Factors associated with psychiatric morbidity and hazardous alcohol use in Australian doctors

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ABSTRACT

Objective: To identify factors associated with psychiatric morbidity and hazardous alcohol use in Australian doctors.

Design, setting and participants: Cross-sectional postal survey of 2999 doctors (including all major specialty groups, trainees and general practitioners) insured with an Australian medical insurance company. The potential for psychiatric morbidity was measured by the General Health Questionnaire (GHQ), and the potential for hazardous alcohol use by the Alcohol Use Disorders Identification Test (AUDIT). The survey was conducted in 2007.

Main outcome measures: Demographic, work-related and personality factors associated with a GHQ score > 4 and an AUDIT score ⩾ 8.

Results: Factors significantly associated with psychiatric morbidity in doctors were: having a current medicolegal matter, not taking a holiday in the previous year, working long hours, type of specialty, and having personality traits of neuroticism and introversion. Factors significantly associated with potentially hazardous alcohol use were being male, being Australian-trained, being between 40 and 49 years of age, having personality traits of neuroticism and extroversion, failing to meet Continuing Medical Education requirements, and being a solo practitioner.

Conclusions: The mental health of medical practitioners is crucial to the quality of care their patients receive. Doctors should reflect on their hours of work and need for holidays. Involvement with medicolegal processes, such as lawsuits, complaints and inquiries, is a stressful part of medical practice today. Doctors need to be educated about these processes and understand how the experience may affect their health, work and loved ones.

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Doctors with high levels of psychiatric morbidity or hazardous alcohol use may provide a lesser standard of care than doctors without these problems.[1] Factors associated with psychiatric illness in doctors include stressors within and outside of work, personality type (particularly neuroticism) and family history of mental illness.[2-5] Specific factors reported in the literature include working long hours,[6,7] being young, working night duty, being divorced,[8] having high stressful life-event scores,[9] and having experienced medicolegal matters.[7,10-19] Factors that have been associated with hazardous levels of alcohol consumption in doctors include having high stress and anxiety levels,[20] being male, being a surgeon,[21,22] and having experienced a medicolegal matter.[19]

In 2007, a questionnaire was administered to all major groups of specialist doctors insured with UNITED Medical Protection (before it merged with another company to become Avant Mutual Group Limited). The questionnaire examined work-related factors, including medicolegal matters, demographic factors and personality factors.

We have previously analysed the responses from the questionnaire to examine the factors associated with Australian doctors experiencing a medicolegal matter.[23] This study investigates whether factors reported in the literature and other factors — including not taking a holiday in the previous year, being Australian-trained, attending a peer review, meeting continuing medical education (CME) requirements, and having a current medicolegal matter — are associated with psychiatric morbidity and hazardous alcohol use for this broad range of Australian doctors. Results from a similar questionnaire administered only to GPs have been published previously.[19]

This is a collaborative research project between the University of Sydney and Avant.

METHODS

A questionnaire was mailed to all specialists (obstetricians, gynaecologists, physicians, surgeons, anaesthetists, psychiatrists, pathologists, radiologists, paediatricians, and accident and emergency specialists), registrars and specialists in training, and a sample of GP non-proceduralists who had been insured with UNITED. GP proceduralists were not included as they had participated the previous year in a similar GP study.[19] Surveys were returned by reply-paid mail. Four weeks later, a reminder letter and repeat questionnaire were sent to non-respondents.

The questionnaire elicited demographic and practice details — age, sex, specialty, hours worked per week, country of medical degree, teaching role, attendance at peer review, fulfilment of CME requirements, holiday in previous 12 months — and measures of personality, psychiatric morbidity and alcohol use. The questionnaire also asked if the doctor had ever experienced any of the following medicolegal matters: a claim for compensation for damages, complaint to a health care complaints body, medical registration board inquiry, disciplinary hearing, Medicare Australia/Health Insurance Commission (HIC) inquiry, hospital dispute, hospital investigation, pharmaceutical services inquiry, complaint before an anti-discrimination board, coronial inquiry, criminal charge, or patient complaint direct to the doctor.

Personality was measured using the Eysenck Personality Questionnaire (EPQ) — Revised Short Scale version.[24] The EPQ is a valid and reliable self-report questionnaire that measures three major dimensions of personality: extroversion (a low score representing introversion); neuroticism (measuring emotional stability or sensitivity); and "psychoticism" (measuring tough mindedness and, at the extreme, lack of empathy, but not actual psychotic features).

Psychiatric morbidity was assessed using the General Health Questionnaire-28 (GHQ),[25] a sensitive and well validated screening tool to detect common non-psy-

chotic psychiatric morbidity by considering symptoms over the previous 2 weeks. It has four subscales: somatic symptoms; anxiety and insomnia; social dysfunction; and depression. Case identification for risk of psychiatric morbidity was based on a combined score > 4, using binary scoring for each question (with the two least symptomatic answers scoring 0 and the two most symptomatic answers scoring 1).

Alcohol use was assessed using the World Health Organization's Alcohol Use Disorders Identification Test (AUDIT),[26] a sensitive 10-item questionnaire to detect hazardous and harmful drinking. Subjects scoring a total of 8 or more were classified as potentially hazardous drinkers (AUDIT case identification).

Our study compared respondents with non-respondents by age, sex, specialty and experience of medicolegal matters.

Ethics approval

Our study was approved by the human research ethics committees of Northern Sydney Central Coast Area Health and the University of Sydney, and the board of Avant. Anonymity and confidentiality were protected at all times.

Statistical analysis

Data were analysed using SAS software, version 9.1 (SAS Institute Inc, Cary, NC, USA). Univariate analyses were conducted using Pearson's χ^2 tests. Multivariate logistic regression models were fitted to outcome measures of both GHQ case identification for psychiatric morbidity and AUDIT case identification for potentially hazardous drinking. Variables were included if their univariate *P* value was less than 0.3. The fit of the model was checked using the Hosmer–Lemeshow goodness-of-fit test.[27]

RESULTS

Characteristics of respondents

Of 8500 doctors invited to participate in the study, 140 declined, and surveys were sent to the remaining 8360. Of these, 2999 (36%) responded.

The mean number of hours worked per week was 44.8 (SD, 15.1), with male doctors averaging 48.0 hours (SD, 14.2) and female doctors averaging 37.1 hours (SD, 14.3). The mean number of weeks worked per year was 46.0 (SD, 6.0). Thirteen per cent of the cohort had not taken a holiday in the previous 12 months. About two-thirds of respondents (1902/2942 [65%]) had experienced medicolegal matters, with 426 (14%) having a current matter.

We have previously reported the demographic and practice details, and the type, frequency and factors associated with medicolegal matters for this study,[23] including a detailed comparison of respondents with non-respondents. There were only minor differences between the two groups.

1 Univariate and multivariate* analysis of factors associated with psychiatric morbidity (GHQ score > 4)

Variable	No.	GHQ score > 4 (%)	*P*†	AOR (95% CI)‡	*P*‡
Medical specialty			0.008		0.03
General practitioner	589	177 (30)		1.00	
Obstetrician/gynaecologist	177	43 (24)		0.72 (0.44–1.17)	
Surgeon	359	89 (25)		0.74 (0.49–1.10)	
Anaesthetist	350	83 (24)		0.71 (0.49–1.02)	
Psychiatrist	230	64 (28)		1.09 (0.71–1.67)	
Pathologist	86	18 (21)		0.41 (0.21–0.81)	
Radiologist	106	32 (30)		1.06 (0.62–1.81)	
Physician	478	138 (29)		0.96 (0.68–1.36)	
Accident and emergency specialist	60	15 (25)		0.81 (0.40–1.66)	
Paediatrician	140	40 (29)		0.91 (0.56–1.48)	
In training§	252	91 (36)		1.05 (0.69–1.59)	
Other	126	22 (17)		0.43 (0.25–0.76)	
Sex			0.006		0.99
Female	868	269 (31)		1.00	
Male	2085	543 (26)		1.00 (0.78–1.28)	
Age group (years)			< 0.001		0.001
< 40	482	148 (31)		1.00	
40–49	872	271 (31)		1.10 (0.81–1.50)	
50–59	917	281 (31)		0.89 (0.65–1.23)	
⩾ 60	682	112 (16)		0.58 (0.39–0.84)	
Country in which medical degree obtained¶			0.82		
Australia	2470	682 (28)			
Overseas	476	129 (27)			
Solo practice			0.006		0.04
No	2044	592 (29)		1.00	
Yes	899	216 (24)		0.78 (0.61–0.99)	
Marital status			0.05		0.29
Single	231	70 (30)		1.00	
Partnered	2511	668 (27)		1.17 (0.83–1.65)	
Divorced/separated	154	56 (36)		1.31 (0.78–2.19)	
Widowed	38	11 (29)		2.34 (0.95–5.77)	

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GHQ = General Health Questionnaire–28. AOR = adjusted odds ratio. * Hosmer–Lemeshow goodness-of-fit test, *P* = 0.37. † Univariate analysis. ‡ Multivariate analysis. § Specialist in training, hospital registrar, GP registrar. ¶ This variable was not included in the multivariate analysis (*P* value > 0.3 in the univariate analysis). ◆

Potential for psychiatric morbidity

GHQ case identification for psychiatric morbidity for the total cohort was 28% (31% for women, 26% for men). The results of the univariate and multivariate logistic regression analyses for psychiatric morbidity found by GHQ case identification are shown in Box 1. All variables were included in the multivariate analysis except teaching role (for which the *P* value was > 0.3 in the univariate analysis).

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Variable	No.	GHQ score > 4 (%)	$P^{\dagger}$	AOR (95% CI)‡	$P^{\ddagger}$
Hours worked per week			0.007		0.02
< 40	823	194 (24)		1.00	
40–49	753	209 (28)		1.23 (0.93–1.62)	
50–59	747	210 (28)		1.41 (1.05–1.89)	
⩾ 60	596	190 (32)		1.65 (1.20–2.26)	
Peer review in previous 12 months			0.1		0.65
No	875	257 (29)		1.00	
Yes	2056	543 (26)		0.95 (0.75–1.19)	
CME requirements			0.27		0.32
Not met	112	36 (32)		1.29 (0.78–2.11)	
Met or not applicable	2785	764 (27)		1.00	
Teaching role¶			0.35		
No	1008	267 (26)			
Yes	1907	536 (28)			
Holiday in previous 12 months			< 0.001		< 0.001
No	388	161 (41)		1.92 (1.47–2.50)	
Yes	2526	643 (25)		1.00	
Current medicolegal matter			< 0.001		< 0.001
No	2478	638 (26)		1.00	
Yes	421	163 (39)		1.96 (1.52–2.54)	
Psychoticism			0.08		0.80
⩽ Median	1776	508 (29)		1.00	
> Median	1090	279 (26)		0.97 (0.80–1.19)	
Extroversion			< 0.001		0.04
⩽ Median	1594	500 (31)		1.00	
> Median	1238	280 (23)		0.81 (0.67–0.99)	
Neuroticism			< 0.001		< 0.001
⩽ Median	1714	252 (15)		1.00	
> Median	1154	542 (47)		4.65 (3.82–5.65)	

GHQ = General Health Questionnaire–28. AOR = adjusted odds ratio. CME = Continuing Medical Education. * Hosmer–Lemeshow goodness-of-fit test, $P = 0.37$. † Univariate analysis. ‡ Multivariate analysis. ¶ This variable was not included in the multivariate analysis (P value > 0.3 in the univariate analysis.) ◆

In the multivariate analysis, significant demographic and work-related variables associated with increased potential for psychiatric morbidity were: having a current medicolegal matter (odds ratio [OR], 1.96 [95% CI, 1.52–2.54]); not having had a holiday in the previous year (OR, 1.92 [95% CI, 1.47–2.50]); and working long hours per week (OR, 1.65 [95% CI, 1.20–2.26] for ⩾ 60 hours compared with < 40 hours). Specialty was also statistically significant ($P = 0.03$) (Box 1). Doctors 60 years of age or older had a lower likelihood of psychiatric morbidity than doctors under 40 years of age (OR, 0.58 [95% CI, 0.39–0.84]). Solo practitioners had a lower risk of psychiatric morbidity than non-solo practitioners (OR, 0.78 [95% CI, 0.61–0.99]). The personality trait of neuroticism (defined as having a neuroticism score greater than the median) was the highest risk factor for psychiatric morbidity (OR, 4.65 [95% CI, 3.82–5.65]). Introversion was also a statistically significant risk factor for psychiatric morbidity ($P = 0.04$).

Potential for hazardous alcohol use

AUDIT case identification for potential for hazardous alcohol use for the total cohort was 15% (8% for women, 17% for men). The results of the univariate and multivariate logistic regression analyses for potentially hazardous alcohol use are shown in Box 2.

Demographic and work-related variables in the multivariate analyses associated with increased risk of potentially hazardous drinking were: being male (OR, 2.55 [95% CI, 1.83–3.55]); being aged 40–49 years compared with under 40 years (OR, 1.86 [95% CI, 1.22–2.83]); not having met CME requirements (OR, 1.72 [95% CI, 1.04–2.87]); and being a solo practitioner rather than a non-solo practitioner (OR, 1.33 [95% CI, 1.01–1.75]). Neuroticism (OR, 2.20 [95% CI, 1.74–2.78]), extroversion (OR, 1.62 [95% CI, 1.28–2.04]) and psychoticism (OR, 1.27 [95% CI, 1.01–1.60]) were all associated with potential for hazardous alcohol use. Doctors were at less risk of hazardous alcohol use if they: trained overseas rather than in Australia (OR, 0.56 [95% CI, 0.39–0.81); worked more than 60 hours a week compared with less than 40 hours a week (OR, 0.67 [95% CI, 0.45–0.99]); and had not taken a holiday in more than a year (OR, 0.63 [95% CI, 0.43–0.93]).

DISCUSSION

Our investigation found that the personality trait of neuroticism carried the highest risk for psychiatric morbidity. Of work-related factors, having a current medicolegal matter was the factor most associated with psychiatric morbidity, followed by not taking a holiday in the previous year and working long hours.

For potentially hazardous alcohol use, demographic and personality factors were more significant than work-related factors. The greatest risk factors for hazardous alcohol use were being male, having an Australian medical degree, and having personality traits of neuroticism and extroversion. Two work-related factors were also associated: being a solo practitioner, and not meeting CME requirements. There was no significant association between having a current medicolegal matter and potentially hazardous alcohol use ($P = 0.09$).

Interestingly, doctors who worked long hours and had not taken a holiday in the previous year were more likely to have psychiatric morbidity but less likely to drink alcohol hazardously, perhaps because they

had less opportunity to do so due to their work demands.

Our findings that long working hours and the work-related stressor of a medicolegal matter were associated with psychiatric morbidity in doctors are consistent with the findings of other studies.[6,8-12,16-18] Our finding that older doctors had a lower risk of psychiatric morbidity is consistent with a recent Australian study.[28]

The proportion of clinicians with a GHQ case identification (28%) was close to that observed in the GP study (27%).[19] The level of psychiatric morbidity was higher among study participants than in a South Australian general population study, where case identification was 19.5%.[29]

The reported prevalence of potentially hazardous alcohol use in our study (15%) was higher than that in the GP study (12%)[19] and similar to that found in a general Canadian population (14%).[30] The female case identification of 8% in our study was the same as that of the Australian national survey of alcohol use in Australian women.[31]

Our study showed that potentially hazardous alcohol use occurs more in male than female doctors, as reported in other studies.[20,21] However, no specific speciality group was identified as being significantly more associated with hazardous alcohol use. This contrasts with a German study that found surgeons to be more likely to drink hazardously.[21]

Considering personality variables, the results of our study are consistent with the GP study[19] and an English study[5] in finding that neuroticism and introversion are associated with psychiatric morbidity. The association of neuroticism, extroversion and psychoticism with potentially hazardous alcohol use is similar to the findings of the GP study.[19]

A medicolegal matter should be regarded as a predictable work-related stressor for which doctors need to be prepared, considering that two-thirds of our sample had experienced a matter at some time and 14% had a current matter. Just as they would advise their own patients, doctors should actively manage stressful life events using positive coping strategies. These strategies include stress reduction techniques, regular exercise, good sleep and diet, as well as working fewer hours a week, being well informed about the legal process, seeking advice from one's own doctor to ameliorate distress and anxiety, and avoiding negative coping strategies like excessive alcohol consumption and self-medication.

2 Univariate and multivariate* analysis of factors associated with hazardous alcohol use (AUDIT score ⩾ 8)

Variable	No.	AUDIT score ⩾ 8 (%)	P†	AOR (95% CI)‡	P‡
Medical specialty			0.25		0.54
General practitioner	590	73 (12)		1.00	
Obstetrician/ gynaecologist	179	27 (15)		0.96 (0.54–1.70)	
Surgeon	357	67 (19)		0.92 (0.58–1.46)	
Anaesthetist	351	63 (18)		1.10 (0.72–1.69)	
Psychiatrist	231	35 (15)		0.89 (0.53–1.49)	
Pathologist	89	11 (12)		0.95 (0.46–1.99)	
Radiologist	107	16 (15)		0.74 (0.37–1.48)	
Physician	480	65 (14)		0.81 (0.53–1.24)	
Accident and emergency specialist	63	10 (16)		0.93 (0.41–2.13)	
Paediatrician	142	16 (11)		0.85 (0.45–1.59)	
In training§	254	33 (13)		1.73 (1.00–2.99)	
Other	128	22 (17)		1.28 (0.72–2.27)	
Sex			< 0.001		< 0.001
Female	873	72 (8)		1.00	
Male	2098	366 (17)		2.55 (1.83–3.55)	
Age group (years)			< 0.001		0.01
< 40	485	46 (9)		1.00	
40–49	874	145 (17)		1.86 (1.22–2.83)	
50–59	924	157 (17)		1.78 (1.15–2.76)	
⩾ 60	688	90 (13)		1.35 (0.84–2.19)	
Country in which medical degree obtained			< 0.001		< 0.001
Australia	2484	394 (16)		1.00	
Overseas	480	44 (9)		0.56 (0.39–0.81)	
Solo practice			0.004		0.04
No	2058	278 (14)		1.00	
Yes	903	159 (18)		1.33 (1.01–1.75)	
Marital status			0.011		0.08
Single	231	21 (9)		1.00	
Partnered	2529	386 (15)		1.60 (0.96–2.67)	
Divorced/separated	154	29 (19)		2.12 (1.08–4.17)	
Widowed	38	2 (5)		0.57 (0.12–2.71)	

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AUDIT = Alcohol Use Disorders Identification Test. AOR = adjusted odds ratio. * Hosmer–Lemeshow goodness-of-fit test, $P = 0.32$. † Univariate analysis. ‡ Multivariate analysis. § Specialist in training, hospital registrar, GP registrar. ◆

The strength of our study was its large sample size, representing 5% of the entire Australian medical workforce and around 10% of the non-GP specialist groups (ranging from 9% for physicians to 14% for obstetricians and gynaecologists.[32] Although the response rate to our survey (36%) was relatively low, the idea that a high response rate is necessary has been challenged (as discussed in our previous study).[23]

The mental health of medical practitioners is crucial to good patient care. Unlike personality traits, the work-related and lifestyle factors associated with psychiatric morbidity and hazardous alcohol use are more easily addressed. Doctors should reflect on their hours of work and need for holidays. Involvement with medicolegal processes, such as lawsuits, complaints and inquiries, are a stressful part of medical

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Variable	No.	AUDIT ⩾ 8 (%)	P†	AOR (95% CI)‡	P‡
Hours worked per week			< 0.001		0.01
< 40	819	94 (11)		1.00	
40–49	762	120 (16)		1.13 (0.81–1.58)	
50–59	756	142 (19)		1.15 (0.82–1.62)	
⩾ 60	599	74 (12)		0.67 (0.45–0.99)	
Peer review in previous 12 months			0.17		0.91
No	882	118 (13)		1.00	
Yes	2066	317 (15)		1.02 (0.77–1.35)	
CME requirements			0.001		0.04
Not met	113	29 (26)		1.72 (1.04–2.87)	
Met or not applicable	2806	401 (14)		1.00	
Teaching role¶			0.35		
No	1014	141 (14)			
Yes	1922	292 (15)			
Holiday in previous 12 months			0.01		0.02
No	388	41 (11)		0.63 (0.43–0.93)	
Yes	2545	389 (15)		1.00	
Current medicolegal matter			< 0.001		0.09
No	2500	344 (14)		1.00	
Yes	421	86 (20)		1.30 (0.96–1.75)	
Psychoticism			0.004		0.04
⩽ Median	1781	238 (13)		1.00	
> Median	1089	188 (17)		1.27 (1.01–1.60)	
Extroversion			0.007		< 0.001
⩽ Median	1592	212 (13)		1.00	
> Median	1245	211 (17)		1.62 (1.28–2.04)	
Neuroticism			< 0.001		< 0.001
⩽ Median	1719	205 (12)		1.00	
> Median	1155	226 (20)		2.20 (1.74–2.78)	

AUDIT = Alcohol Use Disorders Identification Test. AOR = adjusted odds ratio. CME = Continuing Medical Education. * Hosmer–Lemeshow goodness-of-fit test, $P = 0.32$. † Univariate analysis. ‡ Multivariate analysis. ¶ This variable was not included in the multivariate analysis (P value > 0.3 in the univariate analysis.) ◆

practice today. Doctors need to be educated about medicolegal processes and understand how the experience may affect their health, their work and their loved ones.

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COMPETING INTERESTS

Avant provided funding for a part-time research officer (Michele Daly) and mail-out of the questionnaire, as well as inhouse support for sample selection and comparison. Simon Willcock is an elected board member of Avant. Elizabeth van Ekert is a former employee of Avant.

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