Title:

International medical graduates mandated to practice in rural Australia are highly unsatisfied: results from a national survey of doctors

Author names and affiliations

1st Author and Corresponding Author: Matthew R McGrail ^a

matthew.mcgrail@monash.edu

Phone: +61 3 5122 6394; Fax: +61 3 5122 6841

2nd Author: John S Humphreys ^b

john.humphreys@monash.edu

3rd Author: Catherine M Joyce ^c

catherine.joyce@monash.edu

4th Author: Anthony Scott ^d

a.scott@unimelb.edu.au

Affiliation Addresses:

^a Gippsland Medical School, Monash University, Northways Road, Churchill VIC 3842, Australia

^b School of Rural Health, Monash University, PO Box 666, Bendigo, VIC 3552, Australia

^c Department of Epidemiology & Preventive Medicine, Monash University, Alfred Hospital, Melbourne VIC 3004, Australia

^d Melbourne Institute of Applied Economic and Social Research, The University of Melbourne, Alan Gilbert Building, Parkville VIC 3010, Australia

Acknowledgements:

We thank the doctors who continue to give their valuable time to participate in MABEL. Thanks to the other members of the MABEL team for their support, in particular Guyonne Kalb (chief investigator) from the Melbourne Institute of Applied Economic and Social Research, University of Melbourne.

This work, part of the MABEL study, was supported by Australia's National Health and Medical Research Council through both a Project Grant (454799) and Centre of Research Excellence Grant (1019605), and by the Australian Government Department of Health and Ageing.

Title

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Abstract

Objectives: Rural communities worldwide are increasingly reliant on International Medical Graduates (IMGs) to provide health care access, with many countries utilising health policies which mandate IMGs to practice only in rural designated areas of (medical) workforce shortage for many years. The objective of this study is to analyse the satisfaction of IMGs in their current work location, particularly in relation to the effect of mandating IMGs to small rural communities.

Methods: We used data of 3502 general practitioners (GPs) from wave 2 of the Medicine in Australia: Balancing Employment and Life (MABEL) longitudinal study of Australian doctors. The main outcome measures were the level of professional and non-professional satisfaction expressed by GPs with respect to various job and social aspects.

Results: We found that non-professional satisfaction of mandated IMGs was significantly lower across all social aspects, whilst professional satisfaction was also significantly lower for most job aspects relating to their professional autonomy. In contrast, non-mandated IMGs were similarly satisfied compared to Australian trained GPs.

Conclusions: Mandated IMGs are currently filling a critical shortage in rural areas of Australia. However, long-term success of this policy is problematic unless outstanding issues affecting their significantly reduced professional and non-professional satisfaction can be addressed.

Keywords

Australia; General practitioner; International medical graduates; Job satisfaction; Life satisfaction; Mandating policies; Rural

Introduction

Inadequate access to medical practitioners for rural populations is a significant problem that affects most countries worldwide [1]. Rural communities in higher-income countries too are characterised by a shortage of medical practitioners [2, 3], and by ongoing difficulties associated with recruiting and retaining locally-trained graduates practise in to rural areas [1, 4]. Effective health service delivery to these vulnerable populations continues to be problematic and increasingly reliant on policy interventions.

Health policies to address rural and remote workforce shortages include financial incentives, non-financial incentives and compulsory service programs. More than 70 countries have some kind of compulsory service program, which most commonly involves graduates working a short compulsory

period in underserved areas [5]. Although there is little empirical evidence available regarding compulsory service, a number of potential negative effects have been identified on theoretical grounds [6]. First, there may be political difficulties in imposing restrictions or requirements on doctors, based on considerations of autonomy and justice. While such programs are intended by governments to address health inequities and ensure access to doctors in underserved areas, they are also an imposition on the professional independence and freedom of choice of the individual doctor [5, 7]. The health professions themselves are among the most vocal critics of such programs, whilst governments argue that such requirements are reasonable in the context of public investment in doctors' education and training. Second, compulsory service may also decrease the likelihood of working in underserved areas voluntarily once the period of required service has ended. Finally, compulsory service programs may contribute to a perception of decreased attractiveness of jobs in the designated locations, leading to an ongoing cycle of workforce shortages rather than putting long-term solutions in place [6].

Australia has a related 'condition of service' program, used since the late 1990s, which dictates that most International Medical Graduates (IMGs) are initially restricted for up to 10 years to practise only in specific rural locations [8]. Under this policy (specifically Section 19AB of the Health Insurance Act), IMGs can only access private practice subsidies if they work in a Government-designated District of Workforce Shortage area, where the undersupply of doctors is most acute. A large reason for the introduction of this policy was in fact to reduce the perceived excess of general practitioners (GPs) in metropolitan areas [9-11]; however, through this policy and ongoing difficulties attracting local graduates into rural areas, the number of IMGs has increased to around 41% of all doctors working in rural Australia [8].

Similar policies are employed in Canada and the United States of America (USA). In the USA, IMGs in training programs are granted J-1 visas with a proviso that they must return to their country of origin for at least two years upon completion of their education. However, the J-1 visa waiver program enables these IMGs to remain in the USA on the agreement that they work in a designated Health Professional Shortage Area (rural) for at least 3 years [12, 13]. In Canada, most IMGs start practising under provincial licences, which can only be used in rural areas experiencing a workforce shortfall until they become fully licenced [2, 14]. Available evidence suggests that retention of IMGs in rural areas beyond the timeframe of both these programs is poor [15, 16].

Australia's IMG 10-year moratorium sits within a context of both an expectation of national medical workforce self-sufficiency, and a global consensus on ethical international recruitment [17, 18]. Many first world countries currently rely on significant numbers of IMGs to augment their local supply of health professionals; however, the ethics of actively recruiting IMGs to these countries,

particularly from poor countries who can least afford to lose their own health professionals, is highly questionable [19, 20]. Thus, the potential benefits of Australia's IMG 10-year moratorium in meeting population health needs remain in tension with the autonomy and freedom of choice of individual doctors, and unresolved questions about their effects on long term workforce retention in rural and remote areas.

One factor which is known to be critical in workforce retention is satisfaction. Both non-professional and professional satisfaction is central to rural medical workforce recruitment and represents a sentinel indicator of retention [21-23]. Retaining restricted IMGs in rural locations is likely *only* if they experience considerable non-professional and professional satisfaction [23, 24]. Several Australian studies have identified specific difficulties experienced by IMGs, including community integration, which can significantly impact on their satisfaction [25-27]. Moreover, in contrast to IMGs who can choose their practice location, restricted IMGs have limited autonomy relating to their work location and work activity. It seems likely therefore, compulsory service policies such as the 10-year IMG moratorium will be associated with lower satisfaction. To date, only one Australian government report has examined the satisfaction of IMGs, without any stratification of results by 'restriction status' or rurality [28], whilst another study examined the professional satisfaction of GPs by rurality, without any stratification by IMG or restriction status [29].

Internationally, no published research has investigated the association between restriction status of IMGs and their satisfaction. The aim of this paper is to investigate the satisfaction (both professional and non-professional) of IMGs in their current location using Australian data, primarily distinguishing between those who are restricted to practise only in an area of workforce shortage and those who are free to choose their practice location. We hypothesise that satisfaction is likely to be less for those IMGs who are restricted to practise in particular locations, *in addition* to any effect of working in smaller locations. We contend that these locational restrictions are likely to exacerbate any other potential problems confronting IMGs, such as language and communication difficulties, working within a different health system, working in isolation from their cultural peers, and difficulties getting their home country qualifications recognised and attaining full accreditation.

Methods

This paper uses data from the *Medicine in Australia: Balancing Employment and Life* (MABEL) study, a large longitudinal panel survey of Australian doctors who participate in annual waves of data collection. The primary aim of the MABEL study is to investigate labour supply decisions and their determinants among Australian doctors. We report results for GPs and GP registrars from data collected in Wave 2 between June and December 2009 (n=3502). Wave 2 questionnaires can be accessed from the study's website (see <https://mabel.org.au/>). Further details of the study protocol,

including response rates and analysis of non-response bias (which was minimal), have been reported elsewhere [30, 31]. The MABEL study was approved by the University of Melbourne Faculty of Economics and Commerce Human Ethics Advisory Group and the Monash University Standing Committee on Ethics in Research Involving Humans.

IMGs were identified from several questions relating to the specific country where their medical degree was first completed, whether they had passed Australian Medical Council accreditation, their visa residency status, whether they had unrecognised overseas medical qualifications and their type of medical registration. In addition, respondents were asked about any restrictions on their location of practice. IMG status was analysed using three categories: (1) Non-IMG or Australian graduate; (2) 'restricted' IMG; and (3) 'unrestricted' IMG. Additionally, IMG's country of first medical degree was separated between those from the UK, New Zealand, USA or Canada (whose graduates are readily recognised by the Australian Medical Registration authorities), and all other countries (study participants were predominantly from China, Philippines, India, Sri Lanka, Nigeria and South Africa).

Satisfaction was measured using a number of separate items. First, non-professional satisfaction was measured from six questions using agreement items with a five-level scale, and a separate overall life satisfaction item using a single 10-level question. Secondly, professional satisfaction was measured using 8 relevant items from the 10-item version of the Warr-Cook-Wall job content questionnaire on a five-level satisfaction scale [32, 33], and two additional items measuring perceptions of professional support network and opportunities for continuing medical education (CME)/ professional development (PD) on a five-level agreement scale. For all five-level scales, the two positive responses ('very satisfied' and 'moderately satisfied', or 'strongly agree' and 'agree') were grouped together, and compared against the two negative responses. Additionally, the mid-point 'not sure' or 'neutral' response was not used in statistical testing because of its inability to contribute to the question under analysis. Professional and non-professional items had 2-6% and 10-15% neutral responses respectively.

Multivariate logistic regression models were used to test the association between the non-professional and professional satisfaction 'outcomes' against IMG status and community size. Association between overall life satisfaction (following a square root transformation) and IMG status was tested using a multiple linear regression model. Geographical differences were examined using a four-level population-size scale, chosen to maximise differences between 'like' and 'unlike' communities [34]. Specifically, we used: (1) Metropolitan/Regional: $\geq 50,000$ residents; (2) Large rural: 15,000 – 49,999 residents; (3) Medium rural: 5,000 – 14,999 residents; and (4) Small rural: $< 5,000$ residents. All models were adjusted for possible covariate associations between satisfaction and age groupings (< 40 , 40-49, 50-59, 60+), gender, doctor's health (excellent, good, fair/poor), on-call status and hours

worked per week (<35, 35-49, 50-59, 60+). Sample weights (probabilistic weights of participation) were used for all regression models to adjust for potential response bias with respect to age, gender and geographic location (remoteness and state) [30]. All calculations were performed using StataSE 10 (StataCorp, Texas, USA) and a significance level of 5% was used throughout.

Results

Twenty-seven per cent (940) of the 3502 GPs were identified as IMGs. There were proportionally more IMG respondents in rural areas, ranging from 22% in metropolitan and regional centres to 36%-38% across all sized rural communities (<50,000 residents). Almost half of all IMG respondents (n=440, 47%) identified themselves as being 'restricted' in their work location, with the proportion rising to 60%-70% for IMGs across all sized rural communities (<50,000 residents). In our cohort, rural respondents were generally younger and increasingly likely to be male and work longer hours and more on-call than metropolitan respondents.

Non-professional satisfaction

Restricted IMGs were significantly less satisfied for all six non-professional aspects (Odds Ratios (ORs) ranged: 0.20 – 0.49, all $p < 0.001$) compared with Australian medical graduates (Table 1). That is, after accounting for potential confounding factors (including community size), the odds of being satisfied (non-professional aspects) for restricted IMGs in their current location were 2-5 times lower than Australian graduates, across social interactions, access to leisure interests, proximity of family and friends, choice of schools, and spouse employment opportunities.

Furthermore, a strong and consistent negative association is evident in Table 1 of decreased non-professional satisfaction with reduced community size, especially those under 15,000 residents. The compounding effect of (i) IMG restriction status and (ii) smaller community size is highlighted in Figures 1a and 1b, which show the odds of satisfaction with opportunities for both spouse employment and social interactions consistently decreases with smaller community size *and* additionally decreases with restriction status within each community size. Unrestricted IMGs also expressed lower odds of non-professional satisfaction in their current location (ORs ranged: 0.75 – 0.85) compared to Australian trained GPs; however, most specific aspects were not statistically significant and the respective ORs were closer to one. Notably, overall satisfaction with life in general is significantly decreased for restricted IMGs ($p < 0.01$), but significantly increased for IMGs not restricted in their location of practice ($p < 0.05$).

[Table 1 here]

[Figure 1 here]

Professional satisfaction

Unlike non-professional aspects, most GPs expressed a high level of professional satisfaction (>90%) for most aspects of their work. However, restricted IMGs continued to express significantly lower odds of professional satisfaction, with six aspects relating to professional autonomy having significantly lower odds (ORs ranged: 0.36-0.68, all $p < 0.01$) compared to Australian-trained GPs. Unrestricted IMGs also expressed reduced odds of professional satisfaction for each of these six items (ORs ranged: 0.68 – 0.98), though these were mostly not statistically significant. Satisfaction with the remaining four professional satisfaction items was also consistently lower for restricted IMGs (that is, $OR < 1$), though none were statistically significant. Unlike non-professional aspects, community size was generally not associated with aspects of professional satisfaction over and above IMG status associations.

[Table 2 here]

Country of first medical degree

On the whole, satisfaction levels of restricted IMGs (after accounting for community size and other covariates) do not differ significantly with country of their first medical degree, with a few exceptions being “adequate choice of schools”, “amount of variety” and “amount of responsibility” (Table 3). More prominent were differences in satisfaction of unrestricted IMGs, with ‘Other Country’ IMG GPs expressing statistically lower satisfaction for six aspects (four non-professional and two professional aspects) even after their restriction period has finished, whereas unrestricted IMG GPs from ‘readily recognised’ countries were equally satisfied as Australian-trained GPs for all aspects.

[Table 3 here]

Discussion

This is the first study to examine the effect of mandating IMGs to practise in rural areas of workforce shortage. We investigated the satisfaction of IMGs, distinguishing between those who are ‘restricted’ and those who are ‘unrestricted’ in their choice of practice location. Our results show clearly that these two groups exhibit significantly different patterns of non-professional and professional satisfaction. Additionally with regards to non-professional aspects, our study reveals the significant negative experience of restricted IMGs is over and above any reduced satisfaction of being located in small communities of < 50,000 residents [29].

Restricted IMGs do not follow the traditional recruitment pathway to rural practice [24, 35, 36] and are unlike those who choose rural practice based on rural upbringing or positive exposure to rural practice. It is unsurprising that restricted IMGs express strong dissatisfaction with all non-professional location aspects, all of which are critical determinants of doctor’s decisions regarding future practice location and length of stay, including opportunities for spouse employment, social and leisure activities, and schooling [21, 24]. Furthermore, restricted IMGs lose some professional autonomy,

something evidenced in our study through their lower satisfaction with variety of work, opportunities to utilise full range of skills, and responsibility.

The importance of maximising community engagement and integration of new rural doctors, including IMGs, for workforce recruitment and retention is widely recognised [26, 35, 37]. Although not all recruitment and retention factors are easily ‘modifiable’ by interventions, there is no doubt that non-professional factors associated with place of residence are likely to be similarly important as those professional factors that influence the day-to-day practice activities for many doctors, often more so for ‘restricted’ IMGs who have limited choice of their practice and residential location.

Our study found that, for a few aspects, satisfaction varies across IMG’s country of medical degree, with those from the most culturally dissimilar backgrounds sometimes remaining significantly less satisfied than Australian trained GPs even after they are no longer required to work in restricted locations. Undoubtedly IMGs have specific cultural needs that differ across the groups [38]. Hence any workforce recruitment and retention strategy needs to ‘bundle’ both professional and non-professional support and incentive measures that affect work-life satisfaction [1, 39].

One limitation of our study is its inability to quantify the level of importance that doctors place on non-professional aspects compared to professional aspects. It is very difficult to measure the relative importance of inadequate local schools and limited family employment opportunities compared with fewer opportunities for practitioners to utilise their skills and reduced variety of work. Nonetheless, non-professional items are consistently raised as important negative aspects of life for many rural GPs. Moreover, we did not collect qualitative responses, which limits our understanding of how IMG’s restriction status impacts on their professional and non-professional satisfaction.

These findings seem likely to apply to similarly restricted IMGs in Canada and the USA, and to other groups of mandated practitioners, such as those undertaking return of service work following graduation. While in many cases the mandated periods are significantly shorter than in Australia, many of the negative experiences relating to job and social aspects will be common, irrespective of country. The low retention of mandated IMGs in rural areas following removal of restrictions observed in the USA and Canada [12, 15, 16] is consistent with our findings that such doctors are less satisfied than their unrestricted colleagues. Our study does not directly address the question of the relationship between satisfaction and retention, but in our future research we plan to explore this using prospective (longitudinal) data. Our study does provide one of the few empirical investigations into mandated practice, providing important information for the many developed countries around the world that continue to struggle in the face of chronic doctor shortages in rural and remote areas [4]. More specifically, it confirms the suggestion of Frehywot et al. [5] that the support provided to

doctors during periods of compulsory service is a critical factor in the success of such programs, and therefore, in successfully meeting the health care needs of rural and remote populations. Whilst our study has focused on IMGs, compulsory service programs to underserved rural areas are more commonly applied to locally-trained health workers [5]. It is likely that the findings of this study would also apply to locally-trained medical graduates who are similarly mandated to practise for a number of years in rural workforce shortage areas.

In Australia, there has been a strong recent push to reduce or even remove the 10-year moratorium on IMGs [8]. However, these mandated IMGs currently supply around 25% of GP services to rural populations and, based on our findings, most would be expected to leave these communities in the short-term following a removal of this policy. Australia's 10-year IMG moratorium is one of the most expensive compulsory service programs in the world [5], but remains a key plank in government efforts to ensure rural access to healthcare. This goal will continue to be a challenge for many countries around the world, particularly in the context of a more socially-conscious international health professional labour market [18].

Conclusion

This study has clearly shown that IMGs currently mandated to practise in rural communities are significantly unsatisfied with respect to both professional and non-professional aspects. By separating this cohort from unrestricted IMGs, and accounting for community size and other likely explanatory variables, we have demonstrated a strong association between practice restriction of IMGs in Australia and reduced job and social satisfaction. It follows that the long-term retention of currently-mandated IMGs in these vulnerable small rural communities is problematic unless the outstanding issues affecting their significantly reduced professional and non-professional satisfaction can be addressed. Furthermore, many of these concerns are likely to be transferrable to locally-trained medical graduates initially mandated to rural practise.

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Figure captions

Figure 1: Agreement with statements 1a) “there are good employment opportunities for my partner in this work location” and 1b) “the opportunities for social interaction for you and your family in this work location” against community size for (i) Australian trained GPs; (ii) Unrestricted IMG GPs; (iii) Restricted IMG GPs

Table 1: Satisfaction of GPs relating to non-professional aspects in their work location, by IMG restriction status[†] and community size^{††}

	Australian trained GPs (reference group)	IMG, restricted GPs	IMG, unrestricted GPs	Small Rural	Medium Rural	Large Rural
	% Satisfied	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)
GP has many family and friends	73.3%	0.20** (0.15, 0.27)	0.80 (0.61, 1.04)	0.55** (0.41, 0.72)	0.65* (0.46, 0.91)	0.73* (0.54, 0.99)
GP's spouse has many family and friends	71.9%	0.23** (0.17, 0.30)	0.79 (0.60, 1.05)	0.56** (0.42, 0.75)	0.84 (0.60, 1.18)	0.89 (0.65, 1.23)
GP's family has good social interaction opportunities	54.5%	0.26** (0.19, 0.36)	0.72* (0.55, 0.93)	0.32** (0.24, 0.43)	0.40** (0.29, 0.57)	0.58** (0.42, 0.79)
GP's spouse has good employment opportunities	76.0%	0.29** (0.21, 0.40)	0.85 (0.62, 1.16)	0.29** (0.21, 0.40)	0.55** (0.39, 0.79)	0.77 (0.54, 1.10)
GP has easy access to local leisure interests	75.2%	0.34** (0.26, 0.46)	0.78 (0.59, 1.02)	0.59** (0.44, 0.78)	0.67* (0.48, 0.93)	0.82 (0.59, 1.16)
GP's family has adequate choice of schools	82.5%	0.49** (0.34, 0.71)	0.74 (0.50, 1.10)	0.12** (0.08, 0.17)	0.21** (0.14, 0.30)	0.46** (0.30, 0.71)
	Mean (SD)	Beta	Beta	Beta	Beta	Beta
Life in general – overall satisfaction (square	2.69 (0.35)	-0.059**	0.038*	0.011	-0.038	-0.011

root)

*p<0.05; **p<0.01; [†] Referent category is Australian medical graduate (odds ratio, 1.00); ^{††} Referent category is Metropolitan/Regional (odds ratio, 1.00); Covariates controlled for were: age, sex, doctor's health, hours worked and on-call status. Results for community size are adjusted for IMG restriction status and vice versa.

Table 2: Satisfaction of GPs with professional aspects of their work, by IMG restriction status[†] and community size^{††}

	Australian trained GPs (reference group) % Satisfied	IMG, restricted GPs OR (95% CI)	IMG, unrestricted GPs OR (95% CI)	Small Rural OR (95% CI)	Medium Rural OR (95% CI)	Large Rural OR (95% CI)
Freedom to choose your own method of working	93.2%	0.37** (0.25, 0.55)	0.71 (0.48, 1.03)	1.30 (0.83, 2.06)	1.37 (0.81, 2.30)	1.04 (0.65, 1.67)
Amount of variety in your work	95.2%	0.40** (0.25, 0.63)	0.67 (0.44, 1.04)	1.88* (1.04, 3.39)	1.51 (0.78, 2.95)	0.90 (0.54, 1.49)
Opportunities to use your abilities	91.2%	0.41** (0.28, 0.59)	0.87 (0.60, 1.27)	1.48 (0.97, 2.27)	1.54 (0.92, 2.58)	1.20 (0.78, 1.87)
Amount of responsibility you are given	93.1%	0.47** (0.31, 0.71)	0.68* (0.47, 1.00)	1.46 (0.93, 2.29)	1.27 (0.74, 2.19)	1.03 (0.65, 1.64)
Your colleagues and fellow workers	94.2%	0.67 (0.41, 1.08)	0.89 (0.57, 1.40)	1.39 (0.82, 2.35)	1.30 (0.69, 2.44)	0.93 (0.54, 1.61)
Physical working conditions	91.8%	0.70 (0.46, 1.06)	0.92 (0.62, 1.35)	1.23 (0.79, 1.93)	0.93 (0.57, 1.50)	1.04 (0.66, 1.65)
Your remuneration	72.2%	0.85 (0.64, 1.14)	0.85 (0.66, 1.10)	1.66** (1.23, 2.23)	1.31 (0.94, 1.83)	1.33 (0.96, 1.84)
Overall feeling about work	91.7%	0.68 (0.44, 1.06)	1.15 (0.77, 1.72)	1.44 (0.90, 2.31)	1.11 (0.66, 1.87)	0.77 (0.49, 1.20)
Good support network of other doctors	67.0%	0.53** (0.39, 0.70)	0.76* (0.59, 0.99)	0.80 (0.61, 1.06)	0.83 (0.60, 1.14)	1.02 (0.74, 1.41)

Good opportunities for CME / PD	49.3%	0.68** (0.53, 0.88)	0.98 (0.78, 1.22)	0.52** (0.40, 0.67)	0.71* (0.54, 0.94)	0.77 (0.58, 1.01)
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*p<0.05; **p<0.01; [†] Referent category is Australian medical graduate (odds ratio, 1.00); ^{††} Referent category is Metropolitan/Regional (odds ratio, 1.00); Covariates controlled for were: age, sex, doctor's health, hours worked and on-call status. Results for community size are adjusted for IMG restriction status and vice versa.

Table 3: Positive responses of GPs relating to non-professional and professional aspects in their work location, by IMG restriction status and country of medical degree[†]

	IMG, restricted, Other country (n=300)	IMG, restricted, ‘readily recognised’ country (n=81)	IMG, unrestricted, Other country (n=210)	IMG, unrestricted, ‘readily recognised’ country (n=190)
	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)
GP’s spouse has many family and friends	0.18** (0.12, 0.25)	0.40** (0.23, 0.71)	0.61* (0.41, 0.90)	0.92 (0.59, 1.43)
GP has many family and friends	0.21** (0.15, 0.29)	0.18** (0.10, 0.31)	0.72 (0.49, 1.04)	0.83 (0.55, 1.26)
GP’s family has good social interaction opportunities	0.23** (0.16, 0.33)	0.32** (0.17, 0.57)	0.71 (0.48, 1.06)	0.78 (0.53, 1.16)
GP’s spouse has good employment opportunities	0.29** (0.20, 0.41)	0.45* (0.23, 0.90)	0.64* (0.41, 0.99)	1.14 (0.69, 1.89)
GP has easy access to local leisure interests	0.31** (0.22, 0.43)	0.55* (0.30, 0.99)	0.57** (0.39, 0.86)	1.13 (0.73, 1.76)
GP’s family has adequate choice of schools	0.54** (0.36, 0.81)	1.12 (0.41, 3.02)	0.51* (0.29, 0.90)	1.82 (0.87, 3.80)
Amount of variety in your work	0.37** (0.22, 0.62)	0.54 (0.22, 1.33)	0.67 (0.37, 1.22)	1.28 (0.57, 2.89)
Freedom to choose your own method of working	0.41** (0.26, 0.64)	0.32** (0.15, 0.69)	0.52** (0.32, 0.85)	1.11 (0.58, 2.15)

Opportunities to use your abilities	0.45** (0.29, 0.70)	0.31** (0.16, 0.63)	0.94 (0.55, 1.64)	1.10 (0.60, 2.01)
Amount of responsibility you are given	0.45** (0.29, 0.71)	0.56 (0.23, 1.34)	0.57* (0.35, 0.93)	1.00 (0.51, 1.96)
Good support network of other doctors	0.54** (0.39, 0.76)	0.28** (0.15, 0.51)	0.88 (0.60, 1.29)	0.88 (0.58, 1.33)

*p<0.05; **p<0.01; † Referent category is Australian medical graduate (odds ratio, 1.00); Covariates controlled for were: community size, age, sex, doctor's health, hours worked and on-call status. 'Readily recognised' country includes UK, Canada, USA and New Zealand.

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Author/s:

McGrail, MR;Humphreys, JS;Joyce, CM;Scott, A

Title:

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Date:

2012-12-01

Citation:

McGrail, M. R., Humphreys, J. S., Joyce, C. M. & Scott, A. (2012). International medical graduates mandated to practise in rural Australia are highly unsatisfied: Results from a national survey of doctors. HEALTH POLICY, 108 (2-3), pp.133-139. <https://doi.org/10.1016/j.healthpol.2012.10.003>.

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