and Setting** Annual national cross-sectional telephone surveys on alcohol, tobacco and drug use (2016–19) among Norwegian adults. **Participants** A total of 5430 full- and part-time employees aged 16–79 years; 53% were men. **Measurements** The main outcome was self-reported 12-month occurrence of work impairment due to alcohol use the previous day. Main predictors were income and education obtained from national registries, age and gender. A secondary outcome variable was self-reported alcohol-related absenteeism. **Findings** The 12-month prevalence of alcohol-related work impairment was 8.7%, 95% confidence interval (CI) = 7.9, 9.4. Adjusted risk ratios (RR) indicated a higher risk for men compared with women (RR = 1.26, 95% CI = 1.06, 1.50) and higher risk for young employees (e.g. less than 26 years compared with 55+, RR = 7.64, 95% CI = 4.88, 11.95). The risk increased as a function of higher education (in order of increasing education, RR = 1.12, 95% CI = 0.87, 1.45; RR = 1.64, 95% CI = 1.26, 2.12; RR = 2.19, 95% CI = 1.63, 2.95). The risk was estimated as lower in the middle-income categories compared with the lowest (RR = 0.76, 95% CI = 0.58, 1.00, RR = 0.89, 95% CI = 0.66, 1.20, RR = 0.94, 95% CI = 0.68, 1.29) and higher for employees with the highest income (RR = 1.04, 95% CI = 0.73, 1.48; RR = 1.47, 95% CI = 1.09, 2.00). **Conclusions** In Norway, the risk of alcohol-related work impairment for employees in the highest education category is approximately twice that of employees with secondary education or less. Except for employees in the lowest income category, who had a higher risk than those in the middle-income categories, higher income is associated with increased risk of work impairment. Being younger and male are also associated with increased risk of alcohol-related work impairment.

Keywords Absenteeism, alcohol, education, income, presenteeism, socio-demographic, socio-economic, work impairment.

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INTRODUCTION

Alcohol's harm to others includes a wide range of negative consequences for people in the drinkers' immediate surroundings and for society as a whole [1–3]. It has been estimated that alcohol use represents a large cost for the work-place in terms of productivity loss [2,4,5]. Loss of productivity can be traced to workers who are absent from work due to alcohol use and to workers who show up in an impaired state, either being hung over from drinking

the previous day or being intoxicated by alcohol. Being at work in an impaired state due to alcohol use is commonly referred to as alcohol-related presenteeism [6,7], and may involve negative consequences for the work-place and co-workers through reduced work output and increasing the risk of errors and accidents [7–11]. Consistent with cost estimates of general presenteeism and absenteeism [12,13], the cost of alcohol-related presenteeism is estimated to be substantially larger than the cost of alcohol-related absenteeism [2,4]. However, there is little

knowledge about which groups of employees account for the largest share of this cost, and possible socio-demographic differences in alcohol-related presenteeism has yet to be studied. This article estimates the prevalence of alcohol-related presenteeism, operationalized as impaired work performance due to drinking the previous day, and its association with age, sex, income and education. To aid the interpretation of the results, we also estimate the prevalence of alcohol-related absenteeism and its associations with the above socio-demographic variables.

Studies have found that, in a 12-month period, 10% of Americans report going to work hung over or under the influence of alcohol [11], and 6% of Australians have worked under the influence of alcohol [14]. A study from the United Kingdom showed that 9% of the employees had worked hung over or under the influence of alcohol during the past 6 months [15]. Norwegian research shows that alcohol-related work impairment is more common than alcohol-related absenteeism [6,16,17]. Edvardsen and co-workers found that while 25% of Norwegian employees from eight selected industries reported having experienced alcohol-related work impairment during the past 12 months, 5% reported having had an alcohol-related absence in the same period [16]. In two studies based on data from broad samples of Norwegian employees, 1–2% reported being absent from work due to alcohol use while 11–17% reported at least one experience of alcohol-related work impairment [6,17].

Past studies have shown more alcohol-related absenteeism in lower compared to higher socio-economic strata [18,19]. According to a recent systematic review of studies on the association between alcohol use and impaired work performance, no studies have estimated possible socio-demographic differences in alcohol-related work impairment [7]. On one hand, one might expect a negative social gradient in alcohol-related work impairment, because individuals with a lower income and educational level experience more alcohol-attributable problems compared with individuals in higher socio-economic strata [20–23], including alcohol-related absenteeism [18,19]. On the other hand, highly educated individuals and individuals with higher income levels drink more frequently compared to individuals with low education and income [24,25]. Moreover, employees working within industries with high income and educational levels, e.g. bank/finance, information technology and research, report having a higher level of alcohol use compared with employees working within industries characterized by lower income and educational levels [16,26]. While drinking alcohol is undoubtedly related to having a hangover, the extent to which people choose, or can, show up at work the day after drinking is also likely to depend upon factors such as the type of work and the social norms at the work-place.

Thus, the direction of the social gradient in alcohol-related work impairment is not easy to predict.

Other socio-demographic variables of interest are sex and age. Young male employees drink more alcohol than older employees and women [16,26–29], and a larger share of young male employees report having experienced alcohol-related work impairment and absenteeism in comparison with women [26,27]. These variables are also important to account for when interpreting results on education and income, as groups of employees with different levels of education and income probably differ in terms of their sex and age composition.

The main aims of this study were to estimate the prevalence of alcohol-related presenteeism, operationalized as work impairment due to drinking the previous day, and to estimate the associations between work impairment and the socio-demographic characteristics of age, sex, education and income. Additionally, we estimate the prevalence of alcohol-related absenteeism and its association with the above covariates.

METHOD

Design

We used four repeated cross-sectional surveys, but treated the data as one large cross-sectional survey. The associations between the outcome variables and the predictors were estimated by weighted univariate and unweighted multivariable regression analyses.

Sample and weighting

The annual Norwegian Survey on Tobacco and Substance Use included questions on alcohol-related work impairment and absenteeism during the years 2016–19. The 2015 survey also included these questions but we did not use this survey, because data on the highest income categories were not available. In each year, random samples of 3000 adults (aged 16–79) and 700 young adults (aged 16–30) were drawn from Statistics Norway's population registry. Statistics Norway informed potential respondents about the study by letter or short messaging system (SMS), including the information that their names had been randomly drawn and that they were to be contacted by telephone at a later time-point with a request for participation.

Statistics Norway delivered data with survey weights according to the sampling design (disproportionate sampling of individuals aged 16–30) and according to non-response. The weights were calibrated against population demographics by multiplying the weights by the ratio between the population and the sample weights per demographic group, iteratively, for each of the following variables (until convergence): age (six groups), education

(four groups), geographical region (seven regions) and sex, as well as the interactions sex \times age and sex \times education (see full documentation reports in Statistics Norway [30]).

The response rate in the four surveys ranged from 57 to 61% (average of full sample = 59%). Our sample comprised a total of 5430 respondents (53% men) who reported that they considered themselves as mainly employed/working (Norwegian: 'yrkesaktiv').

Outcome measures

Alcohol-related work impairment

The respondents were asked how many times they had been less productive at work due to drinking the previous day in the past 12 months. The responses were recoded into a dichotomous variable representing the values 'never' and 'once or more'.

Alcohol-related absenteeism

Self-reported alcohol-related absenteeism was measured by the item: 'During the past 12 months, how many work days were you absent due to your own alcohol use (because you had drunk, hangover, accidents or illness relating to alcohol use)?'. The authors recoded responses into 'never' and 'once or more'. Respondents who reported not having drunk alcohol in the past 12 months were included in the 'never' category in the two outcome measures.

Predictors

Socio-demographic variables

Age was split into five groups (<26, 26–35, 36–45, 46–55, >55 years) for the descriptive and main analyses. Respondents' highest completed education was provided by Statistics Norway and is based on register data from educational institutions, regional administration (county) and the Norwegian State Educational Loan Fund. The data were provided with the following categories: no education/not reported, primary or lower secondary school ('no/primary'); upper secondary school ('secondary'); university or university college degree of 4 years or less ('university'); university or university college degree of more than 4 years ('university+'). Respondents' income was provided by Statistics Norway and is based on data from the Norwegian tax administration. From 10 original categories, the authors grouped income into the following categories [in Norwegian Krone (NOK) '000]: 0–199, 200–399, 400–499, 500–599, 600–699, 700 or more.

Statistical analyses

As the analyses have not been pre-registered, this research should be considered exploratory. We calculated risk ratios (RR), proportions, adjusted proportions and confidence

intervals (CI) in Stata version 15 from log-binomial models using the 'glm' and 'svy: glm' functions. In the main model, alcohol-related work impairment was regressed on gender, age, educational and income level. A similar analysis was run for alcohol-related absenteeism. Differences in regression coefficients between the two outcomes were tested in a mixed Poisson model with robust standard errors where a respondent identification variable was treated as a random intercept (a logistic model would not converge and the log-binomial was not available as a mixed model). As only 0.6% of the data were missing in the main analysis, we used list-wise complete case analysis.

In an extended regression model that explored the potential moderating role of sex, all two-way interactions involving the variables sex and age were added to the above models. As a further sensitivity test, we only included respondents above the age 25 because the education level and income of these respondents are likely to reflect their more permanent socio-economic position. The categorical age variable was replaced by continuous linear and quadratic terms, and adjusted proportions were calculated using the 'margins' function in Stata (at observed values of covariates in the sample).

RESULTS

Characteristics of the sample according to level of education and income are presented in Table 1. Of the 5430 respondents, 591 (11%) reported not having drunk alcohol in the past 12 months. The estimated (weighted) 12-month prevalence of alcohol-related work impairment was 8.7% (95% CI = 7.9, 9.4). Approximately 3% experienced one episode, 3% experienced two episodes, 1% experienced three episodes, 1% experienced four or five episodes and 1% experienced six or more episodes during the past 12 months. The prevalence of work impairment according to sex, age, education and income is presented in Fig. 1. Tests of differences between categories gave $P < 0.001$ for all factors, except sex ($P = 0.006$). The prevalence was higher among men than women, higher among the younger compared to the older groups of employees and higher with increasing education. In terms of income, the highest occurrence was among those with low income. The lowest occurrence of alcohol-related work impairment was found among those in the middle-income categories.

The results for the socio-demographic variables in Fig. 1 may be attributable to the age and sex composition of the categories. For this reason, we conducted regressions controlling for the main effects of age and sex. As in the unadjusted results in Fig. 1, the risk of experiencing alcohol-related work impairment was higher among men, decreasing as a function of increasing age and increasing with higher education. The highest education group had more than twofold the risk of the least educated

Table 1 Unweighted characteristics of sample according to education and income.

	<i>n</i>	<i>Male (%)</i>	<i>Age (mean)</i>	<i>Drink weekly or more (%) (adjusted)</i>	<i>6+ units at least monthly (%) (adjusted)</i>	<i>Impairment (%)</i>	<i>Absence (%)</i>
<i>Sex</i>							
Men	2872	100	40	39	28	11	1.0
Women	2558	0	41	28	12	8	0.8
Total	5430	53	40	34	20	10	0.9
<i>Age (years)</i>							
<26	863	60	22	24	36	16	2.3
26–35	1390	51	30	30	25	14	1.2
36–45	1055	52	41	32	15	9	0.5
46–55	1231	51	50	38	15	6	0.6
>55	891	54	61	46	13	3	0.1
Total	5430	53	40	34	20	10	0.9
<i>Education</i>							
None/primary	1043	64	34	23 (23)	22 (16)	9	1.3
Secondary	1993	61	42	31 (29)	22 (21)	8	1.1
University	1668	38	42	38 (40)	18 (22)	10	0.6
University+	725	50	41	49 (50)	18 (21)	15	0.8
Total	5429	53	40	34 (34)	20 (20)	10	0.9
<i>Income (NOK)</i>							
0–199	847	53	27	25 (26)	29 (18)	15	2.1
200–399	1139	38	37	22 (24)	18 (18)	8	0.9
400–499	996	44	42	32 (32)	17 (20)	8	0.7
500–599	851	52	43	36 (36)	20 (23)	8	0.8
600–699	546	62	46	45 (43)	20 (23)	9	0.9
700 or more	1035	74	48	48 (44)	19 (23)	11	0.3
Total	5414	53	40	34 (34)	20 (20)	10	0.9

Data on alcohol consumption in brackets are based on adjusted proportions calculated from logistic regression models with sex, age, age², sex × age and sex × age² as covariates (estimated at observed values of covariates in the sample). NOK = Norwegian Krone.



Figure 1 Percentages of employees who report at least one episode of work impairment due to drinking the previous day. Error bars represent 95% confidence intervals. Weighted data.

employees. The risk increased linearly from the second-lowest to the highest-income category, but was higher in the lower- compared with the middle-income categories.

As a sensitivity test, to determine whether the pattern of results also held when considering the total number of episodes of work impairment, not only the prevalence of any episode, we ran a linear regression (not shown) using the number of episodes of work impairment as the outcome. We set the number of episodes to maximum of 25 to reduce the influence of outliers. The data showed a very similar pattern of coefficients, with a higher number of episodes among men and younger employees, and increasing number of episodes with longer education and higher income, except for the lowest-income category which had the highest number of episodes.

In addition to the results on work impairment, Table 2 also presents an analysis on alcohol-related absenteeism. The estimated (weighted) 12-month prevalence of alcohol-related absenteeism was 0.8% (95% CI = 0.5, 1.0). As the prevalence was substantially lower for

absenteeism than work impairment, the estimated effect of socio-demographic characteristics will typically vary noticeably between these two outcomes [e.g. the estimated difference between men and women is 2.2 (95% CI = 0.5, 3.9) percentage points for work impairment and 0.2 (95% CI = -0.4, 0.7) for absenteeism]. However, in terms of the RRs, the statistical evidence for interactions between outcome and the predictors were inconclusive ($P_s > 0.17$; see Supporting information, Table S1). In descriptive terms, the results concerning absenteeism did not show the linear increase in risk with increasing education, and the trend for income was in the opposite direction of the results from the analysis of work impairment (see also opposite patterns for unadjusted percentages in Table 1).

Of the 50 individuals who reported alcohol-related absenteeism, 41 also reported at least one episode of work impairment, which corresponds to a correlation of $\phi = 0.24$, $\chi^2_{(1)} = 300.0$, $P < 0.001$.

In the extended model, we tested for moderation of the effect of education \times sex, $\chi^2_{(3)} = 8.1$, $P = 0.05$ and income \times sex, $\chi^2_{(5)} = 12.8$, $P = 0.03$. The adjusted proportions from this model are presented in Fig. 2. The gradient for education appears to be steeper for men than women, but given the explorative nature of the analyses, the statistical evidence for the interaction is weak. The results for income suggest that the gradient in the middle-income categories is steeper for women than men. The full regression table is presented as Supporting information, Table S2. Adjusted RRs based on estimated marginal proportions from the extended model (see Supporting information, Table S3) corresponded reasonably well with the simpler main model without the interaction terms, but the effect of having the highest income was estimated as lower in the extended model.

DISCUSSION

This study extends previous research on consequences of alcohol use for the work-place by examining the associations between socio-demographic characteristics and alcohol-related work impairment and absenteeism. The age- and sex-adjusted results showed that alcohol-related work impairment is more common among employees with a high educational level and among employees with the highest income in comparison to individuals in lower socio-economic strata. Employees in the lowest-income category experience work impairment more often than employees in the middle-income categories. The prevalence of absenteeism was substantially lower than the prevalence of work impairment, and the results concerning associations between absenteeism and socio-demographic variables and the interaction outcome (work impairment versus absenteeism) by socio-demographics were largely inconclusive.

Table 2 Adjusted relative risk (95% confidence interval) from log-binomial regression analyses predicting alcohol-related work impairment and absenteeism.

	<i>Work impairment</i>	<i>Absenteeism</i>
<i>n</i>	5399	5402
Constant	0.02 (0.01, 0.03)	0.001 (0.0002, 0.01)
Sex		
Women	1.00 Ref.	1.00 Ref.
Men	1.26 (1.06, 1.50)	1.21 (0.67, 2.21)
χ^2 -test	$\chi^2_{(1)} = 6.7$, $P = 0.01$	$\chi^2_{(1)} = 0.41$, $P = 0.52$
Age (years)		
<26	7.64 (4.88, 11.95)	15.16 (1.88, 122.09)
26–35	5.16 (3.43, 7.75)	10.00 (1.31, 76.53)
36–45	2.96 (1.94, 4.53)	4.18 (0.49, 35.80)
46–55	2.05 (1.33, 3.17)	5.11 (0.63, 41.44)
>55	1.00 Ref.	1.00 Ref.
χ^2 -test	$\chi^2_{(4)} = 120.0$, $P < 0.001$	$\chi^2_{(4)} = 10.9$, $P = 0.03$
Education		
No/primary	1.00 Ref.	1.00 Ref.
Secondary	1.12 (0.87, 1.45)	1.31 (0.64, 2.69)
University	1.64 (1.26, 2.12)	0.82 (0.33, 1.97)
University+	2.19 (1.63, 2.95)	1.26 (0.43, 3.66)
χ^2 -test	$\chi^2_{(3)} = 37.7$, $P < 0.001$	$\chi^2_{(3)} = 1.7$, $P = 0.63$
Income (NOK)		
0–199	1.00 Ref.	1.00 Ref.
200–399	0.76 (0.58, 1.00)	0.61 (0.27, 1.38)
400–499	0.89 (0.66, 1.20)	0.63 (0.24, 1.70)
500–599	0.94 (0.68, 1.29)	0.81 (0.29, 2.24)
600–699	1.04 (0.73, 1.48)	0.94 (0.30, 2.95)
700+	1.47 (1.09, 2.00)	0.34 (0.08, 1.40)
χ^2 -test	$\chi^2_{(5)} = 22.6$, $P < 0.001$	$\chi^2_{(5)} = 3.6$, $P = 0.60$

Ref. = reference category coded 0. NOK = Norwegian Krone.

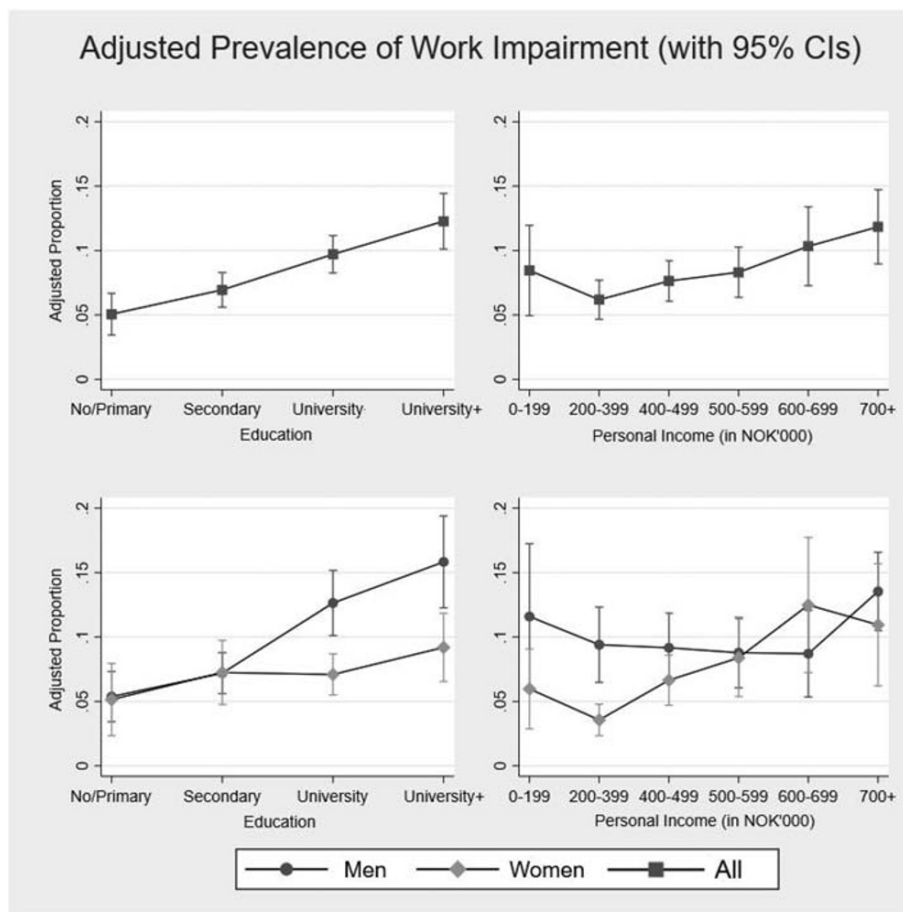


Figure 2 Adjusted proportions (predictive margins) according to level of education and income for all respondents, men and women (aged 26–79 years). The proportions are estimated at values of covariates observed in the unweighted sample (the estimated proportion if all respondents in the sample were in the given category).

The positive social gradient found in alcohol-related work impairment stands in marked contrast to findings from previous studies showing that individuals with lower socio-economic status generally experience more alcohol-attributable problems than individuals with higher socio-economic status [20–23]. Most previous studies on possible socio-demographic differences in alcohol-related harm have focused upon severe consequences, such as alcohol-related morbidity and mortality [21,31]. Whether or not work impairment is a severe consequence of alcohol use depends upon what employees accomplish at work when showing up in an impaired state. In terms of productivity loss, a Norwegian study showed that among employees who had experienced impaired productivity after drinking the previous day, 3% reported getting almost nothing done at work on those days, 20% reported doing approximately half of what they normally did and 77% answered that they achieved almost as much as they would on a normal work day [6]. On average, this reduced productivity would roughly correspond to an absence of approximately 20% of a normal work day (assuming that

'almost nothing' is 10% and 'almost as much as one would on a normal work day' is 90%). However, in addition to productivity loss, alcohol-related presenteeism can reduce the quality of the work output and increase the likelihood of errors and accidents [6–10]. For example, hangovers can impair performance when driving a car or handling heavy machinery [32]. Thus, presenteeism may have severe consequences such as accidents, but also less severe consequences such as minor reductions in productivity.

Another feature of studies addressing socio-demographic differences in alcohol-related harm is that they mainly concern harm to the drinker. Conversely, alcohol-related presenteeism and absenteeism concerns alcohol's harm to others, in that both behaviours inflict cost for the work-place [2,4,5] and negatively affect colleagues [6]. While previous studies suggest a negative social gradient for alcohol-related absenteeism [18,19], which might also be reflected in our analysis on absenteeism (descriptively, the risk was decreasing with increasing income), the present results on alcohol-related work impairment showed higher risk for employees in higher social strata.

These divergent results correspond with the findings in a recent study showing that the social gradient in alcohol's harm to others varies between types of harm [33].

The main objective of the present study was to describe differences between socio-economic strata, not to find the underlying causes of these differences. However, some potential explanations may appear more likely than others. As alcohol-related absenteeism is more common among employees in lower socio-economic strata [13,14], one may speculate that employees in high socio-economic groups go to work after drinking the previous day while employees in low socio-economic groups stay at home. However, this study showed that fewer than 1% reported being absent for a whole day due to drinking during the past 12 months, while the difference in work impairment between the high education group and the lowest was more than 8 percentage points. Thus, there is simply not enough alcohol-related absenteeism to explain the differences in impaired work performance.

There may be numerous explanations relating to the nature of work tasks and work arrangements that may apply to the present results on alcohol-related presenteeism. A meta-analysis of studies on general presenteeism showed that work-related factors such as strict absence policies, job insecurity, elevated job demands and stress were important correlates of working while ill [34]. Elevated job demands and felt stress might apply also to employees in high social strata who show up hung over at work. Other factors may also be relevant, such as differences in flexibility with respect to when and where to conduct the work (working at home, working in weekends, shift or flex-time work schedules), differences in the need to use cars and machines, differences in the requirement of being sharp and sober and differences in perceived decreases of performance (e.g. more perceived impairment in cognitive task than in service-related tasks and differences in sense of competence and diligence which, in turn, could affect the threshold for reporting compromised performance). The questionnaire used for the current study did not contain questions allowing us to examine these possible explanations.

Limitations and future research

Alcohol-related presenteeism can be a broader concept than reflected in the present operationalization. It may include drinking at the work-place and the impairments of a heavy-drinking employee after many years of drinking. However, the majority of Norwegian employees drink moderately [26], and studies of both self-reported data and data from oral fluid samples show that drinking during regular working hours is rare [16,26]. These findings suggest that being present at work in an impaired state due to alcohol use is in most instances—at least in Norway—caused by drinking the previous day.

In research on substance use, the problems of under-reporting and selection bias are well known. Heavy drinkers are typically under-represented in surveys, and alcohol use is under-reported by survey respondents [35]. If these phenomena interact with education and income (or variables correlated with those), for example if alcohol-related work impairment is associated with shame in some types of jobs, but with a rich social life in other professions, this may have affected our results.

While the negative social gradient in alcohol-related absenteeism has been demonstrated previously [18,19], the generalizability of the positive social gradient in alcohol-related work impairment beyond Norway is difficult to determine due to the scarce research on this topic. However, a study on general presenteeism applying data from 26 Organization for Economic Co-operation and Development (OECD) countries found that the level of presenteeism was higher among workers in countries with a high degree of gender-related and structural equality in the labour market, e.g. the Scandinavian countries [36]. Furthermore, manual workers, who are generally reported to have higher health risks, had a lower incidence of presenteeism than non-manual workers, also suggesting a positive social gradient for general presenteeism.

It should also be noted that the findings appear to depend upon gender, with the positive social gradient in education being most pronounced for men and the gradient in income being mainly evident for women. Nevertheless, our conclusions are still valid for the larger socio-demographic groups that include both women and men.

We do not believe the data are suitable for calculations of costs, because it is probably difficult for the respondents to remember all episodes of work impairment for an entire year, and because we have not measured the consequences of alcohol-related work impairment. Also note that the study is based on Norwegian-speaking employees, which precludes the foreign workers in Norway, a group who may have access to inexpensive alcohol from their home country. Thus, there is still a need for research that can quantify the social and economic impact of work impairment due to alcohol use [7,37].

CONCLUSION

The prevalence of impaired work performance due to alcohol use the previous day was markedly higher among employees with high income and educational levels compared with employees in lower socio-economic strata. These results stand in contrast to previous studies that report more alcohol-attributable problems among individuals with lower socio-economic status. Assuming that the severity of the consequences of impaired work performance is the same across different socio-economic groups, a disproportionately large proportion of the cost of work impairment

can be attributed to the more educated and better paid employees.

Declaration of interests

None.

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Author Contributions

Inger Synnøve Moan: Conceptualization; funding acquisition. **Torleif Halkjelsvik:** Conceptualization; formal analysis; visualization.

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Supporting Information

Additional supporting information may be found online in the Supporting Information section at the end of the article.

Table S1. Modified Mixed Poisson Regression with Tests of Interactions between Outcome (Absenteeism vs. Work Impairment) and Demographics (age = 16–79; $N = 5402$; Observations = 10801).

Table S2. Extended Model with Interaction Terms Predicting Work Impairment (age = 26–79, $N = 4544$).

Table S3. Adjusted Risk Ratios for Work Impairment (age 26–79) from the Extended Model Presented in Supplementary Table 2.