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Research Article

Age differences in alcohol drinking patterns among Norwegian and German hospital doctors – a study based on national samples

Alterseffekt in Alkoholkonsumgewohnheiten bei norwegischen und deutschen Krankenhausärzten – eine Studie basierend auf landesweiten Erhebungen

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Abstract

Aims: To describe and discuss the alcohol drinking patterns of the younger generation of hospital doctors in Norway and Germany – respectively the abstainers, frequent drinkers, episodic heavy drinkers and hazardous drinkers.

Methods: Data were collected in nationwide postal surveys among doctors in Norway (2000) and Germany (2006). A representative sample of 1898 German and 602 Norwegian hospital doctors aged 27–65 years were included in the analyses (N=2500). Alcohol drinking patterns were measured using the first three items of AUDIT in Norway and the AUDIT-C in Germany, scores of ≥5 (ranking from 0 to 12) indicating hazardous drinking. Episodic heavy drinking was defined by the intake of ≥60g of ethanol, on one occasion, at least once a week. Frequent drinkers were who drank alcoholic beverages at least twice a week. Abstainers were persons who drank no alcohol. The analyses were performed separately for age groups (27–44 years versus 45–65 years) and genders.

Results: Compared to the age groups 45 to 65 years in the Norwegian and German samples, the younger age groups (27–44 years) tend to have higher rates of abstainers, higher rates of infrequent drinking of moderate amount of alcoholic drinks, lower rates of episodic heavy drinking and lower rates of hazardous drinking.

Conclusion: The younger generation of hospital doctors in Norway and Germany showed tendencies to healthier drinking habits. Changes in professional life, and in the attitude towards alcohol consumption, may go some way towards explaining these findings.

Keywords: alcohol, drinking patterns, hospital, doctors, Norway, Germany

Zusammenfassung

Ziel: Die Studie beschreibt und diskutiert die Alkoholkonsumgewohnheiten der jungen Generation der Krankenhausärzte in Norwegen und Deutschland – die Abstinenz, den häufigen Alkoholkonsum, das Rauschtrinken und den riskanten Alkoholkonsum.

Methoden: Die Datengewinnung erfolgte auf Grundlage schriftlicher Erhebungen in Norwegen (2000) und Deutschland (2006). Die Auswertung baute auf einer repräsentativen Auswahl von 1898 deutschen und 602 norwegischen Krankenhausärzten im Alter von 27 bis 65 Jahren (N=2500). Alkoholkonsumgewohnheiten wurden mit den ersten drei Fragen von AUDIT in Norwegen und AUDIT-C in Deutschland erfasst, ein Punktwert von ≥5 (auf der Skala von 0 bis 12) war die Definition für riskanten Alkoholkonsum. Die Definition des Rauschtrinkens war ein Konsum von ≥5 Gläsern Alkohol mindestens einmal pro Woche. Die Definition des häufigen Alkoholkonsums war ein Konsum von Alkohol

mindestens zweimal pro Woche. Die Definition der Abstinenz war kein Alkoholkonsum. Die Alkoholkonsumgewohnheiten wurden nach Geschlecht und Altersgruppen (27–44 Jahre und 45–65 Jahre) beschrieben.

Ergebnisse: Im Vergleich zur Altergruppe der 45–65-jährigen tendierte die jüngere Altersgruppe (27–44 Jahre) zur höheren Abstinenzrate und zur niedrigen Rate von häufigem Alkoholkonsum, Rauschtrinken und riskantem Alkoholkonsum.

Schlussfolgerung: Die jüngere Generation der Krankenhausärzte in Norwegen und Deutschland zeigte Tendenzen zu einem gesünderen Konsumverhalten. Änderungen im Arbeitsleben und in der persönlichen Einstellung gegenüber dem Alkoholkonsum dürften die vorliegenden Ergebnisse erklären.

Schlüsselwörter: Alkoholkonsum, Krankenhaus, Ärzte, Norwegen, Deutschland

Introduction

Previous investigations among doctors have identified the older age group as one of the important factors for harmful alcohol consumption [1], [2], [3], [4], [5], [6]. Why the young age group of doctors tends to have less risk for harmful drinking, is still an unexplored field. Answers to this question would be interesting, as it is shown that within the general population (at least in many European countries) harmful drinking among younger adults is on the rise [7], [8].

Since data across different drinking cultures suggest similar age patterns in doctors' alcohol consumption [1], [2], [3], [4], [5], [6], there may be common conditions for lower risk among younger doctors compared to older doctors that could be further analyzed in an intercultural context.

A comparison of previous studies is limited by methodological differences. Yet, it is possible to perform reliable analyses between Norway and Germany. Comparable measurement methods and items on drinking patterns were used in nation-wide surveys among doctors in Norway in 2000, and in Germany in 2006. There are some differences in the cultural importance of drinking in these two countries – i.e. lower annual sales of pure alcohol per inhabits aged 15+ years (12.9 liter vs. 5.8 liter) [9], higher rate of abstainers (11–15% vs. 4.3–5.9%) [10], [11] and lower rate of heavy drinkers (3.0–5.2% vs. 11.2–11.3%) [9] in Norway than in Germany. These make analyses of the alcohol drinking patterns of the younger and older generation of doctors interesting.

Because the German sample includes hospital doctors only, the present study will be limited to this category. Yet, there is clearly a need for research that aims at the entire population of hospital doctors. Recent studies focus on medical students, GPs, certain specialties or healthcare professionals in general [5], [6], [12], [13], [14], [15], [16], [17], [18], [19] – with little attention given to hospital doctors [20]. Hospital doctors constitute the largest group among doctors work force. They have a key role both in treating and prevention diseases [21] – including alcohol-related diseases [22]. And how much effort a doctor spends on prevention against harmful drinking depends also on own individual alcohol consumption [16].

The aim of the study is to describe and discuss the alcohol drinking patterns of the younger generation of hospital doctors in Norway and Germany – divided into abstainers, frequent drinkers, episodic heavy drinkers and hazardous drinkers.

Methods

Procedure, setting and sample

In both countries the questions on alcohol habits were parts of more comprehensive questionnaires on doctors' health and work condition. In Norway the questionnaire was disseminated in 2000, with one reminder, from The Research Institute of The Norwegian Medical Association to 1616 Norwegian doctors. In Germany, the questionnaire was sent from the German Hospital Institute in 2006 with no reminder to 3295 hospital doctors. The response rates were 86% (1385/1616) in Norway and 58.2% (1917/3295) in Germany. Only hospital doctors between 27 and 65 years of age were included in this study. Thus, the combined sample comprised 2500 hospital doctors: 602 Norwegian and 1898 German. The gender distribution and the mean age were comparable between the two countries (Table 1).

Questionnaire

Alcohol drinking patterns were identified using a slightly modified version of the Alcohol Use Disorders Identification Test (AUDIT) [23] in Norway and the Alcohol Use Disorders Identification Test, version C (AUDIT-C) [24] in Germany. According to a current review, the AUDIT-C is comparable to the original AUDIT in terms of sensitivity and specificity [25]. In addition, the AUDIT [23] and the AUDIT-C [26] were found to function well in different national and cultural settings.

Table 1: Study population

	Norway	Germany
Survey population		
Date	2000 year	2006 year
Work place	hospitals, general practices, administrative sector	hospitals
Sample size	N=1616	N=3295
Response rate	86.0% (n=1385)	58.2% (n=1917)
Age range	26–71 years (27–71 years among hospital doctors)	24–65 years
Study population		
Work place	hospitals	hospitals
Sample size	N=602	N=1898
Gender distribution Males Females	 66.2% (n=398) 33.8% (n=203)	 61.8% (n=1173) 38.2% (n=725)
Age range	27–65 years	27–65 years
Age (mean) Males 27–44 years 45–65 years Females 27–44 years 45–65 years	 37.3 years (n=161) 53.6 years (n=237) 35.9 years (n=142) 52.2 years (n=61)	 36.2 years (n=787) 52.0 years (n=386) 34.7 years (n=586) 50.2 years (n=139)

Both inventories included comparable questions on frequency and amount of alcohol consumption and frequency of drinking 60g of ethanol, or more, on a single occasion (Table 2). The scores on the Norwegian items were re-coded from 1–7 to 0–4. The maximum sum score is 12. The choice of a cut-off point for hazardous drinking is influenced by national and cultural standards; and may vary from ≥3 to ≥6 [24], [27], [28], [29], [30], [31]. A score of ≥5 points for females and males was found to be appropriate cut-off point in the population of northern Germany [32]. A cut-off of ≥5 points is also recommended by Institute of Health and Society at the Newcastle University in the United Kingdom [29]. Thus, ≥5 points was used as an indicator of hazardous drinking in the present study. Episodic heavy drinking was defined as drinking ≥60g of ethanol on one occasion at least once a week. Frequent drinkers were those who drank alcoholic beverages at least twice a week. Abstainers were those who had not used any alcohol during the last year.

Analyses

Differences between countries, females and males, and age groups (27–44 years vs. 45–65 years) were tested in 2 by 2 tables using Fishers' Exact Test.

Results

Table 3 describes the age-related differences in alcohol drinking patterns of female and male Norwegian and German hospital doctors. With one exception the younger age group (27 to 44 years) had higher rates of abstainers, higher rates of infrequent drinking of moderate amount of alcoholic drinks, lower rates of episodic heavy drinking and lower rates of hazardous drinking, compared to the age group 45 to 65 years. The exception was Norwegian female doctors, where both age groups had the same rates of abstainers. Moreover, the younger age group of Norwegian female doctors had a higher quantity of alcohol intake by infrequent drinking than the older. But the majority of female doctors in both countries, 60 to 80 percent, reported a moderate and infrequent drinking pattern (1–2 drinks less than twice a week). The age-related differences in alcohol drinking patterns are clear, although not all differences were statistically significant.

Independent of age group, gender and nationality, the majority of hospital doctors in Norway and Germany consumed alcoholic beverages, and they drank mostly at a non-hazardous level. Specifically the female doctors among them were found to have lower numbers of episodic heavy drinkers and hazardous drinkers. According to nationality, abstinence was more prevalent among German doctors. German doctors tended to frequently drink 1–2 drinks per occasion, and Norwegian doctors to infrequently drink 3–4 drinks per occasion. The per-

Table 2: Items and scores

Norway: AUDIT, Items 1–3				**Germany:** AUDIT-C		
Items	**Alternatives**	**Original scores**	**Re-code scores**	**Items**	**Alternatives**	**Scores**
Frequency of drinking: *About how often do you have a drink containing alcohol?*	Never Less than monthly About once a month 2–3 times a month About once a week 2–4 times a week Daily or almost daily	0 1 2 3 4 5 6	0 (a) 1 (b) 1 (b) 2 (b) 2 (b) 3 (c) 4 (c)	**Frequency of drinking:** *About how often do you have a drink containing alcohol?*	Never Monthly or less 2–4 times a month 2–3 times a week 4 times a week or more	0 (a) 1 (b) 2 (b) 3 (c) 4 (c)
Typical quantity of drinking: *About how many drinks do you have on a typical day when you are drinking?*	1–2 3–4 5–6 7–9 10 or more	0 1 2 3 4	0 (d) 1 (e) 2 (e) 3 (e) 4 (e)	**Typical quantity of drinking:** *About how many drinks do you have on a typical day when you are drinking?*	1–2 3–4 5–6 7–9 10 or more	0 (d) 1 (e) 2 (e) 3 (e) 4 (e)
Frequency of drinking 5 or more drinks: *About how often a year do you have 5 or more drinks (ca. 60g ethanol) per occasion?*	Never 1–4 times 5–10 times About once a month 2–3 times a month About once a week 2–4 times a week Daily or almost daily	0 1 2 3 4 5 6 7	0 1 1 2 2 3 (f) 3 (f) 4 (f)	**Frequency of drinking 5 or more drinks:** *About how often do you have 5 or more drinks per occasion (ca. 60g ethanol)?*	Not once Less than monthly About monthly About weekly Daily or almost daily	0 1 2 3 (f) 4 (f)
Hazardous drinking			≥5			≥5

(a) abstainers; (b) infrequent drinking; (c) frequent drinking; (d) moderate quantity of drinking; (e) high quantity of drinking; (f) episodic heavy drinking

Table 3: Alcohol drinking patterns of female and male Norwegian and German Hospital doctors aged 27–44 and 45–65 years, percent

	German Hospital Doctors (%)				Norwegian Hospital Doctors (%)			
	Males		Females		Males		Females	
	27–44 years (n=716–786)	45–65 years (n=367–386)	27–44 years (n=527–585)	45–65 years (n=129–139)	27–44 years (n=161–150)	45–65 years (n=226–237)	27–44 years (n=135–142)	45–65 years (n=58–61)
Frequency of drinking								
Abstaining	8.9	5.7	9.9	7.2	6.8	4.6	4.9	4.9
Infrequent (<2 per week)	44.1*	36.5*	63.4	60.4	63.4	58.6	81.0*	65.6*
Frequent (≥2 per week)	46.9*	57.8*	26.7	32.4	29.8	36.7	14.1*	29.5*
Quantity of drinking**								
1–2 drinks	79.8	77.7	92.6	92.7	60.2	52.8	75.9	88.1
3 drinks or more	20.2	22.3	7.4	7.3	39.8	47.2	24.1	11.9
Episodic heavy drinking (≥5 drinks per occasion at least once a week)	3.6	4.2	0.9	0.7	3.1*	12.3*	2.8	4.9
Hazardous drinking (≥5 points)	27.2	28.7	6.7	8.0	28.0	35.5	9.3	11.9

*Differences between age groups (27–44 years vs. 45–65 years) within each gender using Fisher's Exact Test, P<0.05;
**Excluding abstainers

centage of episodic heavy or hazardous drinking was higher in the Norwegian than the German sample, except for the sub-group of male doctors aged 27–44 years, where the differences were minimal.

Discussion

The study describes the drinking patterns among hospital doctors in Norway and Germany. Consistent with other research [5], [12], [16], [17], [19], [20], hazardous drinking was less prevalent among the younger age groups. The present investigation adds knowledge on possible predictors of non hazardous drinking among doctors. Most young female and male hospital doctors (27–44 vs. 45–65 years) tend to report higher rates of abstinence, higher rates of infrequent drinking and lower rates of episodic heavy drinking. These tendencies were observed both in the German and Norwegian samples.

The healthier drinking patterns of the young hospital doctors in Germany and Norway may reflect a number of common factors. Culture plays an important role in defining normative drinking patterns [33], [34], which was also verified among doctors [35]. It was concretely shown that the work place culture, including job conditions [36] and gender mix within medical specialties [5], may accept or encourage doctors' drinking. Thus, one reason for healthier drinking among young doctors lies in differences in workplace culture. Indeed, several regulations of financial structure, organization and management system of German and Norwegian hospitals have been implemented during the last decade, as well as in many other European countries. This process has also influenced the work conditions of hospital doctors [37], [38]. Increasing workload, time pressure and work hours – particularly among young doctors – have been widely discussed both in Germany [39], [40] and Norway [41]. In this context, a reduced opportunity for frequent alcohol consumption and episodic heavy drinking is likely. Also, long work hours automatically reduces time spent on social activities [42], and spending less time with friends is a predictor of less frequent alcohol consumption in a study on health-related behavior among young people [43].

One could argue that work time overload and unbalanced work-home interface may also lead to stress among doctors [44], [45], [46], and that alcohol may be used to reduce stress [1], [47], [48]. However, drinking norms may also reflect the gender composition at the workplace [49]. Previous studies from Germany [20] and Norway [5] have shown, for example, that doctors working in a specialty with the lower percentage of male doctors (non-surgical specialties vs. surgical specialties) were significantly less likely to drink heavily. Thus, it is possible that the growing presence of women in the medical profession in Norway [50] as well as in Germany [51] also accounts for the lower prevalence of heavy drinking in our sample.

Another plausible explanation for the healthier drinking patterns among young hospital doctors in Norway and Germany might be a general shift in attitudes regarding alcohol consumption. A new life-style trend among doctors in Scotland [4], and a changed attitude in medical circles towards alcohol – from positive to negative – in Canada [52] have been observed throughout the last decades. Data from England and Wales [53] show a remarkable decrease in alcohol-related mortality for male doctors from the 1960s to 2005. Similarly, male doctors in California [54] were among the occupations with low mortality rates from liver cirrhosis. Previous analyses in Norway [12] and Germany [20] have shown that the level of alcohol consumption is not higher among doctors than among comparable groups in the adult population. In another Norwegian study, young doctors were found to be more aware of the dangers of alcohol use as a public health problem [55], and they were also less likely to be hazardous drinkers in the Young Doctors Cohort in 2003 than in 1993 [48], [56].

The study yielded a noteworthy result. A higher number of abstainers was found in the younger age groups in both countries – except in the case of female Norwegian doctors, where the number of abstainers was similar in both age groups. If we consider higher educational level and lower age in the Norwegian and German adult populations as factors associated with non-abstinence [11], [57], these results become more than interesting. It is also remarkable that the prevalence of abstinence among doctors in Germany is between 6 and 10 percent, while the adult German population has fewer abstainers than the Norwegian (5.5% vs. 13%) [10], [11], [58]. Although one might be led to assume that the higher proportion of younger doctors refraining from drinking alcohol might correlate with the steady influx of foreign doctors with a tradition of abstinence, this does not seem to be the case. Eighty-five percent of foreign doctors in Norway originally came from Nordic or other European countries [50], and the majority of immigrant doctors in Germany come from Austria or the eastern European countries [59]. It has not been possible, however, to determine the percentage of doctors with a cultural background with a tradition of abstinence.

Strengths and limitations

The study's main strength is the representative dataset, the results of which should be generalizable for the entire population of hospital doctors in Germany and Norway. The high validity of the questionnaires, comparable items on drinking patterns and similarities in measurement methods should also be pointed out. One limitation is the lower response rate among German doctors which might reflect a lower willingness to participate in surveys compared with other Europeans [7]. Nevertheless, it should be noted that, despite the fact that no reminder was sent in Germany, the response rate of 58.2% was better than in previous surveys of German doctors [40]. We know from other studies that non-respondents generally drink more or that alcohol misuse is more common in this group [60], if we were to take the general underestimation of alcohol consumption into consideration – about 40–60%

[61] without much variation between nationalities [62] – the proportion of episodic heavy drinkers and hazardous drinkers could be even greater in this study. A further limitation is the different time-frames of the surveys, with a six year gap (2000 and 2006). The self-rating scales could also have an effect on the results. However, both measurement instruments of alcohol drinking patterns – AUDIT and AUDIT-C – are thoroughly validated and widely used in different national and cultural settings [23], [24], [25], [26]. The possible age-related differences in socially desirable responding should be also noted. It might be that younger doctors had answered the questions more in socially desirable direction – i.e. they were more likely to underreport alcohol consumption and deny having engaged in episodic heavy drinking. Many younger hospital doctors have time-limited contract at the beginning of their career, and it could be a reason to present themselves in a more favorable light. Another concern is that we described the alcohol drinking patterns for age groups and genders. Since alcohol consumption varies with personality, marital status, the presence of children and medical specialty, it would be important to include these as covariates in future investigations – something which was not possible in the present study. In addition, the understanding the nature of the young doctors' working culture and the factors related to drinking patterns might be improved by closely studying the alcohol drinking of comparable socio-economic groups. Because the long term effects of stressful working conditions within the medical profession (e.g. high intensity of work, heavy professional responsibility, exhaustion in relation to long hours and sleep deprivation on-call) can result in several health issues including harmful alcohol consumption in the elderly group [1], [2], [3], [46], [47], [48], [63], it may especially be interesting to see whether the seemingly increasing tendency to moderation in alcohol habits will continue.

Conclusions

The younger generation of doctors in Norway and Germany, the group aged 27 to 44 years compared with 45 to 65 years, shows healthier drinking patterns. A certain "feminisation" of the profession, increasing workload, long work days, a shift in attitudes towards drinking from positive to negative, and new lifestyle trends might to some degree account for these observations. Although there is some evidence that, in the future, doctors will have even less drinking problems than today, special attention still needs to be paid on the medical profession, and in particular middle aged male doctors.

Notes

Conflicts of interest

None declared.

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