Alcohol Use and Hazardous Drinking among Medical Specialists

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Key Words

Medical specialists · Hazardous drinking · Binge drinking · Alcohol · Belgium · Western Europe

Abstract

Background: Alcohol use among medical specialists remains a delicate topic. However, the number of prevalence studies remains very limited in Western European countries.

Aims: To explore alcohol use and hazardous drinking among male and female medical specialists. **Methods:** All medical specialists in Belgium – a typical Western European country regarding alcohol use – were invited to participate. Alcohol use and abuse were measured using the Alcohol Use Disorder Identification Test (AUDIT) and the CAGE screen (acronym based on the four items it contains: ‘Cut down drinking’, ‘Annoyed by criticism’, ‘Guilty feelings’ and ‘Eye opener’). **Results:** A sample of 1,501 specialists completed the survey. The composition of the sample was comparable with that of the overall population of specialists in Belgium regarding gender, age and specialties. A proportion of 18% of the specialists could be classified as hazardous drinkers and 16.8% reported binge drinking at least once a month. Female medical specialists drank less than their male counterparts; however, a substantial proportion of female specialists (14.9%)

displayed higher risk levels of hazardous drinking. Significant differences were found between specialties on the CAGE screen. Finally, younger medical specialists tended to display healthier alcohol use patterns compared with their older counterparts. **Conclusion:** Medical specialists tend to indulge in more hazardous drinking compared with the general population (10%). The alcohol use patterns of female doctors tend to move towards those of males.

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Introduction

Alcohol use and abuse among doctors with a medical specialty remain a delicate topic. However, it is of utmost importance to be informed of doctors’ alcohol use and attitudes towards alcohol because their lifestyle and drinking habits may be followed given their professional role as experts in lifestyle and health. Overall, doctors’ drinking habits may influence the attitudes of the general public to alcohol consumption. Moreover, alcohol problems may seriously compromise their practice of medicine [1] since their alcohol consumption and attitudes might influence their attitudes and practices in screening and treating patients for alcohol problems.

However, studies on the prevalence of alcohol use and misuse within the medical professions remain very limited both in number and in representativeness of the medical specialist population. Only three European publications are available, exploring alcohol use patterns based upon two databases on German and Norwegian medical specialist populations [2–4]. However, these data are limited to specialist doctors working in hospitals and one study focused on female surgeons. In other words, the results of these studies cannot be extrapolated to the whole population of medical specialists, including a growing number of doctors working in outpatient facilities as well as doctors in training to become specialists in addition to hospital doctors. Not only the ways in which doctors work (hospital vs. outpatient practice) are changing rapidly in today's medicine, but substantial differences can also be found between hospital doctors and doctors working in outpatient and private practices, e.g. regarding gender differences, the number of part-time workers and the differences between medical specialties. Taken together, there is a clear need to assess alcohol use patterns within a sample reflecting the whole population of medical specialists, also enabling comparisons to be made among different specialties.

In Belgium, as in many European countries, the number of women in medicine, once a male-dominated profession, has dramatically increased. One of the issues of concern is whether women, who have traditionally lower drinking patterns, compared with men, will adopt their male counterparts' drinking habits. A number of studies indicate that specifically younger working women with a higher education tend to pick up more male patterns of alcohol use, putting them at risk for alcohol-related health consequences [5, 6]. As yet, it is unknown whether this pattern also accounts for female medical specialists. Some studies support the idea that female doctors' alcohol consumption remains relatively low, with less frequent drinking and a lower prevalence of hazardous drinking compared with male doctors [7]. However, in a more recent study, Rosta and Aasland [3] found that female surgeons tended to drink more frequently and haz- ardously than other female doctors. Given that surgery is a typically male-dominated medical specialty, these findings might support to the idea that women are changing their alcohol use patterns. However, there are very few and recent representative studies of the drinking patterns of female doctors.

Finally, within the Belgian adult general population, 10% (13% of the men and 6% of women) can be categorized as hazardous drinkers based on CAGE criteria

(‘CAGE’ is an acronym based on the four items it includes: ‘Cut down drinking’, ‘Annoyed by criticism’, ‘Guilty feelings’ and ‘Eye opener’) [8]. The highest prevalence is found among the 45- to 64-year-olds. A comparable trend was also reported by Rosta and Aasland [4], who found a significant effect of age among hospital doctors' alcohol consumption patterns; older hospital doctors tended to drink more frequently and had higher rates of episodic heavy and hazardous drinking. Overall, both findings might reflect age-related changes in alcohol use among the general population, with younger people tending to adopt healthier drinking habits. However, no data are available as to whether this trend can be found within a Belgian sample of medical professionals in general, and among male and female doctors, in particular.

The present study was therefore set up to fill this gap in our knowledge. We explicitly focused on all medical specialists, also trainee specialists, working both in hospital and in outpatient practices, in order to have a broad representative sample, within a typical Western European country such as Belgium. More specifically, we focused on the following questions: (1) what is the prevalence of alcohol use and hazardous or harmful drinking among medical specialists; (2) are there any differences between the different specialties; (3) are the gender differences that have been reported within the general population reflected among medical professionals, and (4) do older specialists tend to drink more and more haz- ardously compared with their younger counterparts?

Methods

Recruitment and Protocol

From April to June 2011, all medical specialists in Belgium ($n = 24,568$) were surveyed using both postal and online questionnaires. The questionnaire consisted of 41 items on demographic characteristics, working conditions (e.g. setting: hospital, private practice, training and medical specialty), smoking habits, and alcohol and drug use. The current paper focuses on the alcohol data.

Participation was voluntary, and all participants gave written informed consent. Privacy and anonymity of the data were guaranteed according to the Helsinki Convention.

Instruments

To screen for hazardous drinking, the 10-item version of the Alcohol Use Disorder Identification Test (AUDIT) elaborated by the World Health Organization [9] was used. Total AUDIT scores ranged from 0 to 40. Hazardous or harmful drinking was defined as total AUDIT scores of ≥ 8 for men and ≥ 6 for women and participants older than 65 years [10]. In addition, four risk levels were defined as suggested by Babor et al. [11]: risk level I (RL I) with

AUDIT scores of 0–7 (and scores 0–6 for women and participants older than 65 years), RL II with scores of 8–15, RL III with scores of 16–19, and RL IV with scores of 20 or above. RL II represents a medium level of alcohol problems or hazardous drinking whereas RL III and IV represent a high level of alcohol use as well as a need for further diagnostic evaluation concerning alcohol dependence. Finally, answers given on the third question of the AUDIT, i.e. ‘How often do you have six or more drinks on one occasion?’, were used as an operationalization of binge drinking, with 1 drink or unit containing 10 g of alcohol on average.

The CAGE, one of the most frequently used screening tool for alcohol problems in clinical practice, clinical studies and in studies on the general population, was used as well [12, 13]. The CAGE contains four questions. The response categories are binary (affirmative or negative) and the questions are framed in a lifetime perspective [12]. Most studies suggest that ≥ 2 affirmative answers should increase suspicion of alcohol-related problems [14]. Therefore, we used the following two outcome categories: a negative CAGE screen (CAGE–), indicating 1 or no positive answer, and a positive CAGE screen (CAGE+), indicating ≥ 2 positive answers.

Analyses

Student’s *t* test was used for continuous variables (total AUDIT and total CAGE scores) and the χ^2 test was used for dichotomous variables. Pearson’s *r* correlations were calculated to explore the relation between age and the AUDIT and CAGE scores. As a positive correlation between age and the AUDIT scores was found, a GLM univariate analysis was used with age as a covariate when exploring gender differences. Overall, 27 medical specialties were included. In order to avoid cells with too small numbers, these were grouped into 7 subgroups according to their similarities (surgery, anaesthesia and reanimation, psychiatry and neurology, internal medicine, paediatrics, gynaecology and obstetrics and others).

In order to compare the sample with the general population of medical specialists in Belgium, data from the annual statistics concerning health professions collected by the Federal Public Health Services from Belgium were used [15].

The statistical Package for Social Science (PASW; Predictive Analytics SoftWare) software, Mac Version 18.0 was used for data analysis.

Results

Response Rate

We received a total of 1,501 valid response questionnaires (67 online and 1,434 by post). Given that initially all 24,568 Belgian specialist doctors were invited, this resulted in a response rate of 6.1%.

Demographic Characteristics and Representativeness of Sample

The mean age of the sample was 48.24 (SD 12.66) years and consisted of 53.3% males. Gender and age distribution, and relative participation of the different medical specialties of the sample were compared with the general

Table 1. Age distribution and distribution of the medical specialties within the sample and within the general (national) population of medical specialists

	Percent of the sample (n = 1,501)	Percent of the specialists (n = 24,568)	p
Gender			
Male	53.3	64.5	0.102
Female	46.7	35.5	
Age groups			
<30 years	5.8	0.1	0.097
30–44 years	35.2	34.5	
45–54 year	23.7	26.3	
55–64 years	22.8	20.8	
>65 years	10.9	18.3	
Medical specialties			
Surgical ¹	10.4	14.0	0.871
Anaesthesia and reanimation	7.7	8.6	
Psychiatry and neurology	13.9	10.4	
Internal medicine ²	17.8	17.9	
Paediatrics	9.4	6.6	
Gynaecology and obstetrics	8.9	6.1	
Others ³	31.9	36.4	

¹ Surgery, orthopaedics, plastic surgery, neurosurgery, stomatology.

² Internal medicine, gastro-intestinal medicine, cardiovascular diseases, pneumology, geriatrics, rheumatology.

³ Medical imaging, ophthalmology, ENT, physical medicine, urology, clinical biology, radiotherapy-oncology, nuclear medicine, anatomo-pathology, management of health data, occupational medicine, dermato-venereology, insurance medicine, acute medicine, judicial, emergency medicine.

population of medical specialists in Belgium (n = 24,568) (table 1). The gender distribution of the response sample (53.3% male) did not significantly differ from that of the general population of medical specialists (64.5% male) [χ^2 (1) = 2.673; *p* = 0.102]. In addition, although the sample contained slightly more young participants compared with the general population of medical specialists, the age distributions did not differ significantly [χ^2 (4) = 7.856; *p* = 0.097]. All different medical specialties (n = 27, divided into 7 categories) were represented in the sample with a relative distribution comparable with the general population of Belgian medical specialists [χ^2 (6) = 2.477; *p* = 0.871].

Finally, 14.5% of the sample worked in an outpatient setting (private practice, polyclinic or medical center), 45.5% worked in a hospital, 28.1% worked in both an out-

Table 2. Differences between respondents according to age groups

	<30 years	30–44 years	45–54 years	55–64 years	>65 years	Overall
Number of respondents ¹	87	528	357	342	163	1,501
AUDIT						
Abstainers, %	10.3	9.3	5.9	9.1	5.5	8.1
Total AUDIT score	3.61 ± 2.4	3.68 ± 2.8	4.45 ± 3.3	4.79 ± 3.9	5.09 ± 3.2	4.27 ± 3.3
Hazardous drinking, %	12.6	14.4	14.8	20.5	33.7	18.0
AUDIT risk levels, %						
AUDIT RL I	87.4	85.6	85.2	79.5	66.3	82.0
AUDIT RL II	12.6	14.2	13.7	17.8	32.5	16.9
AUDIT RL III	0.0	0.2	0.3	1.5	0.6	0.6
AUDIT RL IV	0.0	0.0	0.8	1.2	0.6	0.5
Binge drinking, %	15.3	14.8	14.1	20	21.9	16.8
CAGE						
CAGE+, %	5.7	15.3	22.5	20.8	18.3	18.3

Values are mean ± SD, unless otherwise indicated. ¹ Age data were missing for 24 respondents.

Table 3. Differences according to gender

	Men	Women	P
Number of respondents ¹	795	697	
Age, years	52.60 ± 12.23	43.27 ± 11.23	<0.001
AUDIT			
Abstainers, %	6.0	10.5	<0.001
Total AUDIT score	5.19 ± 3.66	3.24 ± 2.37	<0.001
Hazardous drinking, %	20.7	14.9	0.003
AUDIT risk levels, %			
AUDIT RL I	79.2	85.1	<0.001
AUDIT RL II	18.6	14.9	
AUDIT RL III	1.1	0.0	
AUDIT RL IV	1.0	0.0	
Binge drinking, %	23.3	8.9	<0.001
CAGE			
CAGE+, %	21.9	14.1	<0.001

Values are mean ± SD, unless otherwise indicated. ¹ Data on gender were missing for 9 respondents.

patient setting and in a hospital whereas 8.5% of the sample were medical specialists in training (and 2.9% gave no response). The number of specialists in training in the sample (8.5%) was comparable with that in the national sample (11.5%).

AUDIT Scores

A proportion of 8.1% of the participants indicated never drinking alcohol. The overall mean AUDIT score of the sample was 4.27 (SD 3.3). Additionally, the prevalence

of the sample according to the four risk levels of the AUDIT scores were calculated and presented overall and according to age categories (table 2). Overall, 18% of the total sample belonged to RL II, III or IV. The majority (16.9%) were classified as RL II, pointing to the presence of a hazardous drinking behaviour; only 1.1% of the sample had an AUDIT score >15 (RL III and RL IV), which might suggest an alcohol dependence.

Binge Drinking

Results for the binge-drinking question (AUDIT, question 3) are also presented in table 2. Of the total sample, 16.8% indicated drinking >6 units on one occasion at least once a month.

CAGE Scores

Overall, 18.3% of the sample was CAGE+, defined as ≥2 positive answers on the CAGE questionnaire and suggesting alcohol-related problems (table 2).

Gender Differences

The mean age of the female participants (43.27 years; SD 11.23) was lower than that of the male subjects (52.60 years; SD 12.23) ($t = 15.210$; $p < 0.001$); significantly more women (10.5%) than men (6.0%) [$\chi^2 (1) = 9.806$; $p < 0.001$] reported never drinking alcohol (table 3).

Women had a lower AUDIT mean score (3.24; SD 2.37) than men (5.19; SD 3.66) [$F(1,1490) = 144.403$; $p < 0.001$]. This difference remained significant after controlling for age [$F(2,1474) = 104.920$; $p < 0.001$]. AUDIT scores additionally showed that a significantly higher

Table 4. Differences between the medical specialist on age, gender, % abstainers, mean total AUDIT scores, % hazardous drinking, Risk Levels (RL – AUDIT), binge drinking (>6 drinks in one occasion – AUDIT) and CAGE scores

	Surgical specialties ¹	Anaesthesia and reanimation	Psychiatry and neurology	Internal medicine ²	Paediatrics	Gynaecology and obstetrics	Others ³	p
Number of respondents	156	116	208	267	141	134	479	
Age, years	48.75 ± 12.7	46.24 ± 9.8	48.32 ± 14.1	47.40 ± 13.4	49.09 ± 12.9	49.53 ± 13.9	48.38 ± 11.7	ns
Gender, male %	76.8	56.0	57.7	54.0	32.6	48.5	49.9	<0.001
<i>AUDIT</i>								
Abstainers, %	8.3	5.2	7.2	6.7	11.3	10.4	8.1	ns
Total AUDIT score	4.42 ± 3.09	4.55 ± 3.43	4.45 ± 3.29	4.12 ± 3.13	3.54 ± 2.87	4.20 ± 3.16	4.43 ± 3.48	ns
Hazardous drinking*, %	15.4	19.0	19.7	16.5	14.2	23.1	18.4	ns
Male/female, %	15.9/13.9	15.3/23.5	23.3/14.8	16.8/16.4	19.5/11.6	23.0/23.2	24.4/11.5	ns/ns
AUDIT risk levels**, %								
AUDIT RL 1	84.6	81.0	80.3	83.5	85.8	76.9	81.6	ns
AUDIT RL 2	14.7	18.1	19.2	15.4	12.8	22.4	16.7	
AUDIT RL 3	0.0	0.0	0.0	0.7	0.0	0.7	1.3	
AUDIT RL 4	0.6	0.9	0.5	0.4	1.4	0.0	0.4	
Binge drinking***, %	21.2	15.5	14.4	14.7	10.6	15.7	16.5	ns
Male/female, %	24.6/15.2	22.2/8.5	20.4/8.8	19.3/11	19.6/7.2	22.2/11.7	27.6/7	ns/ns
<i>CAGE****</i>								
CAGE+ screen, %	14.7	25.9	22.1	15.7	11.3	21.6	18.4	0.024
Male/female, %	16.8/8.3	26.2/25.5	26.7/15.9	17.5/13.9	15.2/9.5	20.0/23.2	25.8/11.1	ns/0.022

Values are mean ± SD, unless otherwise indicated. * Hazardous drinking: a score of ≥ 8 for men and ≥ 6 for women and participants older than 65 years on the total AUDIT (Alcohol Use Disorder Identification Test) score; ** Risk level: risk level I (RL I) with AUDIT scores of 0–7 (and scores 0–6 for women and participants older than 65 years), RL II with scores of 8–15, RL III with scores of 16–19, and RL IV with scores of 20 or above; *** % drinking >6 units in one occasion at least once a month (AUDIT item 3); **** CAGE: screening questionnaire for alcohol problem; CAGE+: CAGE positive screen, indicating two or more positive answers. ns = Not significant. ^{1,2,3}: detailed information about the subcategories can be found in table 1.

proportion of male medical specialists had a total AUDIT score of ≥ 8 (20.7%), indicative of hazardous or harmful alcohol use, compared to 14.9% of their female counterparts (total AUDIT score of ≥ 6) [χ^2 (1) = 8.552; p = 0.003]. A proportion of 2.1% of the male participants had a score > 15 (RL III and IV – AUDIT), suggestive of more serious alcohol problems in male, versus none among the female participants. There was a significant gender difference regarding binge drinking [χ^2 (4) = 111.7; p < 0.001], with more men (23.3%) than women (8.9%) reporting at least one monthly binge alcohol use.

Finally, of the male medical specialists, 21.9% had a CAGE+ screening versus 14.1% of the female participants [χ^2 (1) = 15.341; p < 0.001].

Age Differences

Overall, all outcome variables revealed a tendency to higher-risk drinking patterns with advancing age (table 2). These tendencies were confirmed by Pearson cor-

relations, showing a moderate but significant correlation between age and total AUDIT scores (r = 0.16, p < 0.001). Remarkably, this effect was not significant among the male participants (r = 0.02, non-significant) whereas it was more prominent among the female subsample (r = 0.14, p < 0.001). Finally, the presence of a CAGE– versus a CAGE+ screen correlated very weakly with age for the total sample (r = 0.08, p = 0.004), but comparable gender differences (as seen with the AUDIT scores) were present; male participants did not show any relationship between age and CAGE screens (r = –0.02, non-significant) whereas their female counterparts showed a moderate relationship (r = 0.13, p < 0.001).

Differences between Medical Specialties

The 27 specialties that are represented in the sample were subdivided into 7 subcategories (table 4). Within these 7 subcategories, no significant differences were found with regard to age, but a significant gender distri-

bution was found, mainly indicating a larger number of males within the surgical specialty (76.8% males) and more females in paediatrics (67.4% females) compared to the gender distribution of other specialties.

With regard to the AUDIT, no significant differences were found with regard to the percentage of abstainers. At least 5.2% and at most 11.3% of the medical specialists reported not to drink alcohol, with the lowest percentage of abstainers within the anaesthesia-reanimation specialty and the highest percentage in paediatrics. In addition, there were no significant differences between any outcome measures of the AUDIT (mean total AUDIT score, percent hazardous drinking, risk levels and binge drinking). However, there was a general trend towards a higher percentage of hazardous drinking in the gynaecology-obstetrics specialty (23.1%) whereas less hazardous drinking occurred in paediatrics (14.2%), followed by the surgical specialty (15.4%). In contrast with these latter results, surgeons reported twice as many instances of binge-drinking (21.2%) as paediatricians (10.6%). This latter difference might be attributed to the differences in gender predominance (see above) between these two medical specialties.

Further evaluation of gender differences among specialties concerning hazardous drinking and binge drinking revealed no significant differences in each gender group. In addition, looking at the percentages of hazardous drinking, it must be noted that in anaesthesia-reanimation, internal medicine and gynaecology-obstetrics, women reported equal or even higher levels of hazardous drinking compared with their male counterparts (table 4), and this was especially pronounced in the anaesthesia-reanimation specialty (males: 15.3%; females: 23.5%). With regard to binge drinking, it is noteworthy that female surgeons reported almost twice as many instances of binge drinking (15.2%) as the whole sample of female medical specialists (8.9%) whereas the percentage of binge drinking among male surgeons (24.6%) is comparable to the whole sample of male surgeons (23.3%).

Finally, with regard to the CAGE screens, significant differences were found between the 7 specialties: one quarter of the anaesthesia-reanimation specialists (25.9%) and at least 22% of the psychiatrists/neurologists returned a CAGE+ screen. These numbers are in contrast with the clearly lower percentages of CAGE+ screens from both paediatricians (11.3%) and surgeons (14.7%).

Evaluation of gender differences concerning the CAGE screens also revealed significant differences between medical specialties in females, but not in males, indicating that the presence of CAGE+ screens significantly dif-

fered among specialties for females; a high prevalence of CAGE+ screens was found especially in anaesthesia-reanimation and gynaecology-obstetrics, i.e. 25.2 and 23.2%, respectively; these percentages are comparable with the percentages found for males in the same specialty, i.e. 26.2% for male anaesthesiologists-reanimators and 20.0% for male gynaecologists-obstetricians.

Discussion

To the best of our knowledge, this is the first and only nationwide survey examining alcohol consumption patterns in a sample of medical specialists working in a broad variety of settings and specializations in Belgium, a typical Western European country regarding alcohol use patterns.

In our sample, 8.1% of the participants reported never drinking alcohol (6.0% of the men and 10.5% of the women), and 18% of the doctors reported a hazardous drinking pattern. These findings are consistent with those in German medical specialists. Rosta et al. [2] found that 20% of their sample ($n = 1,839$) of German hospital specialists reported hazardous alcohol use (short version of the AUDIT, AUDIT-C). Rosta and Aasland [3] found that 21.7% of the male and 7.6% of the female (non-surgeon) specialist doctors scored on a hazardous alcohol use (total AUDIT score ≥ 9). Of importance, only around 1% of those 18% hazardous drinkers exhibited a high-risk pattern requiring further evaluation of alcohol dependence. This suggests that among these medical doctors, the prevalence of alcohol dependence might be lower compared with the general population although hazardous alcohol use patterns might be more prevalent. The fact that such a big difference is found between the percentage of hazardous drinking and the risk level for alcohol dependence might reflect that patterns of hazardous drinking are quite distinct from patterns of alcohol dependence, with both pathologies having a specific natural course in the general population [16].

Unfortunately, comparing these numbers with the general Belgian population remains difficult. The only Belgian data available are those from the most recent National Health Enquiry [8]. In this survey, 16% of the men and 23% of the women reported no alcohol consumption during the last 12 months. These data suggest twice as many abstainers in the general population compared with our sample of medical specialists. Moreover, using the CAGE criteria, 10% of the Belgian population (13% for men and 6% women) has been identified with a

CAGE+ screen in the 2008 survey [8]. This is much lower than the CAGE+ rates in our sample of medical specialists (21.9% for men and 14.1% for women) and thus suggests more hazardous alcohol use among doctors. However, this survey included a broader age range (from 15 years on) and only inquired about the use during the last 12 months. Given that the 15- to 24-year-olds in this sample displayed the highest abstinence rates, comparison with our (older) sample is difficult. Besides, no data using the AUDIT for the Belgian population are available.

Studies investigating the prevalence of hazardous alcohol use in other national samples revealed a prevalence of 14.0% (17.9% for men and 10.6 for women, using a cut-off score ≥ 6) [10] in a Swedish general population, using the AUDIT, and of 10.6% and 5.0% in males and females, respectively, in a Finnish sample [17]. Overall, we conclude that both male (20.7%) and female doctors (14.9%) of our Belgian sample show higher prevalence rates of hazardous alcohol use compared with the general population.

The third question in the AUDIT screens for binge drinking, which is defined as drinking ≥ 6 units (10 g alcohol/unit) on one occasion. This measure has been considered indicative of hazardous drinking too [18]. In their survey, Rosta et al. [2] found that 13.5% of the German medical specialists indulged in at least one episode of binge drinking a month. In contrast, in our Belgian sample of medical specialists, 16.8% (23.5% men and 8.9% women) admitted to at least one instance of binge drinking a month. Within this context, our definition of binge drinking differed from that used by Rosta et al. [2], who defined it as ≥ 5 units. So it might be possible that the frequency in the German sample is overestimated, and thus that the difference between our sample and the German sample is even greater. If we compare this with the German general population (whose culture of alcohol use is similar to that of Belgians), binge-drinking patterns in doctors seem to be less prevalent than in the general population in which binge drinking has been estimated at 38% [19].

Overall, our data show a consistent difference between female and male medical specialists' alcohol consumption. More women abstain from alcohol, and when drinking they have lower scores on the AUDIT and CAGE questionnaires. However, although they drink less than their male counterparts, a substantial number of female medical specialists in our sample consumed alcohol within a hazardous range. Both the CAGE and the AUDIT identified almost 15% of the female medical specialists with a positive screen for hazardous drinking. And

this proportion increases to 23.5 and 23.2% of hazardous drinking among the female anaesthesia-reanimation, and gynaecology-obstetrics specialties, respectively. These percentages of hazardous drinking are clearly higher than in general-population studies, i.e. between 0.7 and 10.6% in a Swedish sample [10], and 7.1% in female German specialist doctors [2]. As to this latter study, it remains to be explored whether the dissimilarity between our data and the German sample effectively reflects a more frequent hazardous drinking behaviour, or whether this dissimilarity is a consequence of the use of different screening instruments. Rosta et al. [2] used the AUDIT-C, instead of the 10-item AUDIT that we used. In addition, they used a cutoff of 5 (total AUDIT-C score) for both men and women, which is a relatively high cutoff, since other studies advise to use a cutoff of 4 for men and 3 for women [20]. Specifically, for women a cut-off of 5 may account for the relatively low proportion of women within the risk zone in this study. The same argument might account for the differences between our data and those of a sample of Norwegian medical specialists [3]. In this study, 7.6% of the female specialists (and 18.0% of the female surgeons) scored positive on the AUDIT-C. Again, in this study, the same cutoff (i.e. total AUDIT score ≥ 9) was used for both men and women, possibly explaining the difference with our (higher) results. In support of this hypothesis, we recalculated our data, using the same cut-off (≥ 8) for men and women. This revealed that 5% of the female medical specialists fell within a hazardous drinking range (instead of $\pm 15\%$), which is more in line with the previous studies.

As expected, there were marked gender differences in the different medical specialties with (male-dominated) surgical specialties at one extreme and (female-dominated) paediatrics at the other. Although no significant differences between specialties were found based upon the AUDIT scores, there proved to be noteworthy differences regarding CAGE scores, which were most marked among female participants. In addition, female surgeons had very high rates of monthly binge drinking compared with other (female) specialists. This finding is in line with Rosta and Aasland [3], who found that female surgeons had a greater prevalence of higher alcohol consumption. Taken together, our results show that differences between medical specialties are most prominent among female doctors and suggest that female doctors in disciplines that are traditionally associated with a heavy workload, irregular hours, frequent duties and a high frequency of acute stressful situations are more inclined to drink on a risky level. As to male doctors, differences between the

different specialities proved to be more discreet and not significant, suggesting that differences in type of work do not influence their alcohol use patterns very much. Importantly, our data do not allow making interpretations on causality. Furthermore, our data provide support for a convergence between male and female medical specialists' drinking behaviours, especially among specific specialities. Notwithstanding the fact that female doctors exhibit different and lower drinking behaviours compared with their male counterparts, female doctors seem to have lower overall abstinence rates and end up more frequently in risky drinking behaviours, compared with the general population. This might indicate that female medical specialists are taking over more male drinking patterns as has already been suggested in earlier studies [3, 21, 22].

Finally, our data provided some support for the hypothesis that older doctors drink more frequently and more hazardingly. Indeed, on several AUDIT risk variables, the older age groups had higher scores. Moreover, total AUDIT scores correlated positively with age, indicating that older age is related with higher AUDIT scores. Remarkably, this correlation proved to be most marked among female participants. In contrast, although a comparable trend was found among male participants, this did not yield significant results. Overall, our data are consistent with earlier studies indicating that younger doctors have a different, healthier attitude towards alcohol use [4]. Harrison and Chick [23] reflected upon this trend, hoping that the emphasis placed upon the dangers of alcohol by young doctors would contribute to an increased risk awareness as was the case with the change in doctors' smoking habits. Overall, several factors may be hypothesized to play a role in the development of healthier attitudes to alcohol use among younger doctors. First, cultural changes or traditions may play an important role in defining normative drinking patterns. Second, changes in working conditions and in regulations in hospitals, which have been implemented already in many countries, might lead to a shift towards healthier alcohol use pat-

terns. Third, drinking norms may also be reflected by gender composition at the workplace. Indeed, doctors working in a specialty with a lower percentage of male doctors, tend to drink less heavily [4].

Taken together, this study is the first and, to the best of our knowledge, the only one that explored alcohol consumption in a sizeable sample of medical specialists working in a broad variety of professional settings, representing a naturalistic reflection of the medical specialist profession in Western Europe. The results show that alcohol use is widely integrated in the lifestyle of these doctors, and compared with the general population rates, we conclude that the levels of alcohol consumption and the rates of hazardous alcohol use are at the high end in this population.

This survey has several limitations. First, the small response rate (6.1%) might question the representativeness of the sample. In addition, our sample displays a small overrepresentation of female medical specialists, specialists younger than 30 years and specialists within the field of psychiatry and neurology, compared with the general population of specialist doctors. This overrepresentation might bias our results. However, we compared our sample characteristics with all Belgian medical specialists who were originally surveyed and found that our sample was similar to the national medical specialist population regarding its age distribution and relative participation of the different medical specialities. In addition, although a higher proportion of women participated in the survey compared with the overall specialist population, this difference was not statistically significant. Next, doctors with alcohol or other mental health problems might have been less inclined to participate, which may have led to an underestimation of alcohol consumption. Taken together, although the sample in the survey was, in our view, representative of the medical specialist population, our results must be interpreted with caution. Finally, we limited ourselves to the medical specialist population, so the results cannot be extrapolated to general practitioners or other medical professionals.

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