The evolution of the general practice workforce in Australia, 1991–2003

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ABSTRACT

Objective: To examine changes between 1991 and 2003 in the characteristics of active recognised general practitioners in Australia.

Design: We compared self-reported GP characteristics from the 1990–91 Australian Morbidity and Treatment Survey (AMTS) with those from the 1999 and 2003 Bettering the Evaluation and Care of Health (BEACH) surveys, after standardisation for age and sex to the respective sample frames. AMTS and BEACH are cross-sectional, paper-based, national surveys.

Participants: Three random samples of 473 (1990–91), 980 (1998–99) and 1008 (2002–03) GPs who had claimed at least 1500 A1 (ie, general practice) Medicare items in the preceding year (in the AMTS) or 375 general practice Medicare items in the preceding 3 months (in the BEACH surveys).

Main outcome measures: Changes in distribution of GP sex, GP age, number of sessions per week, practice size and location, country of graduation, and postgraduate training.

Results: Between 1991 and 2003, the proportion of female GPs rose from 19.3% to 35.2%; GPs aged < 35 years dropped from 22.3% to 10.0%, and those aged ⩾ 55 years increased from 21.4% to 31.6%. Between 1999 and 2003, the proportion of male GPs working < 6 sessions/week increased from 6.1% to 11.4%, while the proportion working ⩾ 11 sessions/week fell from 23.8% to 17.1%. Between 1991 and 2003, the proportion of solo practitioners nearly halved (25.5% v 13.7%); the proportion of GPs in practices of ⩾ 4 partners increased from 34.3% to 59.8%; the proportion of Australian graduates fell from 81.4% to 72.2%; and the proportion of graduates from Asia and Africa increased. Over the same period, the proportion of GPs with Fellowship of the Royal Australian College of General Practitioners more than doubled (17.8% v 36.4%). All of these differences were statistically significant ($P < 0.001$).

Conclusion: Changes in characteristics of the practising GP population will affect consultative services and the balance between supply and demand for these services. These changes should be considered in future workforce planning.

MJA 2004; 181: 85–90

Plans for future primary healthcare should consider not only the changing demographics of the Australian population, but also changes in the general practitioner population.

GP characteristics affect a range of service attributes. McAuley et al, in Canada, found a direct relationship between physicians' practice style and their age, the size of their practice, and whether they had general practice postgraduate qualifications.[1] Research in Australia supports the claim that GP age influences the way GPs practise — for example, younger GPs have significantly shorter consultations than older GPs[2] and are significantly more likely to use computers for clinical purposes.[3]

The sex of the GP affects the patient population seen and the mode of practice: one study found that 70% of patients attending female GPs were female, consultations were longer, more prescriptions were written, and more female-specific conditions and psychosocial problems were managed.[4] A study of GPs servicing residential aged-care facilities showed that, although the proportion of female GPs had increased, the average number of services per female GP had declined, leading to an increasing reliance on older, male GPs to supply services in these environments.[5]

A recent examination of GPs' postgraduate qualifications found that, after adjustment for practitioner, practice, patient and morbidity differences, Fellows of the Royal Australian College of General Practitioners (RACGP) had longer consultations, performed more therapeutic procedures and prescribed fewer medications.[6]

These examples suggest that changing GP demographics can have a considerable impact on manner, type and quality of practice. The purpose of our study was to investigate changes in the characteristics of GPs between 1991 and 2003.

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METHODS

Data sources

We used self-reported GP characteristics from three cross-sectional, paper-based, national studies of general practice activity: the Australian Morbidity and Treatment Survey 1990–91 (AMTS)[7] and the first (1998–99)[8] and fifth (2002–03)[9] years of the national Bettering the Evaluation and Care of Health (BEACH) program. (Each study was conducted between April of the first year and March of the following year.) The AMTS and BEACH studies are comparable, as they apply the same methods, detailed in the published reports.[7-9]

Participants

Participants in the AMTS were medical practitioners who had claimed at least 1500 A1 (ie, general practice) Medicare items in the previous 12 months. Participants in the BEACH surveys were GPs who had claimed at least 375 general practice Medicare items in the preceding 3 months. The GPs who agreed to take part in the studies were from random samples drawn by the General Practice Branch, Australian Department of Health and Ageing, from practitioner Medicare claims data supplied by the Health Insurance Commission. To classify the GP's country of graduation we used the standard

Health Insurance Commission groupings, in which Africa includes the Middle East, and Asia includes central Asian countries (Gordon Calcino, General Practice Branch, Australian Department of Health, Housing and Community Services, personal communication).

Data were available for 473 GPs in 1990–91, 980 GPs in 1998–99 and 1008 GPs in 2002–03. For ease of reference, we will call the periods 1991, 1999 and 2003.

Variables analysed

The information provided by participating GPs included age, sex, number of years in general practice, number of sessions usually worked per week, size of practice, country of graduation, and practice location.

Standardisation for age and sex

Comparisons of the age and sex distributions of all three samples with those of the sample frames from which each was drawn demonstrated that all of the samples underrepresented younger GPs.[8,9] To adjust for this, we standardised each of the GP samples for age and sex, based on the distribution of the practising GP population in its sample frame. Additional weighting was applied to the 1991 sample to adjust for the oversampling of smaller states and territories that had occurred in the original survey.[7]

We then compared the standardised samples in terms of their self-reported characteristics other than age and sex. We also compared characteristics of age- and sex-standardised male and female subsamples in the three studies. Changes over time were tested using a χ^2 test for each variable, while within-variable significance was indicated by non-overlapping 95% confidence limits.

Ethics approval

Our project was approved by the Health Ethics Committee of the Australian Institute of Health and Welfare and the Human Ethics Committee of the University of Sydney.

RESULTS

Age and sex of GPs

After standardising samples for age and sex, we observed a significant and progressive increase in the proportion of female GPs between 1991 (19.3%) and 2003 (35.2%). GPs aged under 35 years made up a significantly greater proportion of practising GPs in 1991 (22.3%) than in 2003 (10.0%). An associated significant increase in the proportion of GPs aged 55 years or over occurred between 1999 (21.4%) and 2003 (31.6%) (Box 1)

Number of sessions, practice size and location

Between 1999 and 2003, the proportion of GPs working less than six sessions per week increased significantly, from 12.0% to 18.4%, while those working more than 10 sessions per week declined, from 18.2% to 13.5%, over the same period (Box 2).

There were almost twice as many GPs in solo practice in 1991 (25.5%) as there were in 2003 (13.7%). The proportion of practices with two or three GPs also fell markedly, from 40.2% in 1991 to 26.5% in 2003. Conversely, the proportion of practices with four or more GPs almost doubled, from 34.3% in 1991 to 59.8% in 2003 (Box 2).

Practice location changed significantly between 1991 and 1999, with the proportion of GPs in metropolitan practices increasing from 65.5% to 75.2% and the proportion in rural areas decreasing from 34.5% to 24.8%. However, this trend had steadied by 2003.

1 General practitioner sex and age data, 1990–91, 1998–99 and 2002–03

		AMTS 1990–91			BEACH study 1998–99				BEACH study 2002–03		
	1990 GP sample frame % of GPs*	Raw data % of GPs (95% CI) (n = 473)	Age- and sex-standardised % of GPs (95% CI)	1998 GP sample frame % of GPs†	Raw data % of GPs (95% CI) (n = 980)	Age- and sex-standardised % of GPs (95% CI)	ST‡	2003 GP sample frame % of GPs§	Raw data % of GPs (95% CI) (n = 1008)	Age- and sex-standardised % of GPs (95% CI)	ST‡
Sex¶											
Male	80.3	80.5 (77.0–84.1)	80.7 (76.9–84.5)	70.8	70.0 (67.2–72.9)	68.1 (64.9–71.4)	↓	66.8	64.8 (61.8–67.7)	64.8 (61.8–67.8)	↓
Female	19.7	19.5 (15.9–23.0)	19.3 (15.5–23.1)	29.2	30.0 (27.1–32.9)	31.9 (28.7–35.1)	↑	33.2	35.2 (32.3–38.2)	35.2 (32.2–38.2)	↑
Age (years)											
< 35	22.3	14.2 (11.0–17.3)	22.3 (17.6–26.9)	14.8	6.3 (4.8–7.9)	15.7 (12.3–19.1)		9.7	7.3 (5.7–9.0)	10.0 (7.8–12.1)	↓⇓
35–54	57.1	67.9 (63.6–72.1)	56.3 (51.4–61.3)	62.8	68.5 (65.6–71.4)	62.5 (59.0–65.9)		58.3	61.8 (58.8–64.8)	58.5 (55.4–61.6)	
⩾ 55	20.6	18.0 (14.5–21.4)	21.4 (17.3–25.5)	22.4	25.2 (22.5–27.9)	21.8 (19.3–24.4)		32.0	30.9 (28.0–33.7)	31.6 (28.7–34.5)	↑⇑

AMTS = Australian Morbidity and Treatment Survey. BEACH = Bettering the Evaluation and Care of Health.

* Data supplied by the General Practice Branch of the Australian Department of Health and Ageing for the purposes of this study.

† Data drawn from Britt et al[8] (data originally supplied by the General Practice Branch of the Australian Department of Health and Ageing).

‡ ST = significant trend: ↑ and ↓ indicate significant increase or decrease between either of the two later studies and the 1990–91 study; ⇑ and ⇓ indicate significant increase or decrease between the two later studies.

§ Data drawn from Britt et al[9] (data originally supplied by the General Practice Branch of the Australian Department of Health and Ageing).

¶ Significant at $P < 0.001$.

Country of graduation and postgraduate training

In 1991, 81.4% of GPs were graduates of Australian medical schools, but the proportion declined over the next decade, dropping significantly between 1999 (78.3%) and 2003 (72.2%). The proportion of GPs who graduated in Asia increased significantly between 1991 (5.8%) and 2003 (9.8%), while the proportion who were African graduates trebled, from 1.4% to 4.2%, between 1999 and 2003.

The proportion of GPs holding Fellowship of the RACGP more than doubled between 1991 and 2003, the increase being significant between each of the three measurement points: from 17.8% (1991) to 32.3% (1999) to 36.4% (2003).

Sex differences between GPs

Comparisons between characteristics of male and female GPs are shown in Box 3. In both male and female GPs there was a significant increase in the proportion of older practitioners between 1999 and 2003. The ageing of male GPs (27.7% were aged 55 years or over in 1999, compared with 38.7% in 2003) was anticipated, but the trend was even more pronounced in female GPs, among whom the proportion aged 55 years or over rose from 9.4% in 1999 to 18.4% in 2003.

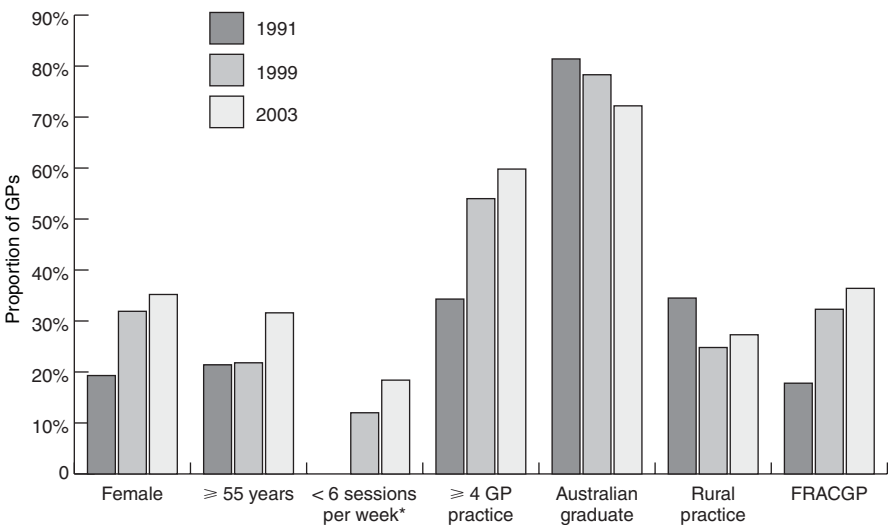
There were wide differences between male and female GPs in the number of sessions worked per week. Female GPs were much more likely to work fewer sessions, but no significant changes over time were found. However, the proportion of male GPs who worked fewer than six sessions per week rose from 6.1% to 11.4% between 1999 and 2003, while the proportion working more than 10 sessions per week fell from 23.8% to 17.1%.

The move towards larger practice size was evident for both male and female GPs. Fewer male GPs were in solo practice in 2003 (17.5%) than in 1991 (27.9%). Conversely, the proportion of male GPs in practices with four or more practitioners rose from 33.3% (1991) to 56.0% (2003). The same pattern was seen for female GPs: in 1991, 38.6% were in larger practices, compared with 66.8% in 2003.

Male GPs were less likely to have graduated in Australia in 2003 (70.6%) than in 1991 (81.7%) and more likely to have graduated in Asia in 2003 (10.2%) than in 1991 (4.8%). These movements were not seen among female GPs. There was a significant increase in the proportion of African gradu-

2 General practitioner practice and training characteristics (all GPs), by year of survey*

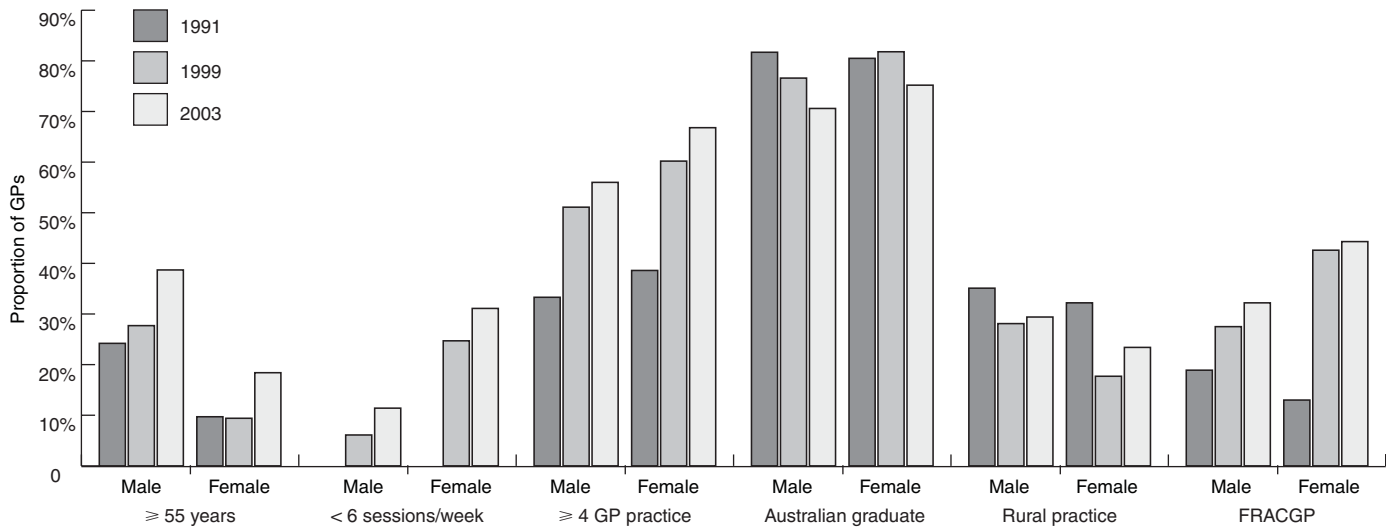
	Proportion (%) of GPs (95% CI)				
	1990–91 ($n = 473$)	1998–99 ($n = 980$)	ST†	2002–03 ($n = 1008$)	ST†
Sessions/week‡					
< 6	NA	12.0 (9.9–14.2)		18.4 (16.0–20.8)	⇑
6–10	NA	69.8 (66.8–72.8)		68.1 (65.2–71.1)	
⩾ 11	NA	18.2 (15.7–20.7)		13.5 (11.4–15.6)	⇓
Size of practice‡					
Solo GP	25.5 (21.3–29.7)	16.4 (14.0–18.8)	↓	13.7 (11.6–15.9)	↓
2–3 GPs	40.2 (35.4–45.0)	29.6 (26.5–32.6)	↓	26.5 (23.7–29.3)	↓
⩾ 4 GPs	34.3 (29.7–39.0)	54.0 (50.6–57.5)	↑	59.8 (56.7–62.9)	↑
Country of graduation‡					
Australia	81.4 (77.8–85.1)	78.3 (75.6–80.9)		72.2 (69.4–75.0)	↓⇓
UK/Ireland	8.9 (6.3–11.6)	8.5 (6.7–10.3)		9.1 (7.3–10.9)	
Asia	5.8 (3.6–7.9)	7.8 (6.2–9.4)		9.8 (8.0–11.6)	↑
Europe	1.5 (0.3–2.7)	2.2 (1.3–3.0)		1.6 (0.8–2.3)	
Africa	1.0 (0.1–1.9)	1.4 (0.7–2.1)		4.2 (3.0–5.5)	↑⇑
Other§	1.4 (0.3–2.4)	1.9 (1.0–2.8)		3.1 (2.0–4.2)	
Practice location‡					
Metropolitan	65.5 (60.9–70.1)	75.2 (72.3–78.1)	↑	72.7 (69.9–75.5)	
Rural	34.5 (30.0–39.2)	24.8 (21.9–27.7)	↓	27.3 (24.5–30.1)	
FRACGP‡					
Yes	17.8 (14.1–21.5)	32.3 (28.9–35.8)	↑	36.4 (33.4–38.5)	↑



FRACGP = Fellow of the Royal Australian College of General Practitioners.
NA = not available (data not collected in 1990–91 Australian Morbidity and Treatment Survey).
* Some survey responses were incomplete. The denominator for each variable was the number of completed responses for that variable.
† ST = significant trend: ↑ and ↓ indicate significant increase or decrease between either of the two later studies and the 1990–91 study; ⇑ and ⇓ indicate significant increase or decrease between the two later studies.
‡ Significant at $P < 0.001$.
§ Includes New Zealand, the USA, South America and Canada.

3 General practitioner practice and training characteristics, by sex of GP and year of survey*

	Proportion (%) of GPs (95% CI)								
	1990–91		1998–99				2002–03		
	Male ($n = 381$)	Female ($n = 92$)	Male ($n = 685$)	ST†	Female ($n = 295$)	ST†	Male ($n = 653$)	ST†	Female ($n = 355$)	ST†
Age (years)‡										
< 35	19.0 (14.0–24.0)	36.0 (24.6–47.3)	12.3 (8.5–16.1)		22.9 (16.2–29.7)		6.5 (4.5–8.4)	↓⇓	16.4 (11.5–21.3)	↓
35–54	56.8 (51.3–62.3)	54.4 (43.1–65.6)	60.0 (56.0–64.1)		67.7 (61.0–74.3)		54.8 (51.0–58.7)		65.2 (59.8–70.6)	
⩾ 55	24.2 (19.5–29.0)	9.7 (3.1–16.3)	27.7 (24.4–31.0)		9.4 (6.3–12.5)		38.7 (35.0–42.5)	↑⇑	18.4 (14.4–22.4)	↑⇑
Sessions/week§										
< 6	NA	NA	6.1 (4.3–7.9)		24.7 (19.5–29.9)		11.4 (8.9–13.8)	⇑	31.1 (26.2–36.0)	
6–10	NA	NA	70.1 (66.5–73.7)		69.1 (63.4–74.8)		71.6 (68.1–75.0)		61.9 (56.7–67.1)	
⩾ 11	NA	NA	23.8 (20.5–27.1)		6.2 (3.1–9.3)		17.1 (14.2–20.0)	⇓	7.0 (4.2–9.8)	
Size of practice‡										
Solo GP	27.9 (23.1–32.7)	15.2 (7.4–23.1)	19.6 (16.5–22.8)	↓	9.6 (6.3–12.8)		17.5 (14.5–20.4)	↓	6.9 (4.2–9.5)	
2–3 GPs	36.7 (33.5–44.0)	46.2 (35.1–57.3)	29.3 (25.7–32.9)	↓	30.3 (24.6–36.0)		26.6 (23.2–30.0)	↓	26.3 (21.6–31.0)	↓
⩾ 4 GPs	33.3 (28.2–38.4)	38.6 (27.7–49.5)	51.1 (47.0–55.2)	↑	60.2 (54.1–66.3)	↑	56.0 (52.1–59.8)	↑	66.8 (61.8–71.8)	↑
Country of graduation¶										
Australia	81.7 (77.6–85.7)	80.5 (71.9–89.0)	76.6 (73.4–79.8)		81.8 (77.3–86.2)		70.6 (67.1–74.1)	↓	75.2 (70.7–79.7)	
UK/Ireland	9.5 (6.4–12.6)	6.4 (1.5–11.3)	9.5 (7.3–11.8)		6.3 (3.4–9.1)		9.9 (7.6–12.2)		7.5 (4.7–10.3)	
Asia	4.8 (2.6–6.9)	9.9 (3.2–16.6)	7.8 (5.9–9.8)		7.7 (4.6–10.8)		10.2 (7.9–12.6)	↑	9.0 (6.1–11.9)	
Europe	1.6 (0.1–3.0)	1.1 (0.0–3.2)	2.3 (1.2–3.3)		2.0 (0.5–3.5)		1.6 (0.8–2.5)		1.6 (0.3–2.9)	
Africa	0.8 (0.0–1.6)	2.2 (0.0–1.6)	1.6 (0.7–2.5)		0.9 (0.0–1.8)		4.0 (2.5–5.5)	↑⇑	4.7 (2.5–6.9)	↑⇑
Other**	1.7 (0.4–3.0)	0	2.1 (0.9–3.3)		1.5 (0.2–2.7)		3.7 (2.3–5.2)		2.0 (0.5–3.6)	
Practice location††										
Metropolitan	64.9 (59.8–70.0)	67.8 (57.3–78.2)	71.9 (68.2–75.6)		82.3 (77.7–86.8)		70.6 (67.1–74.1)		76.6 (71.9–81.3)	
Rural	35.1 (30.0–40.2)	32.2 (21.8–42.7)	28.1 (24.4–31.8)		17.7 (13.2–22.3)	↓	29.4 (25.9–32.9)		23.4 (18.7–28.1)	
FRACGP‡										
Yes	18.9 (14.7–23.1)	13.0 (5.5–20.4)	27.5 (23.7–31.3)	↑	42.6 (36.2–49.1)	↑	32.2 (28.6–35.8)	↑	44.3 (38.9–49.7)	↑



FRACGP = Fellow of the Royal Australian College of General Practitioners. NA = not available (data not collected in 1990–91 AMTS).

* Some survey responses were incomplete. The denominator for each variable was the number of completed responses for that variable.

† ST = significant trend: ↑ and ↓ indicate significant increase or decrease between either of the two later studies and the 1990-91 study; ⇑ and ⇓ indicate significant increase or decrease between the two later studies.

‡ Significant at $P < 0.001$. § $P < 0.001$ (M); $P = 0.143$ (F). ¶ $P < 0.001$ (M); $P = 0.090$ (F).

** Includes New Zealand, the USA, South America and Canada.

†† $P = 0.066$ (M); $P = 0.013$ (F).

ates between 1999 and 2003 for both male and female GPs.

χ^2 tests revealed a decrease in the proportion of female GPs working in rural areas between 1991 and 1999 ($P = 0.013$), although confidence intervals overlapped. There was a marked increase over the years in the proportion of female GPs who were Fellows of the RACGP, rising from 13.0% in 1991 to 44.3% in 2003. The proportion of male Fellows also increased significantly, although less dramatically, between 1991 (18.9%) and 2003 (32.2%).

DISCUSSION

Our study shows that the GP workforce in Australia is becoming proportionally more female, older, more likely to work fewer sessions per week and to hold Fellowship of the RACGP. GPs are more likely to work in large practices and increasingly likely to have graduated overseas. These results provide independent support for recent government reports on the medical labour force[10-12] and have implications for the future needs of general practice.

The increasing feminisation of the workforce alone will affect supply and demand, as female GPs are more likely to work fewer sessions per week and have longer consultations on average.[4] Older GPs have longer consultations than do younger GPs,[2] and Fellows of the RACGP have longer consultations than non-Fellows.[6] These three factors will combine to affect the number of consultations that are provided by each GP.

The preference of many female GPs for part-time practice has been recognised, and the proportion working part-time did not change between 1999 and 2003. However, the marked shift of male GPs away from longer working hours over this period is of equal importance when considering the workforce needs of the future. This finding supports anecdotal evidence that younger male GPs do not expect, in the future, to work the long hours that are normal for older generations.[11] A 1996 Australian study found that full-time GPs were more likely to suffer work-related stress, mostly caused by time pressures, than their part-time colleagues.[13] Work-related stress, the ageing GP population and the international promotion of shorter working hours for the medical workforce — endorsed by the Australian Medical Association's "safe hours" campaign[12] — are probable factors contributing to this change.

The trend away from rural and towards metropolitan practice, with a resultant shortage of rural GPs, is already well recognised.[12,14] However, we hypothesise that the increase in numbers of overseas-trained and temporary-resident doctors in rural areas has reduced this problem to some extent. Overseas-trained doctors holding visas for up to 5 years that are conditional on rural placement have been recruited at a rate of about 200 per year since 2000.[11] Temporary-resident doctors (with a visa stay of up to two years) were estimated to make up 4.6% of the rural GP workforce in 1997, and data from 2000 showed increases of about 50 per year.[11] This has probably already affected the distribution of GPs according to country of graduation, with a decrease in the proportion of Australian graduates. Recently, temporary-resident doctors have been offered 4-year visas, and overseas-trained doctors visas for up to 10 years, with the possibility of gaining Australian qualifications and permanent residence.[15] This policy offsets to some extent the insufficient numbers of Australian graduates taking up training in regional programs despite financial incentives.

In 2001, GP training program places were increased to 600 annually, but have not always been filled,[16] reflecting the trend in countries such as the United States, which has seen a decline in numbers of general practice trainees.[17,18]

In 1998–99, 5%–6% of GPs withdrew from the workforce and a slightly higher percentage entered it.[11] However, because of the widening gap between younger and older GPs in the number of sessions worked, the retirement of the "demographic bulge" of the older generation will have a substantial effect on total consultations provided.

Some limitations were encountered during this study. We were restricted to categories and groupings imposed by extant AMTS data, so some GP characteristic details available from the BEACH surveys (eg, computer use and after-hours arrangements) have not been reported here. The division between metropolitan and rural locations in the 1991 survey relied on the obsolete Remote and Rural Areas categories,[19] but for the two later surveys the more recent Rural, Remote and Metropolitan Areas classification[20] was applied to GP postcode. Although similar in nature, these may not be comparable in all aspects, and variations in urban sprawl over the years may be another confounding factor. Results relating to practice location should therefore be considered as indicative only. In terms of overseas graduates, our data did not differentiate between permanent residents/citizens and temporary visa holders.

This comparison over time presents a picture of a GP workforce that has changed considerably since 1991. Changes in characteristics of the practising GP population will affect consultative services and the balance between supply and demand. These developments need to be considered in future workforce planning.

ACKNOWLEDGEMENTS

We wish to thank the GPs who participated and the General Practice Branch, Australian Department of Health and Ageing, for supply of 1990–91 GP sample frame data. The 1990–91 Australian Morbidity and Treatment Survey was funded by the National Health and Medical Research Council. In 1998–99 and 2002–03, the BEACH program was funded by the Australian Department of Health and Ageing, AstraZeneca Pty Ltd (Australia) and Roche Products Pty Ltd. In 1998–99, funding was also provided by the National Occupational Health and Safety Commission, the Australian Department of Veterans' Affairs and Aventis Pharma Pty Ltd. In 2002–03, Janssen-Cilag Pty Ltd and Merck, Sharpe and Dohme also provided funding for the BEACH program.

COMPETING INTERESTS

None identified.

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(Received 11 Mar 2004, accepted 25 May 2004) ❑