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Common mental disorder and suicidality among doctors: differences by specialty

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Background Common mental disorders (CMDs) and suicidal ideation (SI) are prevalent among doctors, yet limited evidence exists investigating the relationship of specialty area to these outcomes.

Aims This study aimed to determine the prevalence of likely CMD and SI among doctors and to investigate whether likelihood of these outcomes varied by area of medical specialty.

Methods A secondary analysis of a representative national survey of 12,252 Australian doctors was conducted. Demographic and work-related variables, SI and CMD (GHQ-28), were assessed among doctors (n = 7037; 57%) working in a range of specialty areas. Logistic regression was used to examine the association between specialty and mental health outcomes in unadjusted and adjusted models.

Results Almost one-quarter of doctors (n = 1560; 23%) reported symptom levels indicating likely CMD whilst 9% (n = 667) reported SI in the last year. Doctors in surgery (adjusted odds ratio [OR] = 0.73, 95% confidence interval [CI] 0.54–0.97, P = 0.03) were at significantly lower risk of CMD than General Practitioners (GPs), whilst doctors in anaesthetics (adjusted OR = 1.45; 95% CI 1.09–1.93, P = 0.01) and paediatrics (adjusted OR = 1.88; 95% CI 1.02–3.47, P = 0.04) were at significantly higher risk of experiencing SI compared to GPs after accounting for confounders.

Conclusions Results demonstrated that doctors in Australia working in certain specialties, specifically anaesthetics and paediatrics, were at significantly greater risk of suicidal ideation compared to GPs after accounting for confounders. Interventions to address CMD and SI among doctors in all specialties remain urgently needed.

Introduction

There has been increasing international concern about high rates of mental health problems among medical professionals [1,2] including depression [3] and suicidal ideation [4,5]. Mental ill health among doctors not only affects the individual, but can have negative consequences for patient safety [6] and quality of care. There is growing recognition of the role that professional, workplace and systemic factors play alongside individual-level factors in understanding mental ill health among doctors [1,2]. One of the work-related factors that has been considered is a doctors' area of medical specialty. Specialists comprise the majority of the medical workforce in Australia [7] and internationally and are increasing worldwide [8]. However, most research in this area has assessed the association between specialty and non-clinical mental health outcomes, such as burnout and job satisfaction.

There is limited research investigating the association of specialty area with clinical mental health outcomes, in particular common mental disorder (CMD) and suicidal ideation (SI), and even less evidence as to why these differences may be present. A 2019 systematic review and meta-analysis of suicide risk among physicians and healthcare workers [5] identified 55 eligible studies among physicians, of which 85.5% (n = 47) reported deaths by suicide, whilst only 7 studies assessed SI. Results indicated a high prevalence of SI among physicians but high study heterogeneity (I^2 = 98.8%) and insufficient data to stratify by specialty. Authors noted more robust data on suicidality were needed given doctors are at risk for suicide mortality [5]. Whilst estimates vary, rates of SI among doctors are concerning, with one of the few representative national Australian surveys assessing SI reporting lifetime SI among doctors was significantly higher than the general population and other occupations [9]. A US survey representing over 29 specialties reported on average, 13% of doctors experienced suicidal thoughts, with certain specialties at higher risk [10]. However, no differences in SI prevalence were observed by specialty [4]. Further research is needed to clarify the evidence.

Similarly, high rates of psychiatric morbidity among doctors have been identified worldwide [11]. However, the majority of these studies use symptom assessments rather than diagnostic criteria, do not provide national-level prevalence data nor examine rates across a range of specialties. The Beyond Blue report found 27% of Australian doctors were classified as having a high likelihood of a minor psychiatric disorder, yet did not report analyses by specialty [9]. Investigations of this relationship are scarce, but concerning, finding specialty area was

Key learning points

What is already known about this subject:

- Medical practitioners experience high rates of psychiatric morbidity and suicidality.
- Limited research has investigated the relationship of specialty area with suicidal ideation and common mental disorder.
- The current analysis aims to investigate whether the prevalence and risk of common mental disorder and suicidal ideation among doctors vary by specialty area.

What this study adds:

- This study provides national representative data on rates of common mental disorder and suicidal ideation among a diverse range of specialties and among all doctors.
- There are significant differences by medical specialty (with General Practitioners set as the reference group) in the likelihood of probable common mental disorder and suicidal ideation.
- After adjusting for confounders, surgeons had significantly lower odds of common mental disorder compared to General Practitioners, whilst paediatricians and anaesthetists were at significantly higher risk of experiencing suicidal ideation compared to General Practitioners.

What impact this may have on policy or practice:

- Findings demonstrate the considerable burden of common mental disorder and suicidal ideation among doctors and among at-risk specialty groups.
- The results inform future interventions and policy by identifying groups most at risk for these outcomes, and therefore, suggest the need for both specialty-specific and medicine-wide strategies to address mental ill health among doctors.
- There is a need for more research to explore the individual, organizational, professional and systemic risk factors for common mental disorder and suicidal ideation within specialty groups and the medical workforce as a whole.

significantly associated with psychiatric morbidity [12] and that risk of depression, anxiety and insomnia varied by specialty area [13]. Further systematic examination of the relationship between CMD and specialty is necessary.

Speculation about which specialty areas are at 'high risk' for mental health problems has been based mainly on studies of doctors in one specialty [14] or a limited number of specialties [15]. These studies tend to rely on convenience sampling, feature small, highly selected samples and are largely conducted overseas and between-study heterogeneity is a major problem. Further research with large samples, representative national data representing a range of medical specialties where analyses adjust for confounders is required to clarify these issues.

To date, investigation of the relationship between CMD, SI and medical specialty remains limited. As such, robust data on these under-represented outcomes and their relationship to medical specialty is essential to direct interventions and mental health resources to those doctors most at risk. There is a clear need for further evidence in two areas; first, the extent of CMD and SI among doctors, and second, the association of medical specialty with these outcomes. To address these gaps, the current study aims to examine the rates of CMD and SI in doctors and different specialties and to investigate whether specialty area is associated with CMD and SI using a national representative survey of Australian doctors.

Methods

This study utilized existing cross-sectional data collected as part of the 2013 Beyond Blue National Mental Health Survey of Doctors and Medical Students [16], which has been used to examine CMD and SI among doctors-in-training [17,18] and provides an ideal resource to investigate these outcomes and their relationship to specialty area among doctors. A randomly selected sample of 42,924 doctors was invited to participate, of whom 12,252 doctors completed the survey (response rate = 27%) [16]. The methodology is described in detail elsewhere [9]. The recruitment and data collection in the original survey were approved by Monash University Human Research Ethics Office and Committee (CF12/2295–2012001228). The current study was approved by University of New South Wales Human Research Ethics Committee (HC190896).

The population of interest for this study comprised currently employed consultant doctors in any specialty (full or part time). The Australian term 'consultant' refers to 'specialist medical practitioners', that is, fully qualified medical practitioners who have completed specialist training and attained fellowship in a relevant college. In this study, we use the international term 'doctors' to refer to this group. General Practitioners (GPs) and all other specialties reported were included. Retired doctors (n = 458, 4%) and doctors-in-training (n = 3074, 30%) were excluded. A total of 7037 doctors provided valid responses (response rate = 57%) and formed the final dataset used for analysis.

There were two mental health outcomes: (i) caseness of likely CMD and (ii) presence of SI in the last year. CMD was assessed using the validated 28-item General Health Questionnaire (GHQ-28) [19], a widely used measure of symptoms of psychological distress and possible mental illness [20] used successfully in Australian doctors [12]. This study uses the recommended binary scoring method (0-0-1-1) [21] where a total GHQ-28 score of 5 or above indicates the presence of symptoms of distress indicative of a likely case of CMD [20], a cut-off comparable to clinician-delivered diagnostic assessments in the general population [20]. SI was indicated by a positive response to a single item: 'During the last 12 months, have you had thoughts of taking your own life?' (yes/no). Originating from an inventory developed by Meehan, Lamb [22] assessing SI among medical. Demographic and work-related variables assessed included gender, age category, marital status and workplace location. Area of specialty was assessed using an open-ended text response, and responses were categorized into

13 specialty areas (Table S1, available as Supplementary data at *Occupational Medicine* Online).

Sample characteristics and rates of CMD and SI were examined descriptively. Chi-square tests of independence were performed to examine the relationship between specialty and CMD and SI. Univariate unadjusted logistic regression was used to test for significant associations between a set of potential demographic and work-related confounders the literature suggests may be important in CMD and SI. A series of adjusted stepwise multivariate logistic regression analyses were conducted to examine the association between specialty area and CMD and SI, controlling for age group, gender and any confounders identified in the previous step as significantly associated with either mental health outcome. The final adjusted model for CMD controlled for age group, gender, marital status and number of children living at home. The final adjusted model for SI controlled for age group, gender, marital status and work location. The reference group for all analyses by area of specialty was GPs, which comprised the largest specialty group (40%, $n = 2669$) and has been used as the comparator in another study of Australian doctors [12]. Unadjusted and adjusted odds ratios (ORs) and 95% confidence intervals (95% CIs) were calculated as estimates of effect size. Analyses were conducted in IBM SPSS (v26).

Results

A detailed breakdown of the sample including demographics and specialty area is available in Table S2 (available as Supplementary data at *Occupational Medicine* Online). The sample was generally representative of the national medical workforce in 2015 [7]. In total, 23% ($n = 1560$) of doctors reported symptom levels indicative of likely CMD, whilst 9% ($n = 667$) reported having experienced SI in the last 12 months (Table 1). These prevalence rates exceed working age general Australian population (18–64 years) in 2014 for probable CMD (12% [95% CI 11.6–12.7]) [23] and for suicidal thoughts in the last year in 2020–21 (16–85 years; 3% [margin of exposure = 0.6]) [24]. There was a significant relationship between CMD status and specialty ($n = 6509$; $\chi^2 = 23.07$, df = 12, $P = 0.027$); however, the relationship between SI and specialty was not significant ($n = 6743$; $\chi^2 = 17.82$, df = 12, $P = 0.12$).

A series of unadjusted univariate logistic regressions were conducted to examine the association between demographic and work-related variables and mental health outcomes (Table 2). Gender and number of children were significantly associated with likely CMD, whilst current workplace location was significantly associated with SI. Female doctors were 1.5 times more likely than male doctors to report likely CMD ($P < 0.01$) and doctors with one or more children ($P < 0.01$) had a significantly higher risk of experiencing likely CMD compared to doctors with no children living at home. Doctors currently working in rural or regional areas had significantly greater odds of experiencing SI compared to doctors working in metropolitan areas ($P = 0.003$). Doctors aged 61 years and over were significantly less likely to report likely CMD than doctors aged 26–30 ($P < 0.01$) and married doctors had significantly lower odds of likely CMD ($P < 0.01$) and SI ($P < 0.01$) compared to single doctors.

In the adjusted logistic regression analyses investigating the association between area of specialty and likely CMD (Table 3), surgeons had significantly lower odds of being classified as a likely case of CMD (OR = 0.73; 95% CI 0.54–0.97, $P = 0.03$) compared to GPs. Doctors in anaesthetics (OR = 1.45; 95% CI 1.09–1.93, $P = 0.011$) and paediatrics (OR = 1.88; 95% CI 1.02–3.47, $P = 0.044$) had significantly higher odds of experiencing SI in the last 12 months compared to GPs (Table 4). None of the other comparisons of the specialty groups to GPs reached statistical significance in the final adjusted models. The overall final adjusted model was significant for likely CMD ($\chi^2 = 152.83$, df = 22, $P < 0.001$) and for SI ($\chi^2 = 131.66$, df = 20, $P < 0.001$).

Table 1. Proportion of doctors reporting likely common mental disorder and suicidal ideation overall and within each specialty.

	Common mental disorder (CMD)		Suicidal ideation (SI)	
		Likely CMD		Endorsed SI
	N	*n* (%[c])	*N*	*n* (%[c])
All doctors	6774	1560 (23)	7019	667 (9)
All specialties[a]	6509	1500 (23)	6743	631 (9)
Specialty				
General Practice	2584	617 (24)	2661	248 (9)
Emergency Medicine/ ICU	302	56 (19)	313	35 (11)
Anaesthetics	558	147 (26)	577	73 (13)
Internal Medicine	858	196 (23)	889	75 (8)
Psychiatry	383	75 (20)	401	35 (9)
Paediatrics	85	17 (20)	89	13 (15)
Obstetrics/ Gynaecology	453	114 (25)	477	36 (8)
Radiology/Imaging	199	51 (26)	208	16 (8)
Surgery	494	90 (18)	508	43 (90)
Pathology/Histology	127	27 (21)	132	<10 (6)
Dermatology	57	14 (25)	59	<10 (12)
Opthalmology	106	18 (17)	109	11 (10)
Other[b]	303	78 (26)	320	31 (10)

CMD, common mental disorder; ICU, Intensive Care Unit; SI, suicidal ideation in the last 12 months.
[a]Valid responses to the item assessing specialty.
[b]**Other**: Addiction Medicine, Administration/Education, Clinical Genetics, Drug and Alcohol, Forensic Medicine, Locum, Musculoskeletal Medicine, Sports and Exercise Medicine, Sexual Health, Cosmetic, Aboriginal\ Indigenous, Hospital Medical Officer, Pharmacology, Travel, Occupational Medicine\Occupational and Environmental Medicine, Medicolegal, Academic\Research, Chief Medical Officer, Management\Government, Administration\Education\Medical Education, Public Health Medicine.
[c]Percentages reported to whole numbers.

Discussion

This study had four main findings. First, after accounting for confounders, doctors working in paediatrics and anaesthetics reported significantly higher odds of SI compared to GPs. Importantly, this increased risk of SI did not coincide with significantly higher odds of CMD. The third main finding was that surgeons were at significantly lower risk of likely CMD compared to GPs after accounting for confounders. Finally, there was a general pattern of similarity across the specialties in the risk of experiencing CMD and SI in the adjusted models.

Table 2. Univariate associations between demographics and likely common mental disorder and suicidal ideation among doctors, showing unadjusted estimates for effect size (OR, 95% CI).

	Common mental disorder			Suicidal ideation		
Variable	**Unadjusted OR**	**95% CI**	***P* value**	**Unadjusted OR**	**95% CI**	***P* value**
Age group	*n* = 6761		<0.01	*n* = 7005		<0.01
26-30 years[a]						
31-40 years	0.84	0.47-1.52	0.57	0.74	0.31-1.77	0.50
41-50 years	0.80	0.45-1.44	0.46	0.99	0.42-2.33	0.97
51-60 years	0.61	0.34-1.1	0.10	1.06	0.45-2.50	0.90
61+ years	0.32*	0.18-0.58	<0.01	0.44	0.18-1.06	0.07
Gender	*n* = 6759			*n* = 7002		
Male[a]						
Female	1.53**	1.37-1.72	<0.01	1.08	0.92-1.26	0.37
Marital status	*n* = 6756		<0.01	*n* = 7000		<0.01
Single[a]						
Married/in committed relationship	0.58*	0.46-0.73	<0.01	0.42*	0.32-0.56	<0.01
Divorced/separated/widowed	0.90	0.67-1.21	0.49	0.96	0.67-1.38	0.83
Number of children living at home	*n* = 5674		<0.01	*n* = 5882		0.51
None[a]						
1–2 children	1.54*	1.33-1.79	<0.01	1.09	0.88-1.35	0.42
3–4 children	1.38*	1.13-1.67	0.01	1.12	0.86-1.47	0.40
5+ children	2.79	1.36-5.73	0.005	1.90	0.73-4.98	0.19
Location of workplace	*n* = 6758			*n* = 7000		
Metropolitan[a]						
Rural/regional	1.04	0.92-1.16	0.54	1.28*	1.09-1.50	<0.01

[a]Reference group.
*Significant at the $P < 0.01$ level in unadjusted model

To our knowledge, this is the first representative national study to examine the relationship between medical specialty and risk of CMD and SI among Australian doctors, and one of the few large-scale studies to compare these mental health outcomes among a diverse range of specialties. The strengths of this study include the use of a large national representative sample of doctors, inclusion of a variety of specialties and the use of validated clinical mental health outcomes. However, limitations to be considered include the cross-sectional design which limits conclusions around causality, the use of self-report measures, the potential for selection bias and the low response rate which, however, is comparable to other large-scale surveys of medical professionals [25]. The potential for response bias when using self-report mental health data also needs to be taken into account, for example, the potential for participants with CMD and SI being more motivated to respond to the survey, which has been identified in other large-scale occupation-specific studies of mental health [26,27]. Whilst the sample size was reasonable, certain specialty groups were limited in number and results need to be interpreted with caution. The potential for residual confounding needs to be considered, particularly in relation to personality, which can also influence specialty and career choice. Finally, the results may not be generalizable to other countries or time points. Whilst the data for this study were collected in 2013, these findings remain relevant, given the recent growth in the Australian medical profession [7]. An advantage of our study is that we utilized representative national data across a wide range of specialties to clarify and expand limited research into differences in psychiatric morbidity by specialty. As previous studies largely focus on one specialty area or compare a limited number of specialties, they are unable to clarify whether these differences are due to factors other than demographics, as was examined in this study. Whilst there is no 'perfect' comparator group, we believe our approach, that is, selecting GPs as the reference group is justified for several reasons. First, as there is limited research using national data to examine differences in clinical mental health outcomes between medical specialties, there is little precedence for what group would be best placed to use as a comparator within the medical profession. However, our approach to use GPs as comparators in analyses of differences in psychiatric morbidity has also been undertaken in a similar large-scale Australian study which found evidence consistent with our study [12]. Second, GPs comprised the largest specialty group and are suitable as a statistically robust comparison group. Third, GPs are a more homogenous group and are a more uniform comparator group, whilst other specialties are more heterogeneous. GPs provide a more consistent and sufficiently different group in terms of workplace setting, type of work, working hours and shift patterns which are important in employee mental health. Nevertheless, the choice of GPs as a comparator group needs to be taken into account when considering our findings.

Significantly elevated odds of SI among paediatricians compared to GPs, after accounting for confounders, is a novel finding, with paediatricians almost twice as likely as GPs to experience SI in the last year. As research into SI among paediatricians is scarce, there is limited comparable data. However, research has identified a number of occupational hazards associated with mental disorders among paediatricians which may help to understand this result, including high workloads,

Table 3. Association between area of specialty and likely common mental disorder among doctors, showing unadjusted and adjusted estimates for effect size (OR, 95% CI)

	Common mental disorder					
	Unadjusted OR	**95% CI**	***P* value**	**Adjusted OR[a] (*n* = 5453)**	**95% CI**	***P* value**
Age group**						<0.01
26–30 years[c]						
31–40 years				0.92	0.24–3.51	0.90
41–50 years				0.98	0.26–3.73	0.98
51–60 years				0.68	0.18–2.60	0.58
61+ years				0.37	0.10–1.43	0.15
Gender						0.03
Male[c]						
Female				1.18*	1.02–1.36	0.03
Marital status**						<0.01
Single[c]						
Married/in committed relationship				0.57	0.22–1.46	0.24
Divorced/separated/widowed				0.92	0.35–2.44	0.87
Number of children living at home						0.10
None[c]						
1–2 children				0.95	0.78–1.15	0.57
3–4 children				0.81	0.63–1.03	0.09
5+ children				1.74	0.81–3.78	0.16
Specialty						0.16
General Practice[c]						
Emergency Medicine/ICU	0.73*	0.54–0.98	0.04	0.75	0.53–1.06	0.11
Anaesthetics	1.14	0.93–1.41	0.22	1.08	0.85–1.38	0.54
Internal Medicine	0.94	0.79–1.13	0.54	1.02	0.82–1.25	0.89
Psychiatry	0.78	0.59–1.02	0.06	0.88	0.65–1.19	0.41
Paediatrics	0.80	0.47–1.37	0.41	0.69	0.37–1.30	0.25
Obstetrics/Gynaecology	1.07	0.85–1.35	0.55	1.15	0.89–1.49	0.29
Radiology/Imaging	1.10	0.79–1.53	0.58	0.88	0.58–1.34	0.56
Surgery	0.71**	0.56–0.91	0.006	0.73*	0.54–0.97	0.03
Pathology/Histology	0.86	0.56–1.33	0.50	1.06	0.65–1.71	0.82
Dermatology	1.04	0.56–1.91	0.91	0.93	0.44–1.97	0.86
Ophthalmology	0.65	0.39–1.09	0.10	0.69	0.39–1.21	0.20
Other[b]	1.11	0.84–1.45	0.47	1.28	0.94–1.74	0.11

[a]Adjusted for age group, gender, marital status and number of children living at home.
[b]**Other** includes the following: Addiction Medicine, Administration/Education, Clinical Genetics.
[c]Reference group: Drug and Alcohol, Forensic Medicine, Locum, Musculoskeletal Medicine, Sports and Exercise Medicine, Sexual Health, Cosmetic, Aboriginal\Indigenous, Hospital Medical Officer, Pharmacology, Travel, Occupational Medicine\Occupational and Environmental Medicine, Medicolegal, Academic\Research, Chief Medical Officer, Management\Government, Administration\Education\Medical Education, Public Health Medicine.
*Significant at the $P \leq 0.05$ level in adjusted model.
**Significant at the $P \leq 0.01$ level in adjusted model.

excessive working hours, emotionally intense complex cases involving families and children such as child abuse and illness, repeated exposure to potentially traumatic events and aggression from patients [28]. This highly stressful working environment may mean that paediatrics could carry a unique, more pronounced emotional burden compared to other specialties.

Our second finding regarding significantly higher odds of SI among anaesthetists compared to GPs after accounting for confounders is consistent with international findings reporting high rates of SI [10] and identifying anaesthetists as being at elevated risk for suicide mortality [29]. Our results suggest that elevated SI among this specialty may, to some extent, underlie some of this excess mortality among anaesthetists.

Our third main finding was that surgeons were at significantly lower risk of likely CMD compared to GPs, after adjusting for confounders, in line with Nash, Daly [12], where surgeons had a lower likelihood of experiencing psychiatric morbidity compared to GPs, and some overseas studies reporting significantly lower rates of depression and anxiety [13] among surgeons compared to other specialties. However, other evidence has identified contradictory findings. These differing results could be due to different outcomes, comparison groups, and time points that were assessed and variations in health systems and working environments in other countries. Further research is needed to clarify the evidence. Additional factors which may contribute to a lower risk of CMD in surgeons and help to

Table 4. Association between area of specialty and suicidal ideation among doctors, showing unadjusted and adjusted estimates for effect size (OR, 95% CI)

	Suicidal ideation					
	Unadjusted OR	**95% CI**	***P* value**	**Adjusted OR[a] (n = 6714)**	**95% CI**	***P* value**
Location of workplace						
Metropolitan[b]						
Rural/regional				1.30**	1.09–1.54	<0.01
Marital status						<0.01
Single[b]						
Married/in committed relationship				0.39**	0.29–0.53	<0.01
Divorced/separated/widowed				0.91	0.62–1.33	0.63
Age group**						<0.01
26–30 years[b]						
31–40 years				0.66	0.27–1.61	0.36
41–50 years				0.90	0.37–2.17	0.82
51–60 years				0.93	0.39–2.24	0.88
61+ years				0.41*	0.17–1.01	0.05
Gender						
Male[b]						
Female				0.86	0.72–1.04	0.11
Specialty						0.24
General Practice[b]						
Emergency Medicine/ICU	1.23	0.84–1.78	0.29	1.19	0.81–1.74	0.38
Anaesthetics	1.41**	1.07–1.86	0.02	1.45**	1.09–1.93	0.01
Internal Medicine	0.90	0.68–1.18	0.43	0.98	0.74–1.29	0.87
Psychiatry	0.93	0.64–1.35	0.70	1.06	0.73–1.55	0.76
Paediatrics	1.66	0.91–3.04	0.10	1.88*	1.02–3.47	0.04
Obstetrics/Gynaecology	0.79	0.55–1.14	0.22	0.86	0.59–1.24	0.41
Radiology/Imaging	0.81	0.48–1.37	0.44	0.88	0.51–1.50	0.63
Surgery	0.90	0.64–1.26	0.54	0.99	0.70–1.41	0.96
Pathology/Histology	0.63	0.30–1.30	0.21	0.73	0.35–1.51	0.39
Dermatology	1.31	0.59–2.92	0.51	1.45	0.65–3.27	0.37
Ophthalmology	1.09	0.58–2.07	0.79	1.19	0.62–2.27	0.60
Other[c]	1.04	0.71–1.55	0.83	1.12	0.75–1.68	0.58

[a]Adjusted for age group, gender, marital status and location of work.
[b]Reference group.
[c]**Other** includes the following: Addiction Medicine, Administration/Education, Clinical Genetics, Drug and Alcohol, Forensic Medicine, Locum, Musculoskeletal Medicine, Sports and Exercise Medicine, Sexual Health, Cosmetic, Aboriginal\Indigenous, Hospital Medical Officer, Pharmacology, Travel, Occupational Medicine\Occupational and Environmental Medicine, Medicolegal, Academic\Research, Chief Medical Officer, Management\Government, Administration\Education\Medical Education, Public Health Medicine.
*Significant at the $P \leq 0.05$ level in final adjusted model.
**Significant at the $P \leq 0.01$ level in final adjusted model.

explain our finding include greater autonomy and job control, high job satisfaction, personality factors, higher pay, a higher level of stigma and reluctance to disclose mental health problems, and the healthy worker effect.

A fourth notable aspect of our results was the fact that overall, there was much greater similarity between specialities in terms of mental health risk, even after accounting for confounders. This suggests that it may be more pertinent to explore medicine-wide professional and systemic factors that could underlie mental health problems among doctors, such as the culture of medicine [2], high levels of stigma, shame, reluctance and failure to seek help for mental health problems which may be exacerbated by systemic and regulatory issues, such as mandatory reporting [1].

Given the paucity of research into SI and CMD within different specialty areas, particularly the lack of large-scale national representative and longitudinal studies, it is difficult to draw conclusions as to causality, what may be driving these findings or how they compare to other countries. Both CMD and SI are multifactorial, and future research needs to explore work and non-work-related risk and protective factors for CMD and SI among anaesthetists, paediatricians and surgeons, as well as all doctors. Potential protective and hazard factors to assess could include colleague support and psychological resilience, and shift work, workplace stressors, for example, medicolegal matters and barriers to help-seeking, respectively [1]. A better understanding of specialty-specific and medicine-wide factors may help to elucidate some of the underlying drivers of these

results and will inform more effective targeted mental health interventions.

Further research to elucidate these findings could include large-scale comprehensive longitudinal studies such as the Australian MABEL longitudinal panel survey of medical practitioners [30]. Ideally, these studies would assess mental health regularly using validated instruments across a range of outcomes, career stages and specialties. This would provide prospective evidence on the changing nature of the workforce and the professional and personal factors influencing mental ill health at an individual, speciality-specific, and profession-wide level.

More robust, national research is critical to inform our understanding of the mental health of a dynamic, varied profession such as medicine. It will remain important in answering the increasing calls for preventive interventions given the ever-changing nature of the healthcare system, the recent growth in the medical workforce internationally [8] and the global COVID-19 pandemic. The pandemic has illustrated the continued toll of the challenging but essential frontline work carried out by the medical profession and emphasises the need to more comprehensively investigate and understand psychiatric morbidity across medicine.

Our findings emphasize calls made for interventions addressing both pan-specialty and specialty-specific risk factors for mental ill health among doctors. Best practice models of workplace mental health now recognize the need for both organizational-level and individual-level strategies [1]. These multi-level approaches need to be tailored to medicine and focus on issues within and across specialities. Medical colleges and workplaces are the natural owners of the development and delivery of these strategies, resources and services to support and treat doctors experiencing mental health problems [1]. This study informs these efforts in two ways; first, by identifying certain specialties at higher risk of CMD and SI as potential target groups and secondly, by highlighting the need to address these outcomes across the profession.

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Competing interests

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References

1. Harvey SB, Epstein RM, Glozier N *et al*. Mental illness and suicide among physicians. *Lancet* 2021;398:920–930.
2. Center C, Davis M, Detre T *et al*. Confronting depression and suicide in physicians: a consensus statement. *JAMA* 2003;289:3161–3166.
3. Mata DA, Ramos MA, Bansal N *et al*. Prevalence of depression and depressive symptoms among resident physicians: a systematic review and meta-analysis. *JAMA* 2015;314:2373–2383.
4. Shanafelt TD, Dyrbye LN, West CP *et al*. (eds.) Suicidal ideation and attitudes regarding help seeking in US physicians relative to the US working population. Mayo Clinic Proceedings. Elsevier, 2021.
5. Dutheil F, Aubert C, Pereira B *et al*. Suicide among physicians and health-care workers: a systematic review and meta-analysis. *PLoS One* 2019;14:e0226361.
6. Pereira-Lima K, Mata DA, Loureiro SR, Crippa JA, Bolsoni LM, Sen S. Association between physician depressive symptoms and medical errors: a systematic review and meta-analysis. *JAMA Network Open* 2019;2:e1916097.
7. Health ADo. *National Health Workforce Dataset (NHWDS) Medical Practitioners*. 2015. Online2022.
8. OECD. *Health Workforce Policies in OECD Countries: Right Jobs, Right Skills, Right Places*. Paris: OECD Health Policy Studies, OECD Publishing, 2016.
9. Beyondblue. *National Mental Health Survey of Doctors and Medical Students*. Australia: Beyondblue, 2013.
10. Medscape. *Medscape National Physician Burnout and Suicide Report 2021*. 2021.
11. Imo UO. Burnout and psychiatric morbidity among doctors in the UK: a systematic literature review of prevalence and associated factors. *BJPsych Bull* 2017;41:197–204.
12. Nash LM, Daly MG, Kelly PJ *et al*. Factors associated with psychiatric morbidity and hazardous alcohol use in Australian doctors. *Med J Aust* 2010;193:248161–248248.
13. Huang CL-C, Weng S-F, Wang J-J, Hsu Y-W, Wu M-P. Risks of treated insomnia, anxiety, and depression in health care-seeking physicians: a nationwide population-based study. *Medicine (Baltimore)* 2015;94:e1323.
14. Shen L-L, Lao L-M, Jiang S-F *et al*. A survey of anxiety and depression symptoms among primary-care physicians in China. *Int J Psychiatry Med* 2012;44:257–270.
15. Alexander BH, Checkoway H, Nagahama SI, Domino KB. Cause-specific mortality risks of anesthesiologists. *J Am Soc Anesthesiologists* 2000;93:922–930.
16. Wu F, Ireland M, Hafekost K, Lawrence D. *National Mental Health Survey of Doctors and Medical Students*. Australia: Beyondblue, 2013.
17. Petrie K, Crawford J, LaMontagne AD *et al*. Working hours, common mental disorder and suicidal ideation among junior doctors in Australia: a cross-sectional survey. *BMJ Open* 2020;10:e033525.
18. Petrie K, Crawford J, Shand F, Harvey SB. Workplace stress, common mental disorder and suicidal ideation in junior doctors. *Intern Med J* 2021;51:1074–1080.
19. Goldberg DP, Hillier VF. A scaled version of the General Health Questionnaire. *Psychol Med* 1979;9:139–145.

20. Goldberg DP, Gater R, Sartorius N *et al*. The validity of two versions of the GHQ in the WHO study of mental illness in general health care. *Psychol Med* 1997;27:191–197.
21. Goldberg DP. *Manual of the General Health Questionnaire*. Windsor: NFER Publishing Company, 1978.
22. Meehan P, Lamb J, Saltzman L, O'Carroll P. Attempted suicide among young adults: progress toward a meaningful estimate of prevalence. *Am J Psychiatry* 1992;149:41–44.
23. ABS. *4364.0.55.001—National Health Survey: First Results, 2014–15*. Australian Bureau of Statistics, 2015. https://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/4364.0.55.0012014-15?OpenDocument (updated 08/12/2015).
24. ABS. *National Study of Mental Health and Wellbeing 2020-21 Data Download*. Australian Bureau of Statistics, 2021. https://www.abs.gov.au/statistics/health/mental-health/national-study-mental-health-and-wellbeing/latest-release#data-download (updated released 22/07/22).
25. Bonevski B, Magin P, Horton G, Foster M, Girgis A. Response rates in GP surveys: trialling two recruitment strategies. *Aust Fam Physician* 2011;40:427–430.
26. Brewin CR, Miller JK, Soffia M, Peart A, Burchell B. Posttraumatic stress disorder and complex posttraumatic stress disorder in UK police officers. *Psychol Med* 2022;52:1287–1295.
27. Stevelink SA, Opie E, Pernet D *et al*. Probable PTSD, depression and anxiety in 40,299 UK police officers and staff: prevalence, risk factors and associations with blood pressure. *PLoS One* 2020;15:e0240902.
28. Scheepstra KWF, Pauw HS, van Steijn ME, Stramrood CA, Olff M, van Pampus MG. Potential traumatic events in the workplace and depression, anxiety and post-traumatic stress: a cross-sectional study among Dutch gynaecologists, paediatricians and orthopaedic surgeons. *BMJ Open* 2020;10:e033816.
29. Duarte D, El-Hagrassy MM, e Couto TC, Gurgel W, Fregni F, Correa H. Male and female physician suicidality: a systematic review and meta-analysis. *JAMA Psychiatry* 2020;77:587–597.
30. Joyce CM, Scott A, Jeon S-H *et al*. The 'Medicine in Australia: Balancing Employment and Life (MABEL)' longitudinal survey—protocol and baseline data for a prospective cohort study of Australian doctors' workforce participation. *BMC Health Serv Res* 2010;10:1–10.