The paediatric clinical experiences of general practice registrars

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Background

The impact of the ageing population on the paediatric clinical experiences of general practice registrars is unknown.

Methods

A secondary analysis of the Registrar Clinical Encounters in Training dataset to examine the distribution of visit proportions and length, and the most common diagnoses seen (by patient age) by registrars in the general practice setting.

Results

Children aged less than 4 years comprised 9% of patients seen, 5–14 years, 8%, and 15–19 years comprised 6%. Registrars spent the most time in consultations with patients aged 65+ years and the least time with children aged 5–14 years. Registrars reported significantly more extended consultations of more than 40 minutes with seniors than with children aged less than 4 years. Of all consultations for children aged less than 4 years, only one was for more than 40 minutes.

Discussion

Exposure of general practice registrars to chronic illness in children, and to a range of diagnostic conditions, may be quite limited. Specific efforts and interventions may be required to ensure that registrars gain adequate experience to provide competent primary care to all age groups.

Keywords

infant; child; adolescent; education, medical, graduate; general practice

General practitioners in Australia are responsible for providing primary care to patients across all age groups. In response to recent demographic trends, current government healthcare workforce strategies are focused on meeting the needs of the ageing population.[1] At the same time, while the proportion of children aged 0–19 years in the population has fallen from 38% in 1971 to 25% in 2010, the actual number of children has increased by approximately 12% since 1996.[2] This apparent paradox is due to the population of adults and seniors rising at a faster rate than the population of children.

Commensurate with the demographic changes in the overall population, recent studies have demonstrated changes in the demography of patients who visit general practice.[3] Over the past 16 years, a greater proportion of visits are being made by adults and seniors and a smaller proportion by children.[3] Similar trends are occurring among family physicians in the United States, which has an ageing population similar to that of Australia.[4]

As the demography of general practice changes, it is unknown whether similar changes are occurring in the community based training environment of general practice registrars. Currently, as a core requirement of Australian vocational training, general practice registrars are required to complete a hospital paediatric rotation or an emergency department rotation with a significant paediatric caseload. They are also expected to encounter paediatric patients in the community based setting during their clinical placements in primary care practices. Exposure to both the normal and abnormal developmental processes, as well as to the primary care management of acute and chronic conditions across many ages, is considered essential for registrars to gain both experience and competence in the care of children. However, no current information exists regarding the community based paediatric exposure of registrars in primary care settings, either in the volume of care provided or the mix of diagnoses seen.

To examine the current paediatric experiences of registrars in community based clinical training, we queried a relatively new data source, the Registrar Clinical Encounters in Training (ReCEnT) dataset.[5] This dataset was developed General Practice Training Valley to Coast (a regional training provider) to better understand what registrars do in their community based clinical placements and the types of patients they see.

Methods

The ReCEnT dataset

In addition to General Practice Training Valley to Coast, two other training providers currently collect and contribute data to the ReCEnT dataset: the Victorian Metropolitan Alliance and General Practice Training Tasmania. All registrars training under these providers complete data collection as a compulsory audit procedure. They may 'opt in' to consent to their data being used for research purposes.

The ReCEnT dataset uses a paper based data collection instrument, based on the BEACH study tool and patient encounter tools from similar studies.[6–8] Registrars at approximately the midpoint of each of their 6 month general practice training terms record the details of 60 consecutive patient encounters. This represents approximately 1 week of consultations for a full time first term registrar. Registrars record only consultations conducted in the general practice office setting (ie. not those

conducted in a nursing home or on a home visit).

Data is entered into a Microsoft Access database. Data on reason for encounter, problems managed, investigations and referrals made are classified using the International Classification of Primary Care, second edition (ICPC2-plus) disease classification system.[9]

The ReCEnT study received ethics approval from the University of Newcastle Human Research Ethics Committee, approval number H-2009-0323.

Data extraction and analysis

We interrogated the ReCEnT dataset for data relating to the age of the patient seen, encounter duration and diagnostic parameters. These were collated into simple descriptive statistics and used to make univariate comparisons of registrar and practice groups on these outcomes using student t-tests (or nonparametric equivalent) or chi-square analyses, as appropriate. All analyses were conducted using SAS/STAT version 9.2 software (RTP, NC). There was occasional failure to document individual items on the data collection sheet by registrars. All items for which there were values recorded were used in analyses.

Average encounter duration was calculated for patients of each age group. Patient encounters were grouped into time durations for the four most common Medicare billing items: item 3 (<5 minutes), item 23 (6–20 minutes), item 36 (21–40 minutes) and item 44 (>40 minutes). Because the items of greatest interest were the longer consultations, items 3 and 23 were combined. Counts of the number of each type of consultation and the proportion each represented of the total visits for that age group were calculated.

Diagnostic codes for all patient encounters were organised by age groupings. Frequency distributions of diagnoses were calculated for each age group. Calculation of the number of additional diagnoses coded (in addition to the primary diagnosis) for each visit was performed.

In one of the fields in the data collection instrument, registrars were asked to identify which patients triggered the registrar to seek help and/or guidance from their preceptor. We looked for differences among the age groups of patients in the proportion of visits for which registrars requested help from their supervising general practitioner.

Results

Distribution of visits by age

From April 2010 to September 2011, there were a total of 16 881 encounters tracked by 205 registrars in 143 clinical sites. Children aged 0–19 years made up approximately 23% of the visits to registrars participating in the ReCEnT data collection program. Specifically, children aged <4 years comprised 9% of patients, those aged 5–14 years comprised 8%, and those aged 15–19 years comprised 6% (*Table 1*). Although the current overall proportion of children in the population (25%) is almost identical to the proportion seen by registrars in practice (23%), the age subgroups differ considerably, with a much smaller proportion of visits by 5–14 year olds relative to their actual proportion in the population.[3]

Duration of consultation by age

The mean time spent in individual patient consultations varied by age groupings. On average, registrars spent the most time in consultations with patients aged 65+ years (17.1 minutes) and the least time with children aged 5–14 years (14.3 minutes) (*Table 2*).

When examining consultation length in terms of Medicare billing items, longer visits were grouped into those of 20–39 minutes duration (item 36) and those >40 minutes (item 44). For visits of 20–39 minutes duration, there were a much larger proportion of visits for patients aged 65+ years (18%) compared to those aged <4 years (9%), 5–14 years (6%), and 15–19 years of age (14%) (p<0.0001).

Similarly to the findings above, registrars were much more likely to spend extended consultations of >40 minutes with adults and seniors compared with children aged <4 years: 1.6% for seniors vs 0.1% for children aged <4 years (p<0.0001). Of the 1497 visits to those aged <4 years, only one was for >40 minutes. This suggests that all but one of the registrars in the ReCEnT data collection never provided an extended consultation with a child in this age group during the period of data collection.

Seniors were much more likely (1.6% of visits for seniors) to have an extended consultation of >40 minutes than patients aged 5–14 years (0.2% of visits for this age group) (p<0.0001). Of the 1095 consultations by children in this age group, only two were for >40 minutes. These findings suggest that many registrars in the ReCEnT data collection period never provided an extended consultation with a child in this age group during the period of data collection (*Table 3*).

There were no differences among the age groups of patients in the proportion of consultations for which registrars requested help from their supervising GP. It is important to note in *Table 1–3* that the number of consultations with patients in each age group differs between the tables. This is because registrars did not all complete all the fields in the survey.

Table 1. Distribution of patient ages

Patient age (years)	Frequency	Percentage
<=4	1497	8.87
5–14	1346	7.97
15–19	982	5.82
20–64	9670	57.82
65+	3063	18.14

Table 2. Duration of consultation in minutes by patient age

Patient age (years)	N*	Mean	Standard deviation
<=4	1497	14.7	6.6
5–14	1318	14.3	7.1
15–19	952	15.9	8.7
20–64	9368	17.3	9.2
65+	2949	17.1	9.7

* Variation from N in Table 1 due to rare item nonresponse for this variable

Most common diagnoses seen

Table 4 identifies the most common diagnoses coded by registrars for each age group and the proportion of visits for those conditions. For the <5 and the 5–14 years age groupings, there is a greater proportion of visits attributed to the 10 most common diagnoses seen. This finding suggests that there is less variety of diagnoses seen and a more limited exposure to a range of diagnoses for those patients in the paediatric age groups. *Table 4* also demonstrates that the number of diagnoses seen per visit is more limited for paediatric patients than for adults and seniors. The column 'average additional diagnoses' shows a smaller proportion of visits for all of the paediatric age groups having multiple diagnoses coded (ie. more than one problem identified at a visit) than those for adults and seniors.

Discussion

The most important finding from our study was that the proportion of longer consultations (>20 minutes) for children was significantly less than that for adults and seniors. This finding, in combination with the shorter average duration of visits for children, and the higher proportion of visits comprising the top 10 diagnoses, raises the possibility that exposure of registrars to chronic illness in children, and to a range of diagnostic conditions, may be quite limited. These results suggest that further investigation is necessary to determine the actual clinical exposure for registrars to the broad range of problems seen in the paediatric age group.

A recent study has demonstrated that as the demography of the population in Australia has aged, so has the average age of the patient encountered in general practice.[3] General practitioners are seeing a much smaller proportion of children in their practices than they did several years ago.[3] If these findings are also occurring among registrars, a smaller proportion of paediatric patients would mean less clinical exposure to paediatric conditions during their training. Such an occurrence may have a significant impact on the comfort level of future GPs to both provide primary care to children with chronic illness and to be able to assess and manage developmental and behavioural issues in children. These trends may result in general practice registrars today having a significantly different – and more limited – exposure to children than their counterparts of a generation ago.

Currently, some teachers in registrar education and also authors of this article (NS, PM, SM), believe there to be significant variability in registrar community based training, exposure to populations and treatment of disease entities. Anecdotally, although some GP supervisors strive to manage patient appointments of the registrars in their practice to ensure wide exposure, most registrars are believed to treat 'whatever walks in the door'. The data from the ReCEnT project seeks to provide objective information regarding clinical exposure in training to replace anecdote as a guiding force in general practice education and training. Some other specialties (eg. surgery, obstetrics) have requirements for registrars to keep logbooks of patients seen and procedures performed to assess their range of clinical experience and exposure. In contrast, Australian general practice registrars have no such requirement. As such, the ReCEnT project offers a method to monitor clinical educational experiences. Unfortunately, as ReCEnT is a relatively new data collection program, there are no serial cross sectional or cohort data on which to infer any trends in registrar exposure to different age groups of patients. However, the current trends in the ages of patients seen in general practice consultations overall,[3] strongly suggests this is an area worthy of more intensive investigation.

Longer consultations with paediatric patients are most likely to be used for the primary care management of chronic disease, behavioural and developmental assessments and counselling, and for preventive care for keeping children healthy. The absolute and relative paucity of longer consultations for children seen in this study suggests that registrars may not be gaining experience in these types of clinical experiences as part of their training. Importantly, the duration of consultations is only a surrogate marker for complexity in the consultation. There may be other reasons why consultations with older patients may take longer (eg. mobility issues and multiple problems). However, only one chronic disease (asthma) was present in the top 10 diagnoses encountered among paediatric patients, and no behavioural issues were among the list of diagnoses. By contrast, a study of patients seen by general paediatricians has shown that approximately one-third present for management of behavioural issues, presumably following referral from a GP.[10] There are currently no data describing GP referral rates of children to general paediatricians or paediatric subspecialists, or the diagnoses for which they are referred.

The finding that the shortest average consultation time for registrars was with children aged 5–14 years is of concern when considering the plethora of behavioural and developmental issues that arise during these ages. We do not posit that all age groups should have the same proportion of longer consultations. However, the magnitude of the variation between the age groups of patients may have a significant impact on the training experiences of registrars. Simply put, some types of visits for children take more time than others. If registrars do not gain adequate experience in providing primary care for children with chronic illness, conducting behavioural assessments or providing preventive counselling during their training, they will enter independent practice unprepared to provide comprehensive primary care to the paediatric population.

Table 3. Duration of extended consultation in minutes by patient age

Patient age (years)	<20 minutes (items 3 or 23) (n=11105)	20–40 minutes (item 36) (n=2057)	40+ minutes (item 44) (n=126)	p value
<=4	1155 (91%)	114 (9%)	1 (0.1%)	<0.0001
5–14	1027 (94%)	66 (6%)	2 (0.2%)	
15–19	690 (86%)	110 (14%)	7 (0.9%)	
20–64	6276 (82%)	1339 (17%)	77 (1.0%)	
65+	1957 (81%)	428 (18%)	39 (1.6%)	

Table 4. Most common diagnoses by age groupings

Age group (years)	Description	Count	%	Average additional diagnoses
<4	Upper respiratory infection, acute	260	17.9	0.3
	Acute otitis media/myringitis	121	8.1	0.2
	Preventive immunisations/medications	104	6.7	0.4
	Viral disease, other/not otherwise specified	64	4.3	0.5
	Local injection/infiltration	49	3.3	0.4
	Acute bronchitis/bronchiolitis	54	3.6	0.1
	Medical examination/health evaluation complete	30	2.0	0.7
	Tonsillitis, acute	45	3.0	0.3
	Asthma	47	3.1	0.4
5–14	Upper respiratory infection, acute	203	15.1	0.4
	Asthma	95	7.1	0.5
	Tonsillitis, acute	81	6.0	0.2
	Acute otitis media/myringitis	55	4.1	0.1
	Dermatitis, contact/allergic	39	2.9	0.6
	Warts	37	2.7	0.4
	Otitis externa	32	2.4	0.3
	Impetigo	31	2.3	0.3
	Acute bronchitis/bronchiolitis	29	2.2	0.4
	Cystitis/urinary infection, other	29	2.2	0.4
15–19	Upper respiratory infection, acute	98	10.0	0.5
	Depressive disorder	53	5.4	0.9
	Contraception, oral	50	5.1	0.8
	Contraception female, other	40	4.1	1.0
	Tonsillitis, acute	39	4.0	0.3
	Acne	39	4.0	0.8
	Cystitis/urinary infection, other	32	3.3	0.5
	Preventive immunisations/medications	28	2.9	0.6
	Asthma	23	2.3	0.9
	Microbiological/immunological test	22	2.2	1.7
20–64	Depressive disorder	634	6.6	1.0
	Upper respiratory infection, acute	577	6.0	0.6
	Hypertension, uncomplicated	575	6.0	1.4
	Medical examination/health evaluation partial genital female	404	4.2	1.3
	Medication/prescription/renewal/injection	312	3.2	1.1
	Lipid disorder	309	3.2	1.6
	Tobacco abuse	233	2.4	1.3
	Preventive immunisations/medications	218	2.3	1.0
	Oesophagus disease	194	2.0	1.4
	Cystitis/urinary infection, other	190	2.0	0.7
65+	Hypertension, uncomplicated	472	15.4	1.4
	Medication/prescription/renewal/injection	209	6.8	1.3
	Preventive immunisations/medications respiratory	185	6.0	1.3
	Lipid disorder	154	5.0	1.6
	Cystitis/urinary infection, other	112	3.7	0.8
	Osteoarthritis, other	101	3.3	1.2
	Diabetes, noninsulin dependent	94	3.1	1.4
	Other preventive procedures cardiovascular	87	2.8	0.6
	Atrial fibrillation/flutter	80	2.6	1.0
	Upper respiratory infection, acute	79	2.6	0.7

Limitations of this study

As these data reflect only 1 year of data collection, there is no mechanism to know if the visit proportions across age groups are changing or are static. Also, the data is only from consultations of registrars from three training providers and may not be representative of the patterns of consultations across all training providers in Australia. However, given that the current age group proportions of registrar visits are similar to a recent assessment of age groups attending practising GPs,[3] these results should make those involved in general practice education take pause. Without deliberate intervention, the continued population trends of ageing in Australia are likely to erode exposure to paediatric care during clinical training of GPs.

Conclusion

Clinical exposure to a wide range of conditions and age groups is essential to prepare general practice registrars for practice. Specifically with regard to children, registrars must see enough normal development at different ages to be able to recognise abnormal development. They must also have sufficient exposure and experience to diagnose and manage common behavioural problems, and be facile in the primary care management, and co-management, of chronic disease among children. As the proportion of children in general practice will likely continue to fall over the coming decade, specific efforts and interventions may be needed to ensure that GPs do not simply train to become primary care physicians of adults and the elderly. If this does not occur, the future health of the nation's children may be at stake.

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References

1. Rudd K, Roxon N. 15 March 2010. Media release: Building a National Health and Hospitals Network – Training a record number of doctors. Canberra: Australian Government Department of Health and Ageing. Available at www.health.gov.au/internet/ministers/publishing.nsf/Content/mr-yr10-nr-nr046.htm [Accessed 13 December 2011].
2. Australian Bureau of Statistics. Available at www.abs.gov.au/AUSSTATS/abs@.nsf/Web+Pages/Population+Clock?opendocument#from-banner=LN [Accessed 29 November 2011].
3. Freed GL, Sewell J, Spike N, Brooks PJ. Changes in the demography of Australia and of general practitioner patient populations. Aust Fam Physician 2012; in press.
4. Freed GL, Dunham KM, Gebremariam A, Wheeler JR. Which physicians are providing care to America's children? An update on the trends and changes during the past 26 years. J Pediatr 2010;157:148–52.
5. Emery JD, Skinner LP, Morgan S, Guest BJ, Vickery AW. Future models of general practice training in Australia. Med J Aust 2011;194:S97–100.
6. Binns HJ, Lanier D, Pace WD, et al. Describing primary care encounters: the Primary Care Network Survey and the National Ambulatory Medical Care Survey. Ann Fam Med 2007;5:39–47.
7. Crampton P, Jatrana S, Lay-Yee R, Davis P. Exposure to primary medical care in New Zealand: number and duration of general practitioner visits. N Z Med J 2007;120:U2582.
8. Britt H, Miller GC, Charles J, et al. General practice activity in Australia 2009-10. General Practice Series No. 27. Cat. no. GEP 27. Canberra: AIHW, 2010.
9. Britt H. A new coding tool for computerised clinical systems in primary care –ICPC plus. Aust Fam Physician 1997;26 (Suppl 2):S79–82.
10. Hiscock H, Roberts G, Efron D, Sewell JR, Bryson HE, Price AMH, Oberklaid F, South M, Wake MA. Children attending pediatricians study: a national prospective audit of outpatient practice from the Australian paediatric research network. Med J Aust 2011;194:392–7.

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