Contemporary Australian socio-cultural factors and their influence on medical student rural career intent

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Funding information

No external funding was received for this work

Abstract

Revised: 28 February 2022

Objective: To understand how contemporary socio-cultural factors may impact medical students' rural career intent.

Design: Cross-sectional study using data from the national Federation of Rural Australian Medical Educators survey.

Participants/setting: Medical students across 18 Australian universities who completed a full academic year of clinical training in rural areas in 2019.

Main outcome measure(s): Preferred location of practice post-training reported to be either: (i) a major city; (ii) a regional area or large town; or (iii) a small rural location.

Results: In total, 626 students completed the survey (70.1% response rate). A small rural location was the most preferred location of practice after graduation for 28.3% of the students (95% CI 21.6-36.0). Four socio-cultural factors were positively associated with a preference for a rural career location: poor health status of rural people, motor vehicle traffic congestion in cities, rural generalist training opportunities in the state and the Royal Flying Doctor Service. Other sociocultural factors, including specialists' under-employment, Medicare freeze effect on doctors' income, bullying/sexual harassment in hospitals, climate change/ natural disasters or recognised rural health personalities did not influence the investigated outcome.

Conclusions: Our findings indicate a novel association between contemporary socio-cultural factors and rural career intention in a cohort of Australian rural clinical school students. These findings advocate for further consideration of research exploring socio-cultural factors shaping rural career intent and workforce outcomes.

KEYWORDS

career choice, family medicine, health workforce, rural health

[Correction added on 10 May 2022, after first online publication: CAUL funding statement has been added.]

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1 | BACKGROUND

As part of a comprehensive rural medical workforce strategy, the Australian Commonwealth Government funds medical schools to provide 25% of medical students with at least one full academic year based in rural areas. After 20 years of investment, this program has increased graduate participation in non-urban, particularly regional medical practice.¹⁻³ Despite this and other rural workforce recruitment and retention policies, the medical workforce's geographical maldistribution remains a significant issue.⁴

Previous work has identified an association between medical student rural career outcomes and factors such as rural background and rural clinical school exposure.² Key theoretical frameworks also highlight the potential influence of society and environment on career decision making in medicine.^{5,6} In addition, O'Sullivan's model for choosing a generalist career outlined nonprofessional, professional and environmental factors, recognising that values and expectations are established within a social-cultural context.⁶ These studies suggest that it is opportune to consider socio-cultural influences on young people's professional choices, as Australia grapples with the medical workforce's geographical maldistribution and seeks to develop a national medical workforce plan.⁷ Socio-cultural factors can be contextspecific and need to be understood in relation to national cultural norms.8

Societal, cultural and gender norms are 'much deeper rooted in the human mind than occupational cultures acquired at school, or other organizational cultures³ Hofstede and McCrae have undertaken extensive work to characterise six dimensions that define national culture; these are (1) power distance, (2) uncertainty avoidance, (3) individualism/collectivism, (4) masculinity/ femininity, (5) long-/short-term orientation and (6) indulgence/restraint.^{8,9} In comparison to other countries, Australian culture is described as having low power distance (score of 38 out of 100), very high individualism (score 90), intermediate to high masculinity (score 61), intermediate uncertainty avoidance (score 51), low long-term orientation (score 21) and high indulgence (score 71).⁹ These results are similar to Canada, the USA and New Zealand and differ substantially from Western Europe and developing countries.9 This framework has been used in previous research exploring career decision-making in youth.¹⁰ The objective of this study was to explore contemporary Australian socio-cultural factors and their influence on medical student urban or rural career intent.

What is already known on the subject:

• Rural background increases likelihood of choosing a rural medical career

- Positive experiences at rural clinical schools can strengthen rural career interest
- These findings are broadly consistent across Australia, Canada and the USA

What this paper adds:

- Students interested in rural careers describe the positive influence of poor health status of rural people, motor vehicle traffic congestion in cities and the Royal Flying Doctor Service
- In addition, students interested in regional careers describe the positive influence of rural generalist training pathways in their state
- Hofstede and McCrae's national cultural dimensions provide a useful framework for interpreting the influence of socio-cultural factors on medical student rural career intent

2 | METHODS

This cross-sectional study included medical students who completed a full academic year in an Australian rural clinical school (RCS) and answered a national end-of-placement survey. This survey was developed by the Federation of Rural Australian Medical Educators (FRAME) as a standardised questionnaire to collect data on student demographics and perceptions of their RCS experience, motivations and intentions for future practice.¹¹ Medical students from 18 medical schools were invited to complete the online survey during the final 4 weeks of their rural clinical placements. The survey took approximately 15–20 min to complete.

2.1 | Measurements

2.1.1 | Contemporary Australian socio-cultural factors

Two authors (JP and LW) developed a shortlist of sociocultural factors that was further refined by the FRAME survey working party and included in the existing annual survey in 2019. The factors chosen reflected contemporary socio-cultural aspects of the rural and broader health landscape, and we aimed to include factors (individuals,

community issues and organisations) that, according to the available literature, would be familiar to medical students attending an Australian RCS.^{6–8,10} Students were asked to describe how these contemporary factors influenced their choice towards their preferred location of practice after graduation ['Describe how the following factors currently motivate your choice toward your preferred location of practice']. Each of the factors was assessed using a 5-point Likert scale of motivation (i.e. very negatively, negatively, no effect or neutral, positively and very positively). A 'positive influence' was considered when participants selected the option 'positively' or 'very positively' for the corresponding factor.

2.1.2 | Preferred location of practice

Survey participants were also asked 'Regarding your plans for future medical practice... in which geographical location within Australia would you most like to practice on completing your training? Please rank 1 (most preferred) to 5 (least preferred)'. The five descriptors provided to students were population-based descriptors as students may not have been familiar with the ASGS-RA classifica $tion^{12}$: (1) capital or major city, (2) inner regional city or large town (population 25 000-100 000), (3) small town or outer regional (10 000-24 999), (4) small rural or remote community (<10 000) and (5) very remote centre/ area. Students were requested to attribute a different rank (from 1 to 5) to each of these locations. Based on the location of practice selected by the students as the most preferred, they were reclassified in one of the following three categories:

- prefers a major city [descriptor 1 above],
- prefers regional or large town [descriptor 2],
- prefers a small rural location [descriptors 3–5].

For this study, we refer to the third group as those favouring a 'rural' career location, as descriptors 3–5 are more aligned with the modified Monash model 3–7 used by the Commonwealth to define what kind of activities are considered 'rural' as part of the funding requirements for all RCS.^{1–3} However, we acknowledge that rurality may be interpreted differently by students.

2.2 Demographic confounders

Rural career intention in medical students is associated with several other factors.^{2,13} These variables were not

the focus of this paper. Hence, for the purposes of data analysis, the following variables were considered to be possible confounders: gender, age (generated based on the date of birth and classified as 20–24, 25–29 or 30+ years), rural background (based on the question 'Do you consider yourself to come from a rural background?'—yes or no), rurality of place in Australia where they have lived the longest (three categories as outlined above), identified as Aboriginal or Torres Strait Islander, migration status ('You and/or your parents immigrated to Australia'—yes or no), if they were the first in the family to attend university, whether there were medical doctors in their immediate family and prior health qualifications.

2.3 | Data analysis

Categorical variables were expressed in percentages (%) and presented graphically or in tables. Differences in demographic factors according to the preferred place of practice after graduation were tested using chi-squared heterogeneity tests. Adjusted logistic regression models were used to investigate which contemporary sociocultural factor (used as an outcome for analysis) had a more positive influence on their medical career choice after graduation depending on whether they chose a small rural location, a regional or small town or a major city as the preferred location of future practice. Adjusted models included all demographic variables with a p-value <0.05 (crude results) in the association with the preferred location of practice. Maximum likelihood estimates for the full models were obtained and Wald tests for heterogeneity used to estimate the p-values due to the use of clustered weighted data. Results were then expressed as the predicted adjusted frequencies (i.e. proportion reporting a positive influence for the corresponding factor according to the preferred location of practice) rather than as odds ratios, to facilitate the interpretation of the results.

Determination coefficients (R^2) were used to evaluate the overall model fit, while the variance inflation factor (VIF) was investigated as an indicator of possible collinearity between the explanatory variables. All analyses were performed in STATA 16.0 (StataCorp), weighted to the participation rate within each school, and clustered to the corresponding RCS. De-identified data with the variables of interest from the survey were provided to the research group for statistical analysis. Following statistical analysis, the results were considered using Hofstede and McCrae's cultural dimensions as a frame of reference for further interpreting the influence of socio-cultural factors on medical student career intent.

3 | RESULTS

Of the 893 eligible medical students enrolled at the 18 Australian universities, 626 answered the FRAME survey in 2019 (response rate 70.1%). Of these, 33.6% indicated their most preferred location of practice on completion of training was a capital or major city, 38.4% an inner regional city or large town, 19.7% a small town, 6.1% a

remote location and 2.5% a very remote area. A small rural location (including small town, remote or very remote area) was the most preferred location of practice for 28.3% of the participants (95% CI 21.6–36.0).

Table 1 shows that the sample included a larger proportion of females (56.6%), individuals aged 20–29 years (84.2%), were without a rural background (55.3%), lived longest in a major city (56.9%), were non-Indigenous

		Major city (<i>n</i> = 212)	Regional or large town $(n = 243)$	Small rural ^b $(n = 171)$	Overall comparison between groups
Variables ^a	n (%)	%	%	%	p-value ^c
Gender					
Female	355 (56.6)	49.7	56.8	69.2	0.006
Male	270 (43.1)	50.0	43.0	30.8	
Other	2 (0.3)	0.3	0.2	0.0	
Age (years)					
20-24 years	341 (54.3)	59.8	46.3	44.2	0.209
25–29	188 (29.9)	25.7	35.7	38.8	
30+ years	64 (10.2)	8.1	13.7	11.7	
Not informed	35 (5.6)	6.4	4.3	5.3	
Has a rural background					
No	346 (55.3)	75.0	55.1	41.1	<0.001
Yes	280 (44.7)	25.0	44.9	58.9	
Place has lived the longe	est				
Major city	357 (56.9)	80.1	54.7	42.7	<0.001
Large town	103 (16.4)	7.2	18.7	16.2	
Small rural location ^b	167 (26.6)	12.7	26.7	41.1	
Aboriginal or Torres Strait Islander					
No	609 (97.8)	97.7	98.9	98.1	0.550
Yes	14 (2.3)	2.3	1.2	1.9	
Parents or himself/herself immigrated to Australia					
No	395 (63.2)	47.5	69.8	77.1	<0.001
Yes	230 (36.8)	52.5	30.2	22.9	
First in the family to atte	end University				
No	522 (84.1)	86.6	83.9	80.5	0.401
Yes	99 (15.9)	13.4	16.2	19.5	
Immediate family memb	per is a medical pra	ctitioner			
No	501 (80.3)	81.6	80.1	84.0	0.585
Yes	123 (19.7)	18.4	19.9	16.0	
Has a previous health qu	alification				
No	563 (90.4)	92.4	89.7	85.1	0.346
Yes	60 (9.6)	7.6	10.3	14.9	
Total	627 (100.0)	100.0	100.0	100.0	

TABLE 1 Demographic distribution according to the preferred location of practice after graduation

 $^{\rm a} \rm All$ variables with ${<}2\%$ missing data.

^bIncludes a small town, remote or very remote area.

^cChi-squared test of heterogeneity for differences in the distribution of demographic variables according to the preferred location of practice after graduation.

(97.8%) or non-migrants to Australia (63.2%), were not the first in family to attend university (84.1%), were without a medical doctor in the family (80.3%) and had no previous health qualification (90.4%).

Compared to those who selected a major city as the most preferred location of practice (n = 212), respondents who selected a small rural location as the most preferred location (n = 171) were more likely to be female, have a rural background, have lived the longest in a small rural location and be non-migrants (*p*-value <0.01 in all cases). The distribution of the other demographic factors did not differ according to the preferred location of practice.

Figure 1 shows the socio-cultural factors and proportion of medical student responses associated with positive, negative or no motivating influence over their choice towards a preferred location of practice. In descending order, the five factors with a more frequent positive influence included the poorer health status of rural people (63.1%), motor vehicle traffic congestion in cities (51.3%), rural generalist training opportunities in the state (50.4%), underemployment of some specialists (47.5%) and the Royal Flying Doctor Service (RFDS) (45.9%).

Table 2 shows the adjusted results of socio-cultural factors comparing proportion of respondents reporting positive influence and their preferred location of future practice. After adjusting for confounders, students who preferred regional/large town or small rural practice compared to major city location were more likely to report a positive influence of the following factors: the poor health status of rural people, motor vehicle traffic congestion in cities, rural generalist training opportunities in the state and the RFDS. Except for rural generalist training opportunities in the state, these factors were also more likely to be reported by students who preferred small rural practice compared to regional/large town locations. None of the other socio-cultural factors was associated with the preferred future practice location in adjusted analysis.

4 | DISCUSSION

Our findings are consistent with previous work that showed a large majority of RCS students preferred a future practice location outside of major cities, compared to non-RCS graduates' preference for metropolitan location.^{2,14} This paper sought to explore whether contemporary Australian socio-cultural factors influenced RCS students' preferred location of practice, especially among those who preferred a regional or small rural location. Notably, four contemporary factors had a positive pro-rural motivating influence: the poor health status of rural people, motor vehicle traffic congestion in cities, rural generalist training opportunities and the RFDS. Other contemporary sociocultural factors had a lower positive influence and were not associated with the preferred location of practice. Student responses to socio-cultural factors may influence career decisions and may be important to consider when developing future rural training initiatives including the rural generalist pathway.¹⁵

Australian national culture as described by Hofstede and McCrae has very high individualism, high indulgence, intermediate to high 'ego-drive' (masculinity), low long-term orientation, low power distance and intermediate uncertainty avoidance (Table 3).^{8,9}

In our study, poor rural health status had a positive influence on over 50% of the cohort and, importantly, was more likely to be considered a positive influence in students who preferred small rural or regional rather than major city practice locations. Considering Hofstede and McCrae cultural dimensions, this collectivist perspective is counter-intuitive in the context of Australian high individualist national culture.⁹ It fits better with balanced national cultures such as Japan (individualism score 46), and more collectivist cultures such as Thailand (individualism score 20).⁹ This may help explain why Australia has difficulties attracting sufficient doctors to rural areas, as this is a motivation shared by a minority of Australians.



FIGURE 1 Contemporary Australian factors influencing the most preferred location of practice after graduation in descending order of those with a more positive influence

Preferred location of practice Overall Small rural^c Major city **Regional or large** comparison (n = 212)town (n = 243) (n = 171)between groups Positive influence of variables n (%)^b %^e %^e %^e p-value^d Poorer health status of rural people 390 (63.1) 50.7 68.8 71.7 0.002 Motor vehicle traffic congestion in cities 318 (51.3) 37.2 56.4 60.6 < 0.001 Rural generalist training opportunities in 0.001 312 (50.4) 36.8 56.5 55.6 the state 0.041 Royal flying doctor service 284 (45.9) 43.1 42.5 53.6 Underemployment of some specialists 294 (47.5) 49.2 47.9 46.5 0.903 0.245 Bullying/sexual harassment in tertiary 23.0 166 (26.8) 28.5 28.3 hospitals Climate change 114 (18.3) 21.1 18.0 16.6 0.650 Dr Richard Harris, 2019 Australian of the 74 (12.0) 9.9 12.3 12.4 0.692 year Medicare Freeze effect on doctors' 54 (8.8) 11.1 8.3 7.1 0.417 incomes Frequency/severity of natural disasters 7.9 0.097 35 (5.7) 3.6 6.0 The Rural Health Commissioner 4.0 5.8 4.2 30 (4.9) 0.660

TABLE 2 Adjusted results^a of the prevalence of contemporary Australian factors with a positive influence on the preferred location of practice according to the place where they would like to practice after graduation

^aMarginal prevalence estimated using logistic regression models adjusted for gender, rural background, place has lived the longest, and whether parents or himself/herself immigrated to Australia.

^bAll variables with <2% missing data.

^cA small rural practice location includes a small town, remote or very remote area as the preferred placed of practice.

^dLikelihood-ratio test of heterogeneity for differences in the distribution of contemporary Australian actors with a positive influence according to the preferred location of practice after graduation.

^ePercentages represent the proportion of medical students that mentioned the corresponding contemporary factor had a positive influence on their medical career choice after graduation.

TABLE 3 Hofstede and McCrae cultural dimensions in Australia

Hofstede's cultural dimensions for Australia	Description of cultural dimension in Australia		
Individualism 90/100 (very high in Australian society)	People prioritise looking after themselves and their direct family in contrast to working for the benefit of a community or group they belong to ⁸		
Indulgence 71/100 (high in Australian society)	Individuals exhibit a willingness to realise their desires and place a high degree of importance on leisure time ³⁰		
Ego-driven (Hofstede Masculinity) 61/100 (intermediate to high in Australian society)	Individuals value challenging work, with less value placed on comfortable and friendly work environments ³¹		
Long-term orientation 21/100 (very low in Australian society)	Individuals in Australia are past and present orientated. They tend to respect time- honoured traditions, institutions and norms while living for the present ⁹		
Power distance 38/100 (low in Australian society)	In low power societies people tend to value and expect an even distribution of power. Hierarchies are established for convenience. Leaders are seen as always accessible. Communication tends to be informal, direct and participative ³⁰		
Uncertainty avoidance 51/100 (intermediate in Australian society)	Individuals feel threatened by ambiguous or unknown situations and create beliefs, institutions and laws that try to avoid the negative impacts of uncertainty ⁸		

However, this motivation is consistent with recent descriptions of rural doctors' clinical courage, the features of which include undertaking a deliberate decision to serve their community.¹⁶ It is unclear if the influence of poor rural health status reflects pre-existing views of students or demonstrates intersectoral occupational culture acquired during immersion within the medical profession, the medical school or RCS milieu. Engaging with students' sense of social accountability during their RCS experience may motivate some towards rural practice.¹⁷

National Rural Health

Avoiding motor vehicle traffic congestion was an important motivating factor for those who preferred rural location of practice. This may demonstrate that RCS students' attitudes are consistent with national cultural dimensions of indulgence and prioritisation of leisure time.⁹ Rural lifestyle and recreational interests are recognised as important motivators for rural career interest in high indulgence countries such as Australia, Canada (indulgence score 68) and USA (indulgence score 68).9,18-20 Importantly, there is considerable evidence that lifestyle factors can be negative predictors of rural practice in a high indulgence culture, for example, where there is the perception of few social and recreational activities, inadequate accommodation facilities and undesirable oncall responsibilities.²⁰ There is less evidence that lifestyle factors influence career choices for medical students and doctors in countries such as Japan (indulgence score 42) and China (indulgence score 24), where restraint is the national cultural norm.^{21,22}

The RFDS was a motivating influence for many RCS students particularly those interested in small rural and remote practice. The RFDS provides essential emergency, transport and primary care services in rural and remote areas and is one of the most trusted long-term charities in Australia.²³ RFDS doctors have been dramatized in television series and are often portrayed as heroes. Opportunities for medical student clinical placements within the RFDS are relatively limited and highly sought after.²⁴ In our study, RCS students' attraction to the RFDS is consistent with the Australian cultural dimension of very low 'long-term orientation', which reflects a focus on traditions and institutions and potentially to preferences for heroism and challenge in the workplace (Hofstede's masculinity). More work needs to be done to understand whether Canadian rural air ambulance services such as Orange Air Ambulance in Ontario, and STARS Air Ambulance in Alberta have similar cultural significance for Canadian medical students.

Long-term orientation and uncertainty avoidance may be important in understanding why having well-organised rural generalist training opportunities was associated with rural career interest for RCS students. The culture of medicine tends to be conservative, with a well-developed discourse around managing uncertainty. However, rural doctors have been found to have higher novelty seeking and lower harm avoidance behaviours than their urban colleagues,²⁵ suggesting some self-selection in Australia and Canada (uncertainty avoidance score 48).⁹

Underemployment of some specialist disciplines in Australia had a positive motivating influence on career intention in over 45% of survey respondents independent of the preferred location of practice. This influence is consistent with Australia's Individualist culture⁹ that emphasises looking after oneself and one's family. For medical students who invest both time and finances in their degree, economic productivity may be an important driver. It would be interesting to see if underemployment of some specialist disciplines is influential in determining career intent in medical students in high-income, lowindividualistic countries such as Qatar (Individualism score 20).

Uncertainty avoidance and long-term orientation may explain why climate change and the increasing frequency of natural disasters did not influence the choice of career location. There has been a recent trend in Australian medical schools for medical students to advocate for information about the health impacts of climate change be included in the medical school curricula to recognise likely changes to future practice.²⁶ However, there is no evidence to date that this has influenced medical student choices. This is despite a recent Northern Territory study of 362 doctors, which found one-third indicated that climate change was already causing or likely to cause them to consider leaving central Australia.²⁷

Although the importance and impact of some sociocultural factors is well recognised, including bullying and harassment in the workplace, this factor did not appear to affect preferred practice location for most RCS survey respondents. Similarly, there was minimal influence of contemporary figures in Australia, including the Rural Health Commissioner and the 2019 Australian of the Year, a South Australian doctor who was instrumental in the Tham Luang cave rescue in northern Thailand in 2018. Australia's low power-distance society may explain these findings, as students may tend to expect an even distribution of power and under-emphasise hierarchy. Kudos and leadership may be more influential in the location of practice choices for students from high power-distance countries such as France (power distance 68) or China (power distance 80). Understanding how high power distance may be harnessed to influence rural and primary care career choice may be more important for China, as they have an ambitious plan to train additional 500 000 general practitioners by 2030.²⁸

4.1 | Limitations

Our findings are strengthened by the national sample of medical students in our study, although we recognise some limitations. Our interpretation of socio-cultural influences on the location of practice was limited to those factors included in the study, and there may be other important factors that remain to be elucidated. In particular, the cultural or family background of individuals may influence their own belief system that in turn manifests in decision-making.¹⁰ There may be other factors associated with national cultural norms that also influence career choices, for example, the role of parental intervention was shown to differ in individualist versus collectivist societies, with the former encouraging and endorsing options but the latter being more prescriptive towards ensuring economic security.¹⁰ We also acknowledge that the motivating influence of socio-cultural factors may be adopted, or change, at different stages in the student training cycle. Many influences may be pre-existing, but students are also gradually enculturated within the medical profession and RCS students, in particular, to the rural training environment. Intersectoral frameworks recognise that individuals hold multiple social 'locations' and that the culture of each of these collectives shapes their views.²⁹ Hence, our findings demonstrate an association but not direct causality between socio-cultural influences and rural career intention and further research is needed

5 | CONCLUSIONS

Our findings indicate that some contemporary sociocultural factors may have a motivating influence on rural career intention among RCS students. Hofstede and McCrae's cultural dimensions provided insight into how shared cultural values might reflect the perceived importance of some socio-cultural factors, but not others, in rural medical students when deciding on a future career. Other motivating influences (such as poor rural health status) were counter-intuitive to the prevailing national individualist culture, which may reflect shared values among RCS students that were pre-existing or fostered by RCS curricula or communities, or both. Further research is needed to determine if socio-cultural influences are modified by enculturation within the medical, and specifically, rural training environment. Policy makers and program coordinators may need to consider the Australian sociocultural context further when designing rural workforce interventions. Our findings have potential implications for Australian RCS curricula and suggest international medical schools may consider how their own students' expectations of rural careers are influenced by national socio-cultural factors.

ACKNOWLEDGEMENTS

Open access publishing facilitated by The University of Adelaide, as part of the Wiley - The University of Adelaide agreement via the Council of Australian University Librarians.

CONFLICT OF INTEREST

The authors JP and PW are affiliated with the Royal Flying Doctor Service (RFDS). JP is a medical officer and current employee of the RFDS (Central Operations) and former employee of RFDS (South-Eastern Section). PW is on the Board of Directors for RFDS (Central Operations).

AUTHOR CONTRIBUTIONS

JP: conceptualisation; writing—review & editing. DG-C: formal analysis; visualisation; writing—review & editing. PW: conceptualisation; writing—review & editing. KM: conceptualisation; writing—review & editing. LW: conceptualisation; supervision; writing—original draft; writing—review & editing.

ETHICAL APPROVAL

Flinders University Social and Behavioural Research Ethics Committee (project number 4098).

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How to cite this article: Padley J, Gonzalez-Chica D, Worley P, Morgan K, Walters L. Contemporary Australian socio-cultural factors and their influence on medical student rural career intent. Aust J Rural Health. 2022;30:520–528. doi:10.1111/ajr.12866