

Factors related to rural general practitioners supervising general practice registrars in Australia

A national cross-sectional study

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Background and objective

General practice training in Australia is uniquely structured to allow half of all registrars to train in rural areas, in order to increase rural workforce development and access to rural primary care. There is, however, limited national-scale information about rural general practice supervisors who underpin the capacity for rural general practice training. The objective of this research was to explore the factors related to rural general practitioners (GPs) supervising general practice registrars.

Methods

Results were obtained using multivariate analysis of the 2016 Medicine in Australia: Balancing Employment and Life survey data.

Results

Overall, 57.8% of rural GPs were supervising registrars. Supervising was strongly related to being Australian-trained, working in a larger practice, and supervising medical students and interns.

Discussion

Rural supervising capacity could be increased through supporting GPs in smaller practices to engage in supervision and maintaining the strong involvement of GPs in larger practices. Other important factors may include a greater number of Australian-trained graduates working in rural general practice and increased support for international medical graduates to Fellow and feel confident to supervise.

GENERAL PRACTITIONERS (GPs) who supervise registrars have a pivotal role in fostering the future capacity of the primary healthcare workforce in Australia.¹ The availability and equitable geographic distribution of sufficient supervisors is under increasing pressure because of the expansion of medical school places and the growth and de-centralisation of general practice training.²⁻⁵ The Australian General Practice Training Program supports around half of registrars (>2000 annual training posts) to train in rural settings with the aim of building a better distributed, suitably skilled and sustainable rural general practice workforce. Generally this requires at least one rural GP supervising each general practice registrar.² Hence, understanding the factors associated with rural GPs supervising registrars is imperative to enable better targeted growth and sustainability of rural GP training.

To date, there are no national-level studies characterising general practice supervisors nor the factors related to rural general practice supervision work. The supervision literature tends to cover teaching and learning methods and models and supervisor competence.⁶⁻⁹ It also covers practical issues with supervising registrars such as the costs to the practice, roles and responsibilities, workload and supporting trainees who are underperforming.¹⁰⁻¹³ Several studies noted that GPs supervise to maintain their own skills, to contribute to teaching the next generation and because they find it satisfying.^{2,14-16} At a practice level, supervising has been related to an organisational teaching and learning

culture and a part of improving access to sufficient local GPs in rural areas.^{14,15,17,18} However, other studies have focused on supervision from the perspective of the registrar only; many are small-scale and are not focused on rural areas.¹⁹⁻²²

This research aimed to use national-scale data to explore the factors related to rural GPs participating in registrar supervision.

Methods

The study used the Medicine in Australia: Balancing Employment and Life (MABEL) survey (www.mabel.org.au), including 1241 (14%) clinically active GPs working in rural Australia in 2016. The MABEL cohort has already been assessed as reasonably representative of GPs nationally and applied extensively to inform general practice workforce policy.²³⁻²⁶ Of rural GP respondents in 2016, 941 self-reported whether they were currently teaching or supervising registrars. General practice registrars were excluded, as were GPs who were not currently in the paid workforce, and those who were permanently retired.

Non-response weightings were used for all calculations. Multivariate logistic regression modelling explored factors associated with rural GPs supervising registrars. The location of each rural GP's main practice was geocoded to the Modified Monash Model (MMM) categories of geographical remoteness and population size:

- MMM 2: >50,000
- MMM 3: 15,000–50,000

- MMM 4: 5000–15,000
 - MMM 5: <5000
 - MMM 6–7: remote and very remote.
- Three models progressively added covariates for GP factors (gender, age, Australian-trained [ie completed their basic medical training in Australia]), practice factors (number of doctors and business relationship in practice, total hours worked and working in either public hospital or aged care setting) and teaching activity (medical student or prevocational teaching/supervision) to explore the relationship of these elements with registrar supervision.

The study was approved by the University of Melbourne Faculty of Business and Economics Human Ethics Advisory Group (Ref. 0709559) and the Monash University Standing Committee on Ethics in Research Involving Humans (Ref. CF07/1102 – 2007000291).

Results

The cohort comprised 941 rural GPs of median age 49 years (95% confidence interval [CI]: 47.0, 50.0), 62.8% male and 93.2% in accredited practices. Of these, 528 (57.8%; 95% CI: 54.3, 61.0) were currently supervising registrars. In univariate analysis, GPs working in rural communities of population size <15,000 (MMM 4–5), in larger practices (≥ 3 doctors) and for longer hours (≥ 40 weekly hours) were more likely to be supervising. Additional significant factors included being Australian-trained or, to a lesser extent, a Fellowed international medical graduate (IMG), male, aged 41–55 years, practice principal or associate, working in public hospitals and aged care settings and supervising medical students, interns and prevocational trainees (Table 1).

The first multivariate model (Model 1; Table 2), which included GP characteristics, showed the relationship between practice location and supervising registrars was similar to the univariate results in Table 1. In the second model (Model 2; Table 2), which included practice factors, the practice factors, rather than location, had the strongest associations with supervision. In the final

model (Model 3; Table 2), which also included practice teaching activity, the strongest associations with supervision were working in a practice with a greater number of GPs (odds ratios [ORs]: 5.0–16; from 3–5 up to ≥ 11 doctors), and supervising medical students (OR: 8.1) and interns/prevocational doctors (OR: 6.2). Additionally, GPs in later career (OR: 1.9), those who were Australian-trained (OR: 5.1) or Fellowed IMGs (OR: 2.9), and those working moderate extra hours in other community settings (aged care OR: 1.7; public hospitals OR: 2.2) were significantly more likely to supervise registrars.

Discussion

This study provides the first national empirical evidence quantifying the factors associated with the current rural general practice supervisor workforce, showing that more than half of rural GPs supervise registrars. A number of factors related to the rural GPs' characteristics and their practices were found to be significantly associated with supervising registrars. In the final multivariate analyses, the strongest associations were not with the geographic location of practice, but rather with working in practices with a greater number of doctors, supervising medical students and prevocational trainees, and being Australian-trained.

A career orientation to teaching has been described in other literature as a factor motivating GPs to become involved in medical education.¹⁴ Additionally, it may be easier for rural GPs to participate in supervision if the practice in which they work expects them to do so and relevant infrastructure exists in the practice for supporting multi-cohort learners.² Larger rural practices with a greater number of learners may provide more options for team-based supervision and peer-to-peer learning, reducing the individual supervisor responsibility and mitigating increased practice workload.²⁷ Supervising registrars may also be more viable if the practice teaches medical students as well. Practices receive similar reimbursements for teaching medical

students per day (up to \$400) as for supervising registrars per week (GTP1: \$520–\$560, GTP2: \$260–\$280; with additional teaching subsidies for GPT1 and GPT2 of \$120–\$140),^{28,29} although the registrars' patient billings contribute to the overall practice income. Rural GPs may otherwise supervise medical students and prevocational doctors as a way of promoting the uptake of general practice careers by the next generation. Finally, it is possible that GPs with experience of supervising medical students or prevocational doctors feel more confident to supervise registrars (or vice versa), compared with those who are not supervising these other groups. As such, engaging rural GPs already involved in any teaching activities may be a good way to grow capacity.

Increasing the number of Australian-trained doctors working as rural GPs and the number of IMGs qualified and pursuing supervision roles has the potential to enhance rural supervision capacity. IMGs may face structural barriers to supervision, including accessing or completing the required vocational training standards for formal Fellowship themselves. On top of a range of existing options for IMGs to pursue pathways for vocational registration, new programs in the current federal Budget are expected to enhance options to achieve GP Fellowship.^{30,31} However, even if Fellowed, IMGs do not participate in registrar supervision to the same extent as Australian-trained doctors and may need support from peers to do so. Support may include building their confidence to teach in the Australian system, which they may have only recently learned to navigate themselves. Encouraging a greater number of IMGs to supervise is a substantial issue for rural GP supervising capacity given that IMGs constitute approximately 40% of all rural GPs, and many rural general practices continue to depend on these doctors in areas of workforce shortages.³² In towns where un-Fellowed IMGs are predominant and there is only a small number of Fellowed GPs, the available supervisor pool is likely to be small and difficult to increase.

Table 1. Univariate associations between rural general practitioners participating in registrar teaching or supervision (n = 941)

Characteristic	Participate in supervision (n = 528) n (%) weighted	Univariate odds ratio (95% confidence interval)	P value
Location of main practice (Modified Monash Model)			
2 (>50,000)	136 (51.6)	Reference	
3 (15,000–50,000)	137 (59.5)	1.4 (1.0, 2.0)	0.09
4 (5,000–15,000)	85 (68.0)	2.0 (1.3, 3.2)	0.003
5 (<5,000)	103 (61.7)	1.5 (1.0, 2.2)	0.05
6–7 (remote and very remote)	62 (58.6)	1.3 (0.8, 2.2)	0.3
Age group (years)			
≤40	125 (53.9)	Reference	
41–55	207 (62.3)	1.4 (1.0, 2.0)	0.05
≥56	171 (59.4)	1.3 (0.9, 1.8)	0.2
Sex			
Female	226 (51.7)	Reference	
Male	302 (61.3)	1.5 (1.1, 1.9)	0.005
Training status			
Non-Fellowed international medical graduate (IMG)	24 (27.0)	Reference	
Fellowed IMG	84 (51.6)	2.9 (1.6, 5.1)	<0.001
Australian-trained	420 (65.1)	5.0 (3.0, 8.4)	<0.001
Total doctors employed in practice*			
1–2	20 (26.8)	Reference	
3–5	89 (43.2)	2.1 (1.1, 3.9)	0.02
6–10	235 (62.3)	4.5 (2.5, 8.2)	<0.001
≥11	184 (71.9)	7.0 (3.8, 13.0)	<0.001
Business relationship with practice			
Salary/contract	279 (52.3)	Reference	
Locum or other	19 (47.9)	0.8 (0.4, 1.6)	0.6
Principal/associate	228 (66.9)	1.8 (1.4, 2.5)	<0.001
Total hours worked (per week)†			
<30	95 (47.8)	Reference	
30–40	175 (52.9)	1.2 (0.8, 1.8)	0.3
41–46	99 (62.7)	1.8 (1.2, 2.9)	0.008
>46	155 (67.7)	2.3 (1.5, 3.4)	<0.001
Also work in a public hospital (per week)†			
Nil	317 (50.0)	Reference	
<8 hours	108 (80.0)	4.0 (2.6, 6.3)	<0.001
≥8 hours	89 (75.2)	3.0 (1.9, 4.8)	<0.001
Also work in aged care/hospice (per week)†			
Nil	288 (50.8)	Reference	
<3 hours	166 (67.8)	2.0 (1.5, 2.8)	<0.001
≥3 hours	57 (68.3)	2.1 (1.3, 3.4)	<0.003
Teaching or supervising medical students			
No	48 (13.6)	Reference	
Yes	424 (78.1)	22.7 (15.4, 33.3)	<0.001
Teaching or supervising interns or prevocational trainees			
No	236 (39.3)	Reference	
Yes	115 (88.0)	11.4 (6.3, 20.3)	<0.001

*After exploring full-time and part-time patterns, showing similar relationships with supervision, the available full-time and part-time doctors in the practice were combined
†Based on self-reported hours in usual standard working week

Increasing the continuity of rural training pathways for Australian-trained students has the potential to increase the uptake of rural general practice and build the overall rural registrar supervision capacity.³¹ Some of these initiatives include increased investment in rural end-to-end medical programs, initiatives for more prevocational doctors to train and work in rural general practice, and the development of a National Rural Generalist Training Pathway and pathways via the Regional Training Hubs.

This study has some limitations. It was a cross-sectional study, so it is possible to attribute only associations rather than causality. The focus was on rural GPs to specifically inform rural training capacity, so the results cannot be generalised to metropolitan GPs. Another limitation may be that the study involved a subset of GPs responding to MABEL, although this is known to be a reasonably representative cohort of respondents, evenly spread by jurisdiction, town size and remoteness.²³ When explored, there were no signs that missing values systematically biased the results.

Conclusion

This study is the first national-scale study of rural general practice supervision, showing that more than half of rural GPs supervise registrars. After accounting for all potential covariates, the strongest associations were related to doctors working in practices with a greater number of GPs, supervising medical students and prevocational trainees, and being Australian-trained. Supporting GPs in smaller practices to engage in supervision and maintaining the strong involvement of larger practices could build more capacity for rural supervision. Enabling rural GPs to supervise medical students and prevocational trainees may foster registrar supervision as well. Potential strategies to enhance rural general practice supervision capacity include increasing the number of Australian-trained doctors in rural general practice, and increasing support for IMGs to train vocationally and to supervise once Fellowed.

Implications for general practice

- This is the first national-scale study of rural GP supervision, and it shows that more than half of rural GPs supervise registrars.
- Fellowed Australian and IMG GPs are more likely to supervise than non-Fellowed IMGs.
- Supporting GPs in smaller practices to engage in supervision and fostering the continued involvement of GPs in larger practices has the potential to build rural supervising capacity.
- GPs with experience supervising medical students and interns were more likely to supervise registrars.

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Table 2. Multivariate associations between location of rural general practitioners and participation in registrar teaching and supervising, based on logistic regression analyses

Characteristic	Model 1 (n = 851)		Model 2 (n = 819)		Model 3 (n = 653)	
	Pseudo R ² = 0.0667	P value	Pseudo R ² = 0.1877	P value	Pseudo R ² = 0.3762	P value
Location of main practice (Modified Monash Model)						
2 (>50,000)	Reference		Reference		Reference	
3 (15,000–50,000)	1.4 (1.0, 2.1)	0.08	1.2 (0.8, 1.8)	0.5	1.0 (0.5, 1.7)	0.9
4 (5,000–15,000)	2.1 (1.3, 3.4)	0.004	1.3 (0.8, 2.4)	0.3	0.9 (0.5, 1.8)	0.8
5 (<5,000)	1.6 (1.0, 2.4)	0.05	1.1 (0.7, 1.9)	0.6	1.0 (0.5, 2.0)	0.9
6–7 (remote and very remote)	1.4 (0.8, 2.4)	0.3	1.8 (0.9, 3.8)	0.1	2.3 (1.0, 5.5)	0.06
Age group (years)						
<40	Reference		Reference		Reference	
41–55	1.3 (0.9, 1.9)	0.1	1.3 (0.8, 2.0)	0.3	1.6 (0.9, 2.9)	0.1
≥5+	0.9 (0.6, 1.4)	0.7	1.0 (0.6, 1.6)	0.9	1.9 (1.0, 3.5)	0.05
Sex						
Female	Reference		Reference		Reference	
Male	1.6 (1.2, 2.2)	0.002	1.2 (0.8, 1.7)	0.4	1.1 (0.7, 1.8)	0.7
Training status						
Non-Fellowed international medical graduate (IMG)	Reference		Reference		Reference	
Fellowed IMG	2.8 (1.5, 5.4)	0.001	2.8 (1.3, 5.9)	0.009	2.9 (1.1, 7.9)	0.04
Australian-trained	5.7 (3.2, 10.1)	<0.001	6.2 (3.1, 12.2)	<0.001	5.1 (2.0, 12.8)	0.001
Total doctors employed in practice*						
1–2	Reference		Reference		Reference	
3–5	3.4 (1.5, 7.7)		0.003		5.0 (2.0, 12.0)	
6–10	8.2 (3.7, 18.1)		<0.001		11.0 (4.6, 26.1)	
≥11	11.5 (5.1, 26.3)		<0.001		16.0 (6.4, 40.1)	
Business relationship with practice						
Salary/contract	Reference		Reference		Reference	
Principal/associate	1.5 (1.0, 2.2)		0.05		1.1 (0.6, 1.9)	
Locum or other	1.1 (0.4, 3.0)		0.9		0.5 (0.2, 1.6)	
Total hours worked (per week)*						
<30	Reference		Reference		Reference	
30–40	1.1 (0.7, 1.8)		0.6		0.9 (0.5, 1.6)	
41–46	1.9 (1.0, 3.3)		0.04		1.3 (0.7, 2.7)	
>46	1.4 (0.8, 2.4)		0.2		1.1 (0.6, 2.3)	

Table 2. Multivariate associations between location of rural general practitioners and participation in registrar teaching and supervising, based on logistic regression analyses (cont'd)

Characteristic	Model 1 (n = 851)		Model 2 (n = 819)		Model 3 (n = 653)	
	Pseudo R ² = 0.0667	P value	Pseudo R ² = 0.1877	P value	Pseudo R ² = 0.3762	P value
Also work in a public hospital (per week)[†]						
Nil			Reference		Reference	
<8 hours			3.1 (1.7, 5.6)	<0.001	2.2 (1.1, 4.2)	0.03
≥8 hours			3.3 (1.7, 6.4)	<0.001	1.6 (0.7, 3.6)	0.3
Also work in aged care/hospice (per week)[†]						
Nil			Reference		Reference	
<3 hours			1.5 (1.0, 2.3)	0.06	1.7 (1.0, 2.9)	0.04
≥3 hours			2.0 (1.1, 3.6)	0.03	1.8 (0.8, 4.1)	0.2
Teaching or supervising medical students						
No					Reference	
Yes					8.1 (5.0, 13.2)	<0.001
Teaching or supervising interns or prevocational trainees						
No					Reference	
Yes					6.2 (2.6, 15.2)	<0.001

*After exploring full-time and part-time patterns, showing similar relationships with supervision, the available full-time and part-time doctors in the practice were combined

[†]Based on self-reported hours in usual standard working week

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