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Rural specialists: the nature of their work and professional satisfaction by geographic location of work

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Author declaration

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None declared

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Ethics

The MABEL study has ethics approval from the University of Melbourne (Ref. 0709559) and Monash University (Ref. CF07/1102 - 2007000291).

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Abstract

Objective: Systematically describe the characteristics of rural specialists, their work and job satisfaction by geographic location of work

Design: Cross-sectional

Setting and participants: 3479 medical specialists participating in the 2014 Medicine in Australia: Balancing Employment and Life (MABEL) survey of doctors

Main outcome measure: Location of practice, whether metropolitan, large (>50,000 population) or small regional centres (<50,000 population).

Result: Specialists working in large regional centres had similar characteristics to metropolitan specialists, however, those in small regional centres were more likely male, later career, overseas-trained and less likely to work privately. Rural specialists had more on-call requirements and poorer professional development opportunities. However, satisfaction with work hours, remuneration, variety of work, level of responsibility, opportunities to use abilities and overall satisfaction did not differ. Specialists in general medicine and general surgery were significantly more likely to work rurally compared with anaesthetists, particularly in small regional centres, whereas a range of other relevant specialists had lower than average rural distribution and paediatricians and endocrinologists were significantly less likely to work in large regional centres.

Conclusion: Rural specialists are just as satisfied as metropolitan counterparts reporting equivalent variety and responsibility at work. Better support for on-call demands and access to professional development could attract more specialists to rural practice. Increased rural training opportunities and regional workforce planning is needed to **develop and** recruit relevant specialties. Specifically, targeted support is warranted for training and development of specialists in general medicine and general surgery and overseas-trained specialists, who provide essential services in smaller regional centres.

What is already known on this subject?

- Several small-scale surveys have suggested that rural specialists have higher on-call requirements but more variety of work.
- There are no national studies comparing rural with metropolitan specialists.
- Viable specialties in rural areas have been postulated by specialist colleges, mainly based on town size, however actual supply and distribution patterns and factors affecting these, have not been explored.

What does this study add?

- This study systematically describes the types of specialists working in large or small regional centres and compares the nature of their work and professional satisfaction to that of their metropolitan counterparts, identifying factors potentially influencing rural supply and distribution.
- Results show that rural specialists are just as satisfied as metropolitan colleagues, but have higher on-call ratios and report poorer access to continuing professional development.
- The supply and distribution of specialties **considered relevant** in large and small regional centres is variable. Specialists in general medicine or general surgery and overseas-trained specialists provide essential support in small regional centres.

Introduction

It is well-established that access to medical specialists is poorer in rural areas (1-3). In Australia, only around 15% of specialists compared with 30% of the population are located in rural areas, despite rural populations having greater health needs (4) (5). The factors influencing participation in rural specialist practice are critical to understand in the context of the growth and increasing specialisation among the national specialist workforce (3).

Rural specialists are important to support rural general practitioners and enable more comprehensive local health care, early intervention and accessible follow-up, mitigating the need for metropolitan on-referral and aeromedical retrievals (6).

There is policy interest in a range of relevant specialists being available regionally to address common rural healthcare needs including obstetrics and paediatrics, emergency presentations, general medical and surgical services (7), and chronic diseases (8) among other areas. However, the viability of rural specialist practice partly depends on nearby hospital facilities, staff, sufficient population size and infrastructure. The required population size for various specialties has been proposed, but not verified, through repeated surveys of specialist colleges (9, 10) (Table 1). General surgeons and general physicians are among a range of specialties

considered able to work in smaller populations (3). However, actual supply and geographic distribution of various specialties has not been systematically explored.

There is very little evidence about the nature of work and professional satisfaction of rural specialists. Some localised surveys suggest more on-call requirements, longer work hours, inadequate remuneration and restricted professional development opportunities are specific to rural specialist practice (11) (12). In contrast, positively, regionally-based specialists enjoyed the variety of work, professional challenge of applying all skills and collegiality (13), though evidence could be strengthened via a national perspective, using controls.

The aim of this paper is to systematically describe the characteristics of rural specialists, including the nature of their work and job satisfaction, according to whether they work in small or large regional centres versus metropolitan locations.

Methods

Data come from the Medicine in Australia: Balancing Employment and Life (MABEL) longitudinal (annual) study (14), which first invited all Australian doctors to participate in 2008. Respondents are re-surveyed every year along with new graduates or doctors returning to clinical practice with negligible response bias (14, 15).

This study included medical specialists (qualified fellows) working clinically, in the 2014 survey. Respondent specialists were relatively comparable to the Australian specialist population (Table 2), although there were 5% more surgeons and 8% more females. Non-response sampling weights were applied throughout. This study had ethics approval from Melbourne and Monash Universities (Ref. 0709559/Ref. CF07/1102 – 2007000291).

Practice location was geocoded and categorised using the Modified Monash Model as levels 1: 'metropolitan'; 2: 'large regional centres' (>50,000 population) and 3-7: 'small regional centres' (<50,000 population) (16).

Predictive variables were selected to explore factors known to influence rural general practitioners. Career stage was categorised: 'early' <45 years, 'middle' 45-64 years and 'late' 65+ years.

Overseas-trained specialists obtained their medical degree outside Australia.

Practice type was based on average weekly hours worked: 'public only' (all hours in public hospital); 'private only' (all hours in private hospitals/consulting rooms) and 'mixed practice' (both). Specialists working all or most of their work hours in other settings like aged care or <10 hours work in public or private settings were excluded.

On-call participation was defined by binary response to: 'do you do on-call yourself?'

Weekends undertaking public sector on-call were categorised: '1 in 7+', '1 in 4-6' and '1 in 1-3'.

Professional satisfaction was rated 1-5 (very dissatisfied to very satisfied), using the short-form Warr-Cook-Wall job satisfaction questionnaire (17), previously validated within MABEL (18). Seven items were included to test specific issues that had emerged from other research (11, 13): satisfaction with hours of work, remuneration, variety of work, amount of responsibility given, colleagues and fellow workers, opportunities to use your abilities and total satisfaction with work.

Characteristics of employment and work-life balance were rated by the level of agreement from 1-5 (strongly disagree to strongly agree) with a number of professional items that had been modelled on existing tools (19) and thoroughly piloted: it is difficult to take time off when I want to, running my practice is stressful most of the time, the hours I work are unpredictable, the balance between my personal and professional commitments is about right.

For both scales, the two positive responses (satisfied or moderately satisfied and strongly agree or agree) were grouped and compared with two negative responses (moderately or very dissatisfied and disagree or strongly disagree, respectively). The 'not sure' (4-6 % of satisfaction responses) and 'neutral' (14-23 % of agreement responses) were categorised as non-responses.

Opportunities for continuing medical education and professional development were categorised 'good and very good' or 'very limited'.

The differences in age and hours worked according to location was tested using ANOVA. A univariate multinomial regression model tested associations between practice location and specialist characteristics, reporting relative risk (RR) ratios and 95 % confidence intervals (CI).

A separate univariate multinomial model tested associations between practice location and specialty. Specialties individually included in the model were based on two inclusion criteria: 1) considered viable in permanent rural practice (as per Table 1) or 2) considered important to rural health and increasingly adaptable to rural settings (endocrinology, rheumatology, ophthalmology, cardiology, nephrology and medical oncology). The remaining specialists were split between a combined group considered restricted to practising in larger populations (as per Table 1) or excluded if they did not meet the above criteria (9, 10). Anaesthetists were the reference group, being readily identifiable, viable in large and small regions and distributed similarly to specialists nationally.

Further multivariate multinomial logistic regression models tested associations between work location and professional satisfaction and agreement statements. These models adjusted for key covariates (sex, career stage, overseas trained, practice type, hours worked, on-call, and working in general medicine/surgery or not). Calculations were performed using Stata/IC 11.2 with a 5% significance level.

Results

There were 3479 respondents with specialists in metropolitan and large regional centres having similar characteristics (sex, career stage, working privately). However specialists practising in small regional centres were more likely to be male (RR 2.1, 1.6-2.9), late career (RR 1.7, 1.2-2.5), overseas-trained (RR 1.9, 1.5-2.6) and less likely to work privately (RR 0.3, 0.2-0.6) (Table 3).

Rural specialists worked 1.6-1.8 more hours per week, whether working in large or small regional centres. Specialists practising in large regional centres more likely participated in on-call (RR 1.5, 1.1-2.0) and those in small regional centres had significantly higher ratios (one weekend in three) of public sector weekend on-call (RR 1.6, 1.1-2.4) (Table 3).

Compared with anaesthetists (10% based in large and 5% in small regional centres), 32% of specialists in general medicine, 28% in general surgery and 19% obstetrician and gynaecologists worked rurally, more likely based in small regional centres compared with metropolitan locations (RR 5.4, 2.9-10.3) (RR 4.8, 2.7-8.8) (RR 1.8, 1.0-3.3) respectively (Table 4). In contrast, 15% of paediatricians, 5% of endocrinologists and 11% of psychiatrists worked rurally and were less likely to work in large regional centres (RR 0.5, 0.3-0.9), (RR

0.2, 0.04-0.8), (RR 0.6, 0.4-1.0) respectively. A range of other specialists including those in rheumatology (8% rural); respiratory (9%); dermatology (9%); rehabilitation medicine (9%); geriatrics (10%); cardiology (11%); and renal (12%) had proportionally less rural specialists than the 15 % national average (20), though the odds of rural practice were not significantly different from anaesthetics.

After controlling for key covariates in multivariate analysis, no significant differences were found in the satisfaction of specialists practising in metropolitan versus large or small regional centres with regards to hours worked, remuneration, variety of work, amount of responsibility given, colleagues and fellow workers, opportunities to use abilities and overall satisfaction (Table 5).

Over 86 % of specialists, regardless of practice location, reported good access to continuing medical education and professional development however, this was significantly lower among specialists in large (RR 0.4, 0.2-0.6) and small regional centres (RR 0.2, 0.1-0.3) (Table 6).

There were no statistical differences between difficulty taking time off, stress of running the practice and balance between personal and professional commitments by location, but specialists in small regional centres were more likely to report unpredictable hours (RR 1.6, 1.1-2.4) (Table 6).

Discussion

These findings suggest that the characteristics of specialists practising in large regional centres are similar to their metropolitan counterparts but those in small regional centres are older, overseas-trained, male and working publicly. Small regional hospitals more often rely on sponsoring overseas-trained specialists (an authorised policy approach when a locally-trained specialist cannot be sourced). This approach can be targeted to community needs and organisationally-controlled. However, large regional centres rely on attracting Australian graduates, contingent on training and development pathways and opportunities for stable employment through strong regional workforce planning.

Other research suggests rural specialist practice is uniquely rewarding on measures such as responsibility and variety of work (13), though this study found the satisfaction of rural and metropolitan specialists was similar. This was despite rural specialists reporting more on-call

demands and poorer professional development opportunities. Perhaps specialists choosing to work rurally have already factored in these aspects of rural work, with no major influence on job satisfaction. However, targeted support for on-call and professional development might attract other specialists rurally, for whom these issues could negatively impact satisfaction. Increasing the critical mass of rural specialists would improve on-call demands and local professional networks. Further, specific programs, such as the Rural Health Continuing Education Program, while delivering locally-accessible rural-relevant professional education, could be expanded to reach all rural specialists.

With respect to specialist type, employing specialists in general medicine and general surgery is likely to be cost-effective for hospitals in small rural centres. However, such specialists are a relatively small group, under threat by the increasing sub-specialisation of doctors (3). Most doctors choose their specialty by their third postgraduate year based on their skills, intellectual content of the specialty and the work culture (21). Programs providing structured and positive rural exposures during undergraduate and early post-graduate years have the potential to make a difference (22, 23). Also preferential selection and mentoring of medical students and trainee specialists with rural backgrounds who want to work rurally should be considered, although the evidence about this is still mainly focussed on undergraduate, rather than specialist training (24). It remains that the majority (around 65%) of Australian-trained rural specialists are raised in the city (25).

The restricted distribution of many specialists, considered adaptable and relevant to rural settings, including paediatricians, endocrinologists and psychiatrists (less likely in large regions), is concerning. Paediatrics is rapidly growing but the rate of sub-specialisation may reduce the uptake of rural practice by recent graduates (3). The recent expansion of dual (split rural/metropolitan) training pathways by the Australasian College of Physicians is an important initiative to promote specialists with both sub-specialist and general skills

Psychiatry is experiencing national workforce shortages, largely relying on overseas-trained doctors for supply (3). However, like endocrinology, as a more privately based specialty, innovative private or mixed sector opportunities in large regional centres might facilitate uptake of rural psychiatry. Community-based rural Specialist Training Program places are important for improving awareness of and networks in rural psychiatry practice.

A number of limitations are noted including only measuring associations, not causal links. A range of social factors not studied also have potential to influence rural supply. The brevity of

the modified Warr-Cook-Wall scale and items selected for this study may have missed some aspects of job satisfaction. **This study did not test the psychometric properties of this scale, which is a consideration for future studies.** Although non-response bias was accounted for, it was limited to known covariates. The specialty analysis may be a reflection of survey respondents although groups were comparable to the national workforce. Some male-dominated specialties, including general medicine were potentially under-represented given the study cohort had 8 % more females. Apart from town size, other geographic drivers like hospital size and regional density are potentially important predictors of the nature of work and distribution of rural specialists.

Conclusion

This study indicates that rural specialists, whether working in large or small regional centres are highly satisfied in line with their metropolitan counterparts. As such, **with specific rural training opportunities**, targeted regional workforce planning and increased support for on-call and professional development, more relevant specialists with both general and sub-specialist skills could be attracted to working in regional centres. Addressing these issues requires strong coordination and engagement of multiple stakeholders. Providing targeted support for training and development of specialists in general medicine and general surgery and overseas-trained specialists is important given they provide essential support for smaller regional centres.

Table 1: Specialist medical colleges projected population catchment requirements for viable permanent practice [†] (9, 10)

Permanent practice restricted to larger populations >80,000 population	Viable permanent rural practice 50-80,000 population	Viable permanent rural practice <60,000 population
Urology [‡]	Dermatology	General surgery
Cardiology	Neurology	General medicine

Medical oncology ‡	Respiratory	Paediatrics
Nephrology ‡	Emergency medicine	Obstetrics and gynaecology ‡
Diagnostic radiology	Palliative medicine	Psychiatry ‡
Intensive care ‡	Otolaryngology	Geriatric medicine
Radiation oncology ‡	Rehabilitation medicine	Orthopaedic surgery ‡
Clinical genetics		Anaesthesia ‡
Haematology		Pathology
Occupational medicine		Pain medicine
Public health medicine		
Neurosurgery		
Paediatric surgery		
Vascular surgery		

† Based on surveys of Australian specialist medical colleges in 1998 and 2004. Population bases approximated only, with some overlapping range in size of population required for permanent practice.

‡ College projected the need for a minimum of two specialists for viable resident service

Table 2- Characteristics of specialist respondents to the 2014 MABEL survey compared with the national specialist workforce

Characteristics	Specialist respondents (n=3479)	Australian specialists (n=27,279) †
Sex	n (%)	n (%)
Male	2232 (64)	19,681 (72)
Female	1247 (36)	7598 (28)
Mean age †	51 years	50 years
Location of work ‡		
Metro	2,873 (83)	21,808 (86)
Rural	606 (17)	3,601 (14)
Specialist group §		
Physicians	782 (22)	5,706 (21)
Pathology	135 (4)	1119 (4)
Surgery	393 (11)	4,250 (16)
Other specialists	2045 (59)	15,306 (56)
Missing	124 (4)	898 (3)
Mean weekly hours worked	42 hours	44 hours

[†] The number of respondents to age was reduced to 3379 due to 100 missing values; mean hours worked reduced to 3416 due to 63 missing values and specialist group reduced to 3355 due to 124 missing values.

[‡] based on the Australian Statistical Geography Standard Remoteness Area Structure (26)

[§] Specialist group was categorised according to the National Health Workforce Dataset groupings (20) by the Australian Institute of Health and Welfare: Physicians: cardiology, endocrinology, gastroenterology & hepatology, general medicine, geriatric medicine, haematology, immunology, medical oncology, nephrology, respiratory & sleep medicine, rheumatology and other physician; Pathology: anatomical and general pathology; Surgery: general surgery, oral and maxillofacial, otolaryngology, plastic surgery, urology, orthopaedic, cardiothoracic, paediatric, neurosurgery, vascular surgery, other surgery; Other specialists: diagnostic radiology, other radiology, obstetrics & gynaecology, paediatrics, anaesthesia, psychiatry, emergency medicine, ophthalmology, dermatology, ICU medicine, rehabilitation medicine, radiation oncology, other specialists not grouped

[¶] Data on the Australian specialist workforce were obtained from the National Health Workforce Dataset (NHWDS) 2014 (20) except data on Location main place of work, which was obtained from the 2014 Australian Medical Directory dataset (n=25,409) (27). The NHWDS included n=166 specialists whose specialty was general practice under 'other specialists', which is not included as a specialty in the MABEL survey.

Table 3 – Univariate multinomial logistic regression models of characteristics of medical specialists, their employment characteristics, and geographic location of work [†]

Characteristics [‡]	Metropolitan n=2893	%	Large regional centres n =345	%	RR (CI)	Small regional centres n=241	%	RR (CI)
Sex								
Female	1086	29	108	24	Ref	53	16	Ref
Male	1807	71	237	76	1.3 (1.0-1.7) *	188	84	2.1 (1.6-2.9) **
Mean age	50.2 (SD 10.8)		51.3 (SD 9.8) *			54.0 (SD 10.5) *		
Career stage (age)								
Mid (45-64)	1400	53	178	56	Ref	137	61	Ref
Early (<45)	1099	35	122	35	0.8 (0.6-1.1)	52	19	0.4 (0.3-0.6) **
Late (>64)	316	12	31	9	1.0 (0.6-1.5)	44	20	1.7 (1.2-2.5) *
Overseas-trained								
No	2129	73	246	71	Ref	147	62	Ref
Yes	757	27	97	29	1.2 (0.9-1.6)	93	38	1.9 (1.5-2.6) **
Practice type								

Mixed practice	1084	41	141	43	Ref	104	46	Ref
Public only	1047	39	116	37	0.8 (0.6-1.0)	98	46	0.9 (0.7-1.2)
Private only	543	20	67	20	0.9 (0.7-1.3)	18	8	0.3 (0.2-0.6) **
Mean weekly hours worked	41.3 (SD 13.9)		43.1 (SD 12.7) *			42.9 (SD 14.9) *		
Do you do on-call yourself?								,
No	637	22	59	17	Ref	50	21	Ref
Yes	2190	78	280	83	1.5 (1.1-2.0)	185	79	1.2 (0.8-1.6)
Public sector weekend on call ratio								
One weekend in 4-6	726	45	106	49	Ref	92	56	Ref
One weekend in 1-3	191	12	40	20	1.4 (0.9-2.2)	39	24	1.6 (1.1-2.4) *
One weekend in 7+	740	44	64	31	0.6 (0.4-0.8) *	30	20	0.3 (0.6-0.7) **

† Analysis weighted

‡ Age/career stage reduced to 3379 due to 100 records missing, 78 from metropolitan, 14 from large regional centres and 8 from small regional centres; Overseas trained reduced to 3469 due to 10 missing values, 7 from metropolitan, 2 from large regional centres and 1 from small regional centres; Practice type reduced to 3218 records due to 261 records missing hours worked or related to working in other settings, 219 from metropolitan, 21 from larger regional centres and 21 from small regional centres; Hours worked reduced to 3416 due to 63 missing values; On-call reduced to 3401 due to 78 missing values, 66 from metropolitan, 6 from larger regional centres and 6 from small regional centres; Public sector weekend on call ratio was calculated of the 2655 specialists undertaking on-call, and was reduced to 2026 due to 629 missing values, 535 from metropolitan, 70 from larger regional centres and 24 from small regional centres

* p<0.05 ** p<0.001

Table 4 –Univariate multinomial logistic regression models of geographic location of work of selected specialties relative to the distribution of anaesthetists †

Characteristics	Metropolitan n = 2423	Large regional centres n =302	RR (CI)	Small regional centres n=207	RR (CI)
Specialist type ‡					
Anaesthesia §	429	62	Ref	28	Ref
General surgery	91	18	1.6 (0.9-3.0)	25	4.8 (2.7-8.8) **
General medicine	61	15	1.7 (0.9-3.2)	22	5.4 (2.9-10.3) **
Paediatrics	178	19	0.5 (0.3-0.9) *	19	1.2 (0.7-2.3)

Obstetrics and gynaecology §	142	19	0.7 (0.4-1.3)	20	1.8 (1.0-3.2)
Psychiatry §	273	27	0.6 (0.4-1.0) *	15	0.7 (0.4-1.4)
Geriatric medicine	79	7	0.6 (0.3-1.4)	5	1.0 (0.4-2.7)
Orthopaedic surgery §	82	9	1.0 (1.1-1.3)	6	1.4 (0.5-3.5)
Pathology	122	10	0.5 (0.3-1.1)	<5	0.4 (0.1-1.2)
Pain medicine	20	<5	1.1 (0.3-4.0)	0	Not applicable
Dermatology	35	<5	0.2 (0.02-1.1)	<5	0.7 (0.2-3.1)
Neurology	45	6	0.9 (0.4-2.2)	<5	0.9 (0.4-2.3)
Respiratory	74	7	0.6 (0.3-1.4)	<5	0.4 (0.09-1.6)
Emergency medicine	160	27	1.1 (0.7-1.9)	17	1.6 (0.8-3.0)
Palliative medicine	40	10	1.4 (0.6-3.1)	<5	0.3 (0.04-2.5)
Otolaryngology	27	6	1.5 (0.6-3.9)	<5	1.7 (0.5-5.9)
Rehabilitation medicine	36	0	Not applicable	<5	1.3 (0.4-4.1)
Cardiology	45	<5	0.3 (0.8-1.2)	5	1.7 (0.6-4.6)
Endocrinology	51	<5	0.2 (0.04-0.8) *	<5	0.2 (0.03-1.7)
Medical oncology §	45	7	1.0 (0.4-2.3)	<5	1.3 (0.4-3.8)
Nephrology §	42	<5	0.5 (0.2-1.7)	<5	1.5 (0.5-4.5)
Rheumatology	35	<5	0.2 (0.03-1.6)	<5	1.4 (0.4-4.8)
Ophthalmology	74	7	0.6 (0.3-1.5)	8	1.6 (0.7-3.7)
Combined group – specialists less suited to permanent rural practice ¶	369	46	0.9 (0.6 -1.4)	22	1.0 (0.5-1.7)

† Analysis weighted

*Analysis excluded 423 specialists (based on criteria in methods): clinical pharmacology, immunology/allergy, infectious diseases, nuclear medicine, cardiothoracic surgery, oral/maxillofacial surgery, plastic surgery, addiction medicine, medical administration, radiology, sexual health medicine, sport/exercise and other specialty). A further 124 were missing specialist type: 107 from metropolitan, 8 from larger regional and 9 from small regional centres.

§ College surveys considered a minimum of two specialists needed for viable resident service

¶ As per Table 1, includes specialties considered as restricted to practising permanently in larger populations based on specialist college surveys (9, 10) (urology, diagnostic radiology, intensive care, radiation oncology, clinical genetics, haematology, occupational medicine, public health medicine, neurosurgery, paediatric surgery, vascular surgery). Cardiology, medical oncology and nephrology, although also considered restricted, were included in the analysis, mainly based on relevance to rural health.

*p<0.05; ** p<0.001

Table 5 –Multivariate multinomial logistic regression model of medical specialist's satisfaction and geographic location of work †

Satisfaction with:	Metropolitan n=2893	%	Large regional centres n=345	%	Multivariate RR (CI)	Small regional centres n=241	%	Multivariate RR (CI)
Hours worked								
No	400	15	50	16	Ref	43	19	Ref
Yes	2251	85	269	84	1.0 (0.7-1.5)	182	81	0.7 (0.5-1.1)
Remuneration								
No	286	11	32	10	Ref	24	10	Ref
Yes	2399	89	298	90	1.3 (0.8-2.0)	197	90	1.3 (0.8-2.3)
Variety of work								
No	148	5	20	7	Ref	14	6	Ref
Yes	2659	95	310	93	1.0 (0.5-1.7)	222	94	0.9 (0.5-1.8)
Amount of responsibility given								
No	140	5	13	4	Ref	12	6	Ref
Yes	2612	95	317	96	1.2 (0.6-2.4)	208	94	1.1 (0.5-2.3)
Colleagues and fellow workers								
No	164	6	28	9	Ref	22	10	Ref
Yes	2557	94	295	91	0.6 (0.4-1.0)	198	90	0.6 (0.3-1.1)
Opportunities to use your abilities								
No	196	7	31	10	Ref	22	10	Ref
Yes	2555	93	303	90	0.8 (0.5-1.3)	208	90	0.8 (0.5-1.4)
Overall satisfaction								
No	155	6	25	9	Ref	20	8	Ref
Yes	2609	94	302	92	1.0 (0.5-1.7)	209	92	0.6 (0.4-1.1)

† Analysis weighted and adjusted for sex, career stage, overseas trained, practice type, whether do on call, hours worked (except for satisfaction with hours worked), specialists in general medicine/general surgery or not.

Table 6 –Multivariate multinomial logistic regression model of medical specialist's agreement with statements about work and work-life balance and geographic location of work[†]

Characteristics	Metropolitan n=2893	%	Large regional centres n=345	%	Multivariate RR (CI)	Small regional centres n=241	%	Multivariate RR (CI)
Opportunities for continuing medical education:								
Very limited	106	4	27	8	Ref	36	14	Ref
Good	2723	96	313	92	0.4 (0.2-0.6) **	198	86	0.2 (0.1-0.3) **
It is difficult take time off								
No	1529	65	164	60	Ref	128	63	Ref
Yes	839	35	115	40	1.2 (0.9-1.6)	80	37	1.1 (0.7-1.5)
Running my practice is stressful most of the time								
No	1140	59	122	52	Ref	89	58	Ref
Yes	788	41	111	48	1.3 (0.9-1.8)	69	42	1.2 (0.8-1.7)
The hours I work are unpredictable								
No	1453	58	158	53	Ref	102	52	Ref
Yes	1010	42	141	47	1.3 (1.0-1.8)	95	48	1.6 (1.1-2.4) *
Balance of personal and professional commitments is right								
No	696	29	91	32		58	28	
Yes	1732	71	196	68	0.9 (0.6-1.2)	150	72	1.0 (0.7-1.5)

† Analysis weighted and adjusted for sex, career stage, overseas trained, practice type, whether do on call, hours worked, specialists in general medicine/general surgery or not.

*p<0.05; ** p<0.001

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