

Impact of clinical placement sites on general practice as a career preference for Australian medical students

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Abstract

Objective: This study investigates whether General Practice placement experience or locations (urban/metropolitan vs non-metropolitan) promote student interest in pursuing general practice.

Design: SurveyMonkey was used in the design of the survey.

Setting: The study was conducted online.

Participants: A total of 520 and 705 clinical-year students were surveyed in 2009 and 2019, respectively. The study was conducted online, using SurveyMonkey, and the participants were mostly non-indigenous Australian medical students, between the ages of 18 and 30.

Interventions: Students were recruited from the General Practice Students' Network membership database to complete the survey online. Chi-squared testing, Pearson's correlation and a multivariate logistic regression analysis were used to investigate the correlation between general practice placements and intention to become a general practice.

Main outcome measures: The association and causation between general practice placement location, student experience and students' intended career outcomes.

Results: In 2009, majority of students rated their general practice experience 'mostly positive' while most metropolitan participants and majority of non-metropolitan placement participants in the 2019 survey responded with 'mostly positive' in 2019. Based on 2009 and 2019 data, general practice placement location had no association with the likelihood of pursuing general practice as a career, while student experience had a stronger positive correlation with the likelihood of pursuing general practice as a career.

Conclusion: Our study shows that students' overall experience with their general practice placements significantly encourages medical students to pursue the general practice pathway. As such, increasing both metropolitan and non-metropolitan placement experiences can potentially overcome general practice shortage.

KEYWORDS

remote health practice, rural general practice, rural health, rural incentive programs, rural/remote GP and rural medicine education

1 | INTRODUCTION

The general practice (GP) workforce in Australia is suffering a workforce shortage, particularly in many rural and remote regions, and this is projected to worsen with current trends.¹ GP placements have been identified as a positive influential factor of medical students' attitudes towards GP and have been proposed as a potential intervention strategy to increase proportion of medical students choosing a GP career.² This study seeks to investigate whether clinical-year medical students' experience with their GP placements, or whether the location of the placement (non-metropolitan vs metropolitan/urban locations) had an impact on their desire to pursue GP as a career.

In Australia, growing trends towards specialisation and increasing medical demands from an ageing population have led to insufficient numbers of general practitioners in Australia.¹ This is especially significant in rural and remote Australia, where there is a greater patient-to-doctor ratio.² As only a minority of Australian medical students have clear career intentions at graduation,¹ pre-graduate GP placements have been identified as a possible intervention strategy to increase the proportion of students choosing a GP career.³

International research has strongly demonstrated that undergraduate GP clinical experiences have a positive impact on the likelihood of a medical student to consider a career in general practice. A multi-country systematic review⁴ found that primary care focused and rural undergraduate placements were associated with increased recruitment of primary care doctors. Wiener-Ogilvie's⁵ survey found that out of 14 factors, an undergraduate GP placement had the strongest positive influence on GP career preference in foundation doctors. Pfarrwaller's⁶ systematic review compared the impact of compulsory clerkships, longitudinal programs, electives, interest groups, student-run clinics and integrated residency programs in primary care and concluded that whilst every intervention increased interest towards primary care, only longitudinal primary care programs consistently increased the proportion of students choosing primary care. Additionally, previous literature has also shown that high-quality, ongoing and authentic clinical placements are a powerful attractor to GP career.⁷

Already in the last decade, opportunities for medical students to undertake learning in general practice are becoming more and more common,⁸ albeit mostly driven

What is already known on this subject:

- There is an insufficient number of general practitioners in Australia, especially in remote and rural
- GP placements and similar longitudinal primary care training programs have shown a positive influence on GP career intent and a positive correlation with increased recruitment of primary care doctors

What this study adds:

- This study determines the quantitative impact of GP placements on career intent
- It compares and contrasts the impact of a rural GP placement with an urban GP placement, whilst considering the impact of student placement experience in a single evaluation
- This study adds to current recommendations on appropriately timed exposures that can lead to an increase of individuals considering a career in general practice

by the establishment of new rural clinical schools.⁹ At Flinders University under the Parallel Rural Community Curriculum, senior medical students undertake a whole year in rural general practice.⁸ On the other hand, urban GP-based undergraduate teaching areas are still much less developed and currently still mostly consist of short term placements.¹⁰ Longitudinal integrated clerkships (LICs), where medical students remain in one setting for an extended time, are another innovative model of medical education which has recently been adopted in Australia,¹¹ and preliminary evidence has shown that students who undertake LICs are positively influenced towards primary care and rural careers.¹²

However, though there is evidence to support GP placements as a positive influence on GP career intent, there is a lack of studies that quantitatively determine impact of GP placements on career intent, and the evidence base regarding the topic remains weak.⁴ Importantly, there is a lack of studies which compare and contrast the impact of a rural GP placement with an urban GP placement, as well

as student placement experience, in a single evaluation, which is what this study seeks to find out. Thus, this study seeks to find further evidence to build on existing research, and examine whether urban vs rural GP placements and student placement experience influence intended career choice in favour of GP. This can be compared to current recommendations that appropriately timed exposures relevant to general practice can lead to an increase of individuals considering general practice career.¹

2 | METHODS

2.1 | Setting

The initial study was undertaken in May to July 2009, through an online survey platform (SurveyMonkey). The same survey, with some modifications, was administered on the same platform in September to November 2019.

2.2 | Participants and recruitment

The online survey (Appendix S1) was distributed through the General Practice Student Network (GPSN) membership database and promoted through medical faculty newsletters, social media groups across all medical schools and GPSN student ambassadors. The majority of participants were likely to be recruited from the GPSN membership database (see section 4.1). All clinical-year medical students enrolled in an Australian Medical School were eligible to be a part of the study. However, participants who completed the survey did so on a voluntary basis.

2.3 | Data collection

The survey contained questions encompassing the demographic of participants such as age, sex, Aboriginal or Torres Strait Islander origin, relationship status, existence of dependents and citizenship status. This was followed by questions relating to the location of GP placement, with overall satisfaction with the placement and whether the placement was likely to contribute to the desire to become a GP assessed using Likert scales. The location of placement was separated into metropolitan and non-metropolitan: non-metropolitan, defined as areas that do not encompass RRMA 1 category, and this definition remained consistent between both the 2009 and 2019 surveys. Participants rated their GP placement experience using the following options: mostly negative, neutral, mostly positive. Participants also indicated the likelihood that they would consider pursuing a career as a GP with

the following options: less likely, no change and more likely. 'Less likely' and 'no change' responses were placed into one category and 'more likely' in a separate category to evaluate whether the independent variable had a positive impact on students' interest in becoming future GPs.

Due to the 10-year gap between both data sets (2009 and 2019), there were some discrepancies between the surveys distributed in 2009 and 2019, with the 2019 survey allowing participants who completed a non-metropolitan and metropolitan GP placement to give separate ratings for each of their placements, while in 2009, participants of the same category were asked to give an overall rating of both their placements. To account for this difference, participants who completed a placement in both non-metropolitan and metropolitan areas were excluded from the data analysis.

2.4 | Data analysis

Quantitative data analysis was performed using SPSS, with chi-squared testing, Pearson's correlation and a multivariate logistic regression analysis. Parameters analysed were whether the location of placement and the overall satisfaction of the placement contributed to the desire to become a GP. Chi-squared tests assessed the strength of association between the location of the GP placement or a positive experience of the placement and the extent to which the placement contributed to pursuing general practice as a career. For the purpose of an accurate chi-squared analysis, 'less likely/no change' scores were grouped together for the 'likelihood of pursuing a career as a GP' variable, while 'mostly negative/neutral scores' were grouped together for the 'GP rotation experience' variable. This was done as the aim of the study is concerned with the potential positive impact of each of the independent variables.

A multivariate logistic regression analysis and Pearson's correlation coefficient was also used to investigate the relationship between the likelihood of pursuing GP as a career and its independent variables (age, sex, location of GP rotation and rating of GP placements).

2.5 | Ethics approval

Ethical approval was sought through the UOW & ISLHD Health and Medical Human Research Ethics Committee (HREC number 2019/297).

3 | RESULTS

In 2009, 520 clinical-year medical students were surveyed. Participants, between the age of 18 and 30, comprised

89.8% of the surveyed population, with 67.2% of surveyees also female. 99% of the medical students surveyed were non-indigenous, with most of the surveyed population either single without children (59.8%) or in a relationship but not living together with no children (22.7%).

Responses were mostly positive, with 81.3% rating their GP experience 'mostly positive' in 2009. Based on 2009 data, the region where GP placement was undertaken did not significantly increase the likelihood of pursuing GP as a career $\chi^2(1, N = 312) = 1.871, P > .05$. However, a correlation can be observed between the rating of students' GP experiences (irrespective of location) and the desire to become a GP in the future $\chi^2(1, N = 335) = 45.503, P < .001$ (Figure 1). The sample size differs to the number of students who had completed a GP rotation as some students did not leave a rating on their survey. All chi-squared tests performed on both 2009 and 2019 data had zero cells with an expected count of <5 . A Pearson's *r* data analysis revealed that there were no significant correlations between the covariates, as the Pearson coefficient correlation of each covariate lied between ± 0.02 . Qualitative responses indicated that students who had a positive GP placement used words such as 'challenging' and 'exposure', to describe their experience.

In 2019, 705 clinical-year medical students were surveyed. As with the 2009 dataset, 81.2% of the surveyed population were between the ages of 18 to 30, 65.4% female, 97.4% non-indigenous and 95.1% without children (either single or in a non-de facto relationship).

78.2% of metropolitan participants in the 2019 survey responded with 'mostly positive,' while 84.7% of 2019 rural placement participants answered likewise. Analysis of data collected in 2019 supports the fact that the location of GP rotation did not have a significant impact on the dependent variable $\chi^2(1, N = 437) = 0.073, P > .05$. However, a strong association was seen between the participant rating of their GP placement and an increase in desire to be a GP $\chi^2(1, N = 436) = 50.24, P < .001$ (Figure 2). A Pearson's

r data analysis revealed that there was a mild positive correlation between certain covariates: the overall attitude towards GP training and the rating of GP placement in rural, remote and metropolitan regions ($P < .05$).

A positive correlation was also found between rating of GP placements in non-metropolitan and the likelihood of pursuing a career as a rural GP; however, 22.2% of cells had less than 5 values for the chi-squared test that was performed.

Students in 2009 and 2019 also highlighted the incorporation of 'procedural experience' and 'parallel consultations' in their positively related GP placements. A multivariate regression analysis in 2009 showed the rating of GP placement to be the only significant variable to have an impact on the likelihood of medical students pursuing GP as a career, $b = 3.979, P < .001, OR = 53.485$ (95% CI = 7.199, 397.377). This was also the case in 2019, $b = 2.922, P < .001, OR = 18.587$ (95% CI = 6.585, 52.464).

4 | DISCUSSION

As inferred from the results and outcomes of this study, the location of GP placement has no significant impact on the likelihood of a medical student pursuing general practice in the future. Our results echo the findings of Edward's¹³ study, where regardless of rural or urban location, nursing students reported feeling satisfied and more competent post-clinical placement. These results indicate that both urban and rural placements play a role in developing competence and student satisfaction with their clinical experience.

On the other hand, our study highlighted that the student experience rating of their placement had a significant correlation with the desire to become a GP. This reflects the findings of previous literature, such as Nicholson's study,⁷ which found that GP placements that were perceived as high-quality and authentic were a powerful

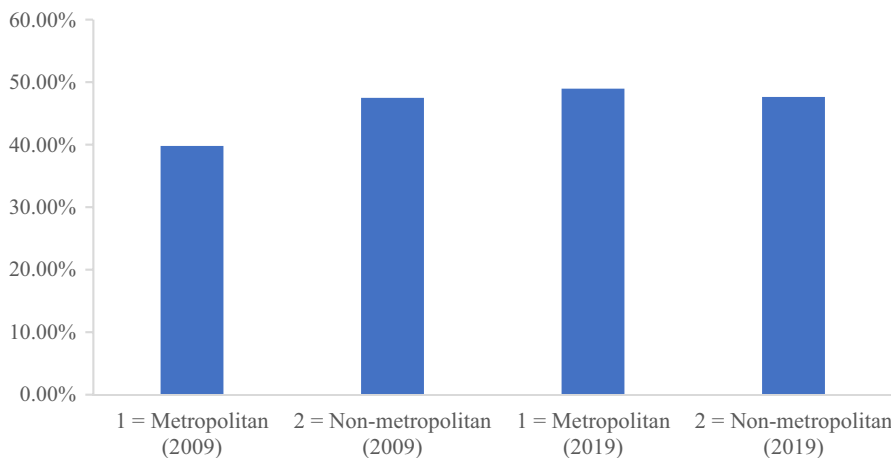
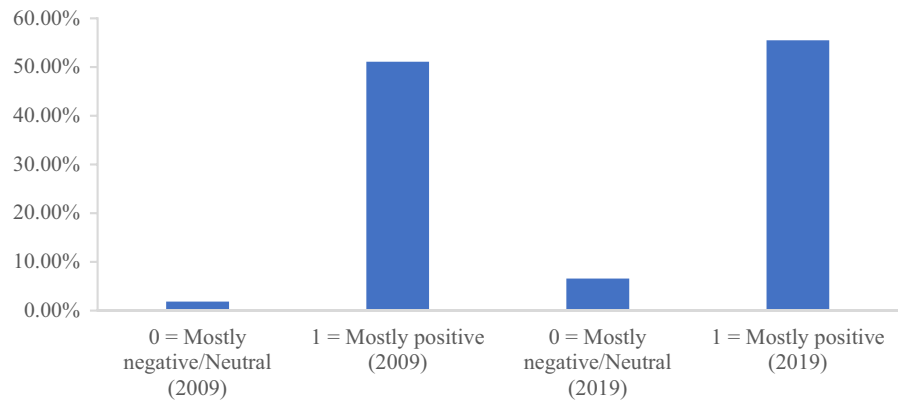


FIGURE 1 Bar chart: Impact of location of general practice (GP) placement on proportion of students who were more likely to pursue GP as a career based on 2009 and 2019 data

FIGURE 2 Bar chart: Impact of rating of general practice (GP) placement experience on proportion of students who were more likely to pursue GP as a career based on 2009 and 2019 data



attractor to general practice for UK medical students, whilst poor placement experiences affected career perception and choice negatively. Therefore, comparing non-metropolitan GP placements vs urban placements may be inconsequential, but rather the focus should be on how we can improve placements in both non-metro and metro areas to improve students' experience and satisfaction with their placements.

In the qualitative segment of our study, subjects cited parallel consulting and procedural experience as key elements that allowed them to gain insight into general practice as a profession, mentioning 'parallel consulting was my favourite style of learning,' and thus positively influenced their decision to become a general practitioner. More students enjoyed the 'hands-on' approach to their placements over an observational approach, as one student noted it was more 'engaging and interactive, which helped with the consolidation of their learning from medical school.' While more research is needed to confirm whether these integrative practices within placements are the primary reasons for student satisfaction or whether there are other contributing factors involved, focusing on integrating these elements into GP placements across Australia may be beneficial.

Some participants who showed interest in pursuing general practice also acknowledged their welcoming and knowledgeable supervisors (GPs), the support of their workplace and their positive influence during their placement: 'The doctors were more than happy to have me involved,' 'he [the GP] made a point to teach me something about every patient,' 'loved the supportive culture with all the GPs being great teachers,' 'I was quickly accepted into the practice family.' In a separate study, those satisfied with workplace supervision showed increased overall satisfaction and post-placement rural practice intention.^{14,15} Similarly, a trial of the CEMENT learning project in London consisting of a teaching program by general practitioners to medical students exemplified that when students and GPs work collaboratively, it can be a positive experience for both parties. Students

demonstrated marked improvement in their clinical skills, including history taking, examination skills and management of the patient, while GPs felt less isolated and more compelled to be thorough with their clinical and examination skills: a win for both the educator and the learner.¹⁶ GPs and supervisors can be the deciding factor in whether a student chooses to turn towards or away from practising as a GP. In addition to incorporating more 'hands-on' opportunities for students during their placements, ways to strengthen the relationship and rapport medical students share with their supervisors should also be investigated.

From our study, it is not known whether students' satisfaction with their clinical experience will address the workforce shortage of rural generalists and GP's in rural and remote areas. While we have seen that an increase in the rating of student experience with their GP placements correlates to an increase in desire to pursue general practice as a career, we do not know whether students will pursue general practice in rural and remote areas down the track. A correlation was found in our study between these 2 variables, however 22.2% of cells had less than 5 values for validity of the chi-squared test.

To encourage rural practice for Australian students, as a continuation of the factors that improve positive experience, previous literature has demonstrated Australian medical students of both rural and metropolitan origin could be open to rural practice if provided with immersive and insightful rural placements.¹⁷ Another study from the Australian Journal of Rural Health states that students satisfied with their placement were 2.33 times more likely to pursue rural practice.¹⁴ While it cannot be said for certain that a positive placement experience will lead to an increased interest in practising rurally, it most often correlates to a positive outlook when students are considering general practice as a career prospect.

Nonetheless, there will always be factors that will hinder progress in addressing the GP workforce shortage in rural and remote areas, beyond the control of medical faculties and those in charge of arranging GP placements

TABLE 1 Summary of chi-squared statistics, *P*-values, sample size included in chi-squared calculations, omitted data numbers due to students having completed both non-metropolitan and metropolitan placements

	Chi-squared statistic (χ^2)	Sample size	<i>P</i> -value	Omitted data due to students having completed both non-metropolitan and metropolitan placements
Impact of location of GP placement on likelihood of pursuing GP as a career				
2009	1.871	312	.692	148
2019	0.073	437	.715	235
Impact of rating of GP placement experience on likelihood of pursuing GP as a career				
2009	45.503	335	.000*	148
2019	50.24	436	.000*	235

Abbreviation: GP, general practice.

**P* < .001.

for students. From this study, a student mentioned ‘a lack of interest’ in the field from the outset, which resulted in a disconnect to activities and clinical skill opportunities within their GP placement. These uncontrollable factors may also include the desire to pursue other specialities or being more skilled or well-versed in other areas of medicine and preference for urban settings.^{18,19} Proximity to family, prior training background and skills, preconceived notions of rural practice, lack of self-confidence and inadequate remuneration also contribute to the rural workforce shortage concern.²⁰

While there are individual factors and reasons at play, there are factors that are within the control of medical faculties, GP clinics and students themselves, to ensure a high-quality GP placement. In order to develop authentic insight into a career as a general practitioner, it is important for medical schools to not only allocate students to GP rotations, but to also ensure placements are meaningful for students, by ensuring there are adequate opportunities to engage in parallel consulting and procedural skills, build and foster relationships with their mentors, and experience authentic clinical practice in a welcoming environment. Through these methods, a step can be taken closer towards improving the prevalence and hence, accessibility of rural and remote doctors.

4.1 | Limitations

A limitation of this study was that the recruitment strategy had a selection bias. While the surveys were open to all Australian clinical-year medical students, those who showed some interest in a career in general practice were more likely to participate as members were recruited via the GPSN database. As there was no information or data on the total number of students the survey reached, response rates for the study remain undetermined. There

were also some minor differences in survey questions that limited comparisons. For the data collected in 2019, a correlation was observed between the overall attitude towards GP training and the rating of GP placement in non-metropolitan and metropolitan regions, which suggests that each student’s rating of their experience might have been influenced by preconceived beliefs and attitudes towards the profession. However, when recording the overall attitudes of each student towards their GP rotation, some students had not yet completed their rotation, while others had already finished. This makes it unclear as to whether one’s attitudes prior could have predetermined whether they would want to become a future GP. No information on this variable was collected in the 2009 data, which limited the investigation of this variable. Furthermore, the ‘likelihood’ (less likely, no change, more likely) and ‘overall attitudes’ (mostly negative, neutral, mostly positive) scales provided a limited response range. There were also discrepancies in the method of data collection between 2009 and 2019. For students who completed a non-metropolitan and metropolitan GP placement in 2019, ratings for each placement were recorded as a separate entry; while in 2009, students were asked to give a global rating. For a valid comparison between the 2 sets, the ratings given by these students were excluded (Table 1). This accounts for the differences between the sample size and numbers reported for the chi-squared analysis; ratings were also not reported for some students.

However, despite these limitations, the value of this study is greatly heightened by the vast demographic that were studied and the questionnaire design which provided both relevant qualitative and quantitative data. As GPSN has a national reach there was representation from all medical schools in Australia, which increased the validity of conclusions made in this study. Furthermore, as 2 questionnaires were distributed, one in 2009 and one in 2019, changes in attitudes towards general practice within 2 time

frames depending on overall experience and placement location were able to be ascertained. Both the questionnaires were designed mostly to contain multiple-choice questions, thus maximising potential for a high number of responses as students are more inclined to participate in questionnaires which require shorter times to complete.

5 | CONCLUSION

Our results indicate the insignificance of the impact of GP location (non-metropolitan vs metropolitan/urban areas) on the likelihood of medical students pursuing GP as a career in both 2009 and 2019 data sets. On the contrary, students who rated their placements positively were associated with a greater likelihood of practising as a general practitioner in the future. Some of these students emphasised that the aspects of their GP placements they thoroughly enjoyed were the parallel consultations and procedural experiences, and this was consistent across the 2009 and 2019 data sets.

The results of our study highlight the importance of GP placements regardless of location. Alternatively, one of the ways we can increase interest in the field of general practice is to focus on enhancing and enriching the placement experiences for each medical student, perhaps through the incorporation of more parallel consultations and procedural experiences for students. Further research to understand and investigate both the extent of rotation experience and individual aspects of clinical-year placement on career outcomes in other medical fields as well can better guide future intervention strategies.

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CONFLICT OF INTEREST

None.

AUTHOR CONTRIBUTIONS

AY: formal analysis; writing-original draft; writing-review & editing. **AKS:** methodology; writing-original draft; writing-review & editing. **CNYL:** writing-original draft; writing-review & editing. **RH:** data curation; funding acquisition; investigation; supervision. **AG:** supervision; writing-review & editing. **KNT:** writing-original draft.

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SUPPORTING INFORMATION

Additional supporting information may be found in the online version of the article at the publisher's website.

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