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Maintaining capacity for in-practice teaching and supervision of students and general practice trainees: a cross-sectional study of early career general practitioners

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Abstract

Objectives. Expanding learner cohorts of medical students and general practitioner (GP) vocational trainees and the impending retirement of the 'baby boomer' GP cohort threaten the teaching and supervisory capacity of the Australian GP workforce. Engaging newly qualified GPs is essential to sustaining this workforce training capacity. The aim of the present study was to establish the prevalence and associations of in-practice clinical teaching and supervision in early career GPs.

Methods. The present study was a cross-sectional questionnaire-based study of recent (within 5 years) alumni of three of Australia's 17 regional general practice training programs. The outcome factor was whether the alumnus taught or supervised medical students, GP registrars or other learners in their current practice. Logistic regression analysis was used to establish associations of teaching and supervision with independent variables comprising alumnus demographics, current practice characteristics and vocational training experiences.

Results. In all, 230 alumni returned questionnaires (response rate 37.4%). Of currently practising alumni, 52.4% (95% confidence interval (CI) 45.6–59.0%) reported current teaching or supervisory activities. Factors significantly ($P < 0.05$) associated with alumni currently undertaking in-practice clinical teaching and supervision were: Australian medical graduation (odds ratio (OR) for international graduates 0.36; 95% CI 0.14–0.92), working in a regional or remote area (OR 2.75; 95% CI 1.24–6.11) and currently undertaking nursing home visits, home visits or after-hours work (OR 2.01; CI 1.02–3.94).

Conclusions. Rural–urban and country-of-graduation differences in the engagement of early career GPs in practice-based apprenticeship-like teaching or training should inform strategies to maintain workforce training capacity.

What is known about the topic? Projected changes in the demand for and supply of clinical teaching and supervision within Australian general practice will require greater uptake of teaching and supervision by recently qualified GPs to ensure sustainability of this teaching model. Although interest in and undertaking of teaching roles have been documented for GP or family medicine trainees, studies investigating the engagement in these clinical roles by GPs during their early post-training period are lacking.

What does this paper add? This paper is the first to document the prevalence of teaching and supervision undertaken by early career GPs as part of their regular clinical practice. We also demonstrate associations of practice rurality, country of medical graduation and undertaking non-practice-based clinical roles with GPs' engagement in teaching and supervisory roles.

What are the implications for practitioners? Establishing current teaching patterns of GPs enables appropriate targeting of new strategies to sustain an effective teaching and supervisory capacity within general practice. The findings of the present study suggest that exploring focused strategies to facilitate and support international medical graduates to engage in teaching during their vocational training, aided by focused supervisor support, may be of particular value.

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Introduction

Access to best-practice primary care is the key medical factor in improving the health of communities and in healthcare efficiency and equity.[1] Access to and the quality of primary health care is predicated on sufficient numbers and distribution of adequately educated and trained general practitioners (GPs).

General practice education and training is based on a traditional workplace-based, apprenticeship-like model. In this model, most learning occurs in the context of the clinical workplace, under the supervision of a more senior practitioner,[2] supplemented by additional away-from-practice learning such as lectures, workshops or skills sessions. Both medical student education[3,4] and general practice vocational training[5,6] operate within this model, with 'vertical integration' of all levels of education within individual general practices being strongly advocated.[7,8]

Within the apprenticeship-like model, the role of the more senior practitioner, the supervisor, is central.[6] In Australia, there are considerable concerns that the capacity of the GP workforce to continue to provide this apprenticeship-like supervision is limited by clinical load and the impending retirement of the 'baby boomer' GP cohort.[2] Although responses to this scenario will necessarily be multifaceted and integrated,[2] one obvious element is engagement of newly qualified GPs in the supervision of medical students and GP vocational trainees (in Australia, termed 'registrars'). However, little is known regarding the engagement of early career GPs in teaching and supervision.

In the present study we sought to establish the prevalence and associations of in-practice clinical teaching and supervision in early career GPs (GPs within 5 years of completion of vocational training).

Methods

The present study was a cross-sectional questionnaire-based study.

Setting, participants and recruitment

The study was of recently vocationally qualified GPs ('alumni') of three of Australia's then 17 general practice regional training providers (RTPs). The RTPs were government-funded, not-for-profit, geographically defined education and training organisations. The first of these RTPs included non-capital major city and inner regional training practices. The second RTP encompassed capital major city to very remote training practices. The third RTP had a predominantly urban capital city geographic footprint, but with inner regional training practices. The RTPs were located in different states.

Inclusion criteria were status as an alumnus of one of the three participating RTPs and having achieved Fellowship of the Royal Australian College of General Practitioners (RACGP) or of the Australian College of Rural and Remote Medicine (ACRRM) within 6 months to 5 years before study recruitment. The 6-month post-Fellowship inclusion criterion reflected the intent to recruit alumni once they had completed any immediate post-training employment and location arrangements and changes. The study sample frame was the registrar databases of the three RTPs. Contact details for the alumni were obtained from these databases plus recourse to publicly available sources (triangulating data from the Australian Health Practitioner Regulation Agency website, telephone directories and individual practice websites).

An anonymous questionnaire (see below) was both mailed and emailed from each individual RTP to their alumni in March 2015. Alumni responded either by reply-paid post or completion of a SurveyMonkey link.

Questionnaire

Development of the 46-item questionnaire was informed by a literature search of the area of vocational trainee post-training practice plus the extensive general practice clinical and vocational educational experience of the study investigators. Individual items elicited demographic data of the alumnus and their current practice location. Items also elicited data on current practice patterns and the perceptions of the alumni of their vocational training experiences. The practice patterns elicited included several aspects of alumni practice. Results regarding provision of nursing home visits and home visits have been published

previously.[9] The questionnaire was pilot tested and modified with alumni who did not meet the study inclusion criteria.

Analysis

The outcome factor in the present analysis was whether the alumnus taught or supervised medical students, GP registrars or other learners in their current practice. The relevant questionnaire item was 'Does your current clinical GP role involve in-practice teaching or clinical supervision?'. Whether teaching or supervision involved GP registrars, medical students or other learners was also elicited.

The independent variables were as follows: the RTP the registrar trained with, gender, age, country of primary medical degree (Australia or international), years of medical clinical experience before GP vocational training, training pathway (rural or general), time since Fellowship, rurality of the current practice (dichotomised to Australian Standard Geographic Classification–Remoteness Area (ASGC-RA)[10] RA1 (major city) or RA2–5 (inner regional to very remote) in view of limited numbers of graduates in individual rural categories), size of the current practice (small practices with less than five full-time equivalent GPs), full- or part-time current clinical workload (with 'part-time' defined as 'working less than eight clinical general practice sessions on average each week') and whether the alumnus does other general practice-related academic education or research work away from the practice or does voluntary medical work. A further independent variable was whether the registrar failed any element of the RACGP or ACRRM Fellowship exams. We also constructed an independent variable of the alumnus undertaking nursing home visits or home visits or after-hours work as part of their current GP role. This variable was intended as a measure of alumnus 'engagement' with the breadth of general practice care (and as an indication of capacity as a supervisor to expose the learner to the breadth of general practice).

The proportions of graduates currently teaching or supervising medical students, GP registrars or other learners in their current practice were calculated with 95% confidence intervals (CIs).

Simple and multiple logistic regression analyses were used. Due to the relatively small sample sizes of the population of interest, the presence of influential observations was assessed using Cook's D statistics. No highly influential observations were found.

Independent variables with $P < 0.2$ and relevant effect size in the univariate analysis were included in the multiple regression model. Variables that had a small effect size and were no longer significant in the multivariate model were removed from the final model as long as removal of the variable did not change the resultant model.

Statistical analyses were performed using Stata 13.1 (StataCorp LLC, 4905 Lakeway Drive, College Station, Texas, USA) and SAS v9.4 (SAS Institute, 100 SAS Campus Drive, Cary, NC USA). Predictors were considered statistically significant if two-sided $P < 0.05$.

Ethics approval

The study was approved by the University of Newcastle Human Research Ethics Committee (Reference H-2015-0032).

Results

In all, 230 alumni completed questionnaires (response rate 37.4%). Of these, 212 respondents were currently engaged in clinical practice and provided a measure of involvement in teaching or supervision (hereafter, 'supervision') in their current GP role. The demographics of participants are presented in Table 1.

One hundred and eleven participants (52.4%; 95% CI 45.6–59.0%) reported undertaking supervision. Of these, 37 (33.3%; 95% CI 24.7–42.9%) supervised undergraduate medical students only, 19 (17.1%; 95% CI 10.6–25.4%) supervised registrars only and 52 (46.8%; 95% CI 37.3–56.6) supervised both. Three participants supervised other categories of learners only: international medical graduate GPs (IMGs) or nurses.

Table 1. Characteristics of participating general practitioners ($n = 230$) and their practices

Note, numbers may not add up to the total due to missing data. ASGC-RA, Australian Standard Geographic Classification–Remoteness Area; FTE, full-time equivalent; GP, general practitioner

Variable	*n* (%)
Gender	
Male	81 (35.4)
Female	148 (64.6)
Age (years)	
≤30	37 (16.1)
31–35	89 (38.7)
36–40	56 (24.4)
41–45	26 (11.3)
≥46	22 (9.6)
Marital status	
Not married	45 (20.0)
Married: partner not medically trained	116 (51.6)
Married: partner medically trained	64 (28.4)
Country of birth	
Australia	141 (61.3)
Other	89 (38.7)
Country where primary medical degree was awarded	
Australia	189 (82.5)
Other	40 (17.5)
Training pathway	
Rural	37 (16.3)
General	190 (83.7)
Mean time since fellowship awarded (years)	2.6
Currently working in clinical general practice	
Yes	215 (93.9)
No	14 (6.1)
Main practice location by ASGC-RA remoteness classification ($n = 215$)[A]	
Major cities	150 (73.5)
Inner regional	41 (20.1)
Outer regional	9 (4.4)
Remote	1 (0.5)
Very remote	3 (1.5)
Practice size (no. FTE GPs; $n = 215$)[A]	
<2	15 (6.6)
2–4	54 (23.8)
5–9	103 (45.4)
≥10	38 (16.7)

[A]Includes only those respondents currently working in clinical general practice.

The univariate associations of an alumnus' current GP role involving clinical teaching or supervision are presented in Table 2 and results for logistic regression models with outcome 'Current GP role includes teaching or supervision' are presented in Table 3.

In the adjusted regression model, three factors were associated with alumni currently undertaking in-practice clinical supervision: primary medical degree obtained in Australia (OR 0.36 for having obtained a primary medical degree outside Australia (i.e. being an IMG); 95% CI 0.14–0.92), working in a regional or remote (RA2–5) area (OR 2.75 compared with working in a major city; 95% CI 1.24–6.11) and undertaking nursing home visits or home visits or after-hours work as part of their current GP role (OR 2.01; 95% CI 1.02–3.94).

Discussion

Current trends to increased amounts of undergraduate education in clinical skills being taught in general practice[4] and, in particular, increasing numbers of Commonwealth government-funded GP registrar positions[11] have placed considerable pressure on Australian universities and regional vocational training providers to find suitable capacity within practices.[2] It is encouraging that we found somewhat more than half of alumni being engaged in

Table 2. Characteristics of alumni undertaking or not undertaking teaching and supervisory roles

Unless indicated otherwise, data are given as *n* (%) or as the mean ± s.d. RTP, regional training provider; GP, general practitioner

Variable	GP role: teaching and supervision		*P*-value
	No (*n* = 101)	Yes (*n* = 111)	
RTP			
RTP 1	27 (26.7)	28 (25.2)	0.058
RTP 2	28 (27.7)	17 (15.3)	
RTP 3	46 (45.5)	66 (59.5)	
Gender			
Male	34 (33.7)	40 (36.4)	0.68
Female	67 (66.3)	70 (63.6)	
Place where qualified as a doctor			
Australia	76 (75.2)	98 (88.3)	0.015
Other	25 (24.8)	13 (11.7)	
Vocational training pathway enrolled in			
General	79 (79.0)	96 (87.3)	0.11
Rural	21 (21.0)	14 (12.7)	
Fail components of Fellowship exams			
No	92 (92.0)	103 (94.5)	0.47
Yes	8 (8.0)	6 (5.5)	
Voluntary work related to medicine			
No	90 (91.8)	100 (90.9)	0.81
Yes	8 (8.2)	10 (9.1)	
Age (years)			
≤35	56 (55.4)	60 (54.1)	0.62
36–40	23 (22.8)	31 (27.9)	
≥41	22 (21.8)	20 (18.0)	
Rurality			
Major city	76 (80.0)	74 (67.9)	0.052
Regional, remote or very remote	19 (20.0)	35 (32.1)	
Practice size			
Small[A]	35 (35.0)	34 (30.9)	0.53
Large	65 (65.0)	76 (69.1)	
Current workload			
Part-time[B]	47 (47.0)	54 (49.5)	0.71
Full-time	53 (53.0)	55 (50.5)	
Visit nursing home, home or work after-hours			
No	40 (39.6)	23 (20.7)	0.003
Yes	61 (60.4)	88 (79.3)	
Other regular medical work (education or research)			
No	86 (87.8)	97 (87.4)	0.94
Yes	12 (12.2)	14 (12.6)	
Medical postgraduate years before GP training	4.0 ± 3.6	4.2 ± 3.9	0.61
Time since Fellowship (years)	2.3 ± 1.3	2.7 ± 1.4	0.061

[A]Less than five full-time equivalent GPs.
[B]Less than eight clinical sessions (4 days) per week.

Table 3. Associations with an alumnus' clinical role in general practice involving teaching or supervision
OR, odds ratio; CI, confidence interval; RTP, regional training provider

Variable	Univariate analysis		Multivariate analysis	
	OR (95% CI)	*P*-value	OR (95% CI)	*P*-value
RTP (reference: RTP 1)				
RTP 2	0.59 (0.26, 1.31)	0.19	0.66 (0.27, 1.65)	0.38
RTP 3	1.38 (0.72, 2.65)	0.33	2.09 (0.95, 4.61)	0.067
Place where qualified as a doctor (reference: Australia)				
Other	0.40 (0.19, 0.84)	0.015	0.36 (0.14, 0.92)	0.032
Vocational training pathway enrolled in (reference: general pathway)				
Rural	0.55 (0.26, 1.15)	0.11	1.24 (0.42, 3.65)	0.69
Rurality (reference: major city)				
Regional, remote or very remote	1.89 (0.99, 3.60)	0.052	2.75 (1.24, 6.11)	0.013
Visit nursing home, home or work after-hours				
Yes	2.51 (1.37, 4.61)	0.003	2.01 (1.02, 3.94)	0.042
Time since Fellowship	1.22 (0.99, 1.49)	0.061	1.18 (0.93, 1.49)	0.17

teaching or supervision within the practice, although we could not identify any previous evidence with which to directly compare our findings.

The 2015 Australian General Practice Training (AGPT) GP Registrar Satisfaction Survey[12] showed that 54.8% of registrars had recently participated in teaching activities, whereas 59.1% and 45.5% of responders saw themselves supervising medical students and registrars respectively within 5 years. In a study of English final-year GP trainees, 49.6% reported that they were engaged in practice-based teaching.[8] In another English study, 50% of trainees were 'quite' or 'very' interested in teaching after training.[13] In Canada, 77.7% of family medicine trainees were 'interested' or 'highly interested' in teaching in their future careers.[14] In addition, further studies have examined supervisor and teacher experiences and motivations,[15,16] as well as enablers (e.g. supportive peer network,[17,18] teaching interest[18–20]) and barriers (e.g. funding, time pressures, need for teacher training)[19–21] to teaching faced by Australian GPs and GP registrars. However, studies documenting the prevalence of teaching or supervision in the early post-training period, or of factors associated with becoming a teacher or supervisor, are lacking.

The fact that regionally or remotely located alumni are more likely to be engaged in teaching and supervisory work is especially important. Registrars comprise an increasing proportion of the GP workforce with increasing ASGC-RA classification from RA1 to RA5.[22] Therefore, the need for registrar supervision is greater the more rural or remote the location. There is also evidence that GP registrar training in rural areas is a particularly rich learning experience for both undergraduate students[23] and registrars,[24] so maintaining or increasing capacity to deliver this educational experience is vital. However, there are disincentives to undertaking GP vocational training in rural practices. One study has found that rural practices absorb a financial loss for teaching GP registrars, whereas urban practices made a small financial gain.[25] Thus, our finding of robust engagement with teaching and supervision in rural areas is particularly pleasing.

However, the finding that IMGs are approximately one-third as likely as Australian graduates to be teaching or supervising is a concern. IMGs comprise 30% of the Australian GP vocational training intake[11] and it is essential that this potential source of supervision be further explored. Another important finding of the present study was the lack of association of full- or part-time status with supervision. With decreasing work hours with successive cohorts of general practice graduates,[26,27] it is important that the part-time GP demographic continue to be engaged with supervision.

Study strengths and limitations

A strength of the present study is its generalizability to the wider Australian vocational training program. We recruited alumni from RTPs in three Australian states with footprints across all categories of rurality from major city to very remote. The study is also relevant to other countries with apprenticeship-model workplace-based training programs in general practice or family medicine (countries such as the UK, Canada, Belgium, the Netherlands and the Scandinavian countries).[5]

A limitation of the present study is that we have established associations of several factors with supervision but, because the present study was a cross-sectional study, we cannot infer causality in the relationships. A further limitation of the study is our response rate of 37.9%. Although modest, this is quite reasonable for a survey of GPs.[28] However, there is potential for responder bias, with alumni who do supervise being more likely to respond.

Implications for educational practice and future research

Given the expansion of undergraduate medical placements and GP vocational training positions that rely heavily on workplace-based or apprenticeship-like models of training, it is of strategic value to establish the teaching patterns of GPs. This is particularly so for recent alumni of training programs as they join a limited group of professionals who have the necessary qualifications to teach these expanding cohorts of learners.[2] In this context, several of our findings have implications for educational practice.

Promotion of teaching as a core skill in vocational training is appropriate for all registrars[8] and congruent with the core skills of both RACGP[29] and ACRRM curricula.[30] Our findings suggest that there is a pool of IMGs who may have the potential to engage with teaching during their vocational training, and then supervise registrars in their practice once qualified

as Fellowship-holding GPs. Exploring specific strategies to facilitate and support IMG teaching may be appropriate in training organisations' professional development programs for supervisors.

The association of supervision with performing nursing home visits, home visits and after-hours work, as discussed above, suggests potential for supervisors to engage students and registrars in some of the richest learning environments in general practice. We also found in the present analysis that part-time status is not associated with less provision of supervision. In an earlier analysis in this alumni population, we found that part-time status was associated with markedly reduced provision of nursing home visits and home visits.[9] As we suggested above, continuing engagement of part-time practitioners in supervision is essential. However, limited supervisor experience of and expertise in nursing home visits and home visits of part-time GPs may need to be addressed. 'Blended' supervisory models where more than one GP in the same practice contributes complementary components to educational programs for individual learners may be desirable in these circumstances.

We found that 25% of all alumni (equating to 48% of those alumni undertaking any supervision) supervised both undergraduate students and registrars. This suggests that there is already appreciable scope for vertical integration of education with practices. Supporting these practices to deliver models of vertical integration is clearly indicated.[8]

Future research, informed by our findings, could explore enablers and barriers to teaching and supervision faced by GPs during the crucial early post-Fellowship period, particularly IMGs. Qualitative investigation of this knowledge gap will complement existing literature examining such enablers and barriers faced by GPs during their vocational training and as established clinicians.

Conclusions

In the present study, engagement of early career GPs in the practice-based apprenticeship-like training of undergraduate students and vocational trainees was occurring quite frequently, especially in regional and rural areas. However, IMGs were less likely to be involved in supervision. Vocational training program education in clinical teaching could particularly address potential barriers to teaching faced by IMGs. Further qualitative research investigating such barriers is warranted.

Competing interests

The authors report no competing interests.

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