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Abstract

Aim

To study the prevalence of a regular source of primary care for Victorian children attending one of four emergency departments (ED) and to determine associated characteristics, including ED use.

Methods

Responses were collected via an electronic survey from parents attending EDs with their child (≤ 9 years of age) for a lower urgency condition. Single, multiple choice and Likert scale responses were analysed using bivariate and logistic regression tests.

Results

Of the 1146 parents who provided responses, 80% stated their child has a regular source of primary care. Of these, care is mostly received by a GP (95%) in GP group practices (71%). Approximately 20% have changed where their child receives primary care in the last year. No associations were observed between having a regular source of primary care and frequency of ED attendance in the past 12 months, though parents whose child did not have a regular source of primary care were more likely to view the ED as a more convenient place to receive care than the primary care provider (39% without regular source vs. 18% with regular source; $p < 0.0001$). Children were less likely to have a regular source of primary care if their parents were younger, had a lower household income, lower education, and were visiting a hospital in a lower SEIFA rank.

Conclusions

Policy options to improve continuity of care for children may require investigation.

Increasing the prevalence of regular source of primary care for children may in turn reduce ED visits.

What is already known on this topic

1. There is support in Australia and worldwide for children to have a regular source of primary care
2. Evidence shows having a regular source of primary care is associated with lowered ED use
3. Almost 90% of Australian adults have a regular source of primary care

What this paper adds

1. One in five children presenting to Victorian EDs for lower urgency conditions are without a regular source of primary care
2. Parents whose child does not have a regular source of primary care are more likely to perceive the ED as more convenient than the primary care provider compared to parents whose child has a regular source of primary care
3. Children whose parents have a low annual income ($\leq \$100K$) and low education (secondary school or less) are less likely to have a regular source of primary care.

Keywords: primary health care, emergency medicine, child health services, parents

Introduction

Continuity of care denotes the provision of care over time by a single individual or team of health care professionals.¹ Continuity of care may be labelled or measured in a variety of ways. For instance, the notion of a medical home encompasses the delivery of continuity of care.² Having a regular source of primary care or a physician whom the patient always or usually visits can be a proxy measure for continuity of care.¹

There is support in Australia and worldwide for continuity of care, especially with regard to primary care provision. The Royal Australian College of General Practitioners lists continuity of care as a standard in their general practice framework.³ Further, a 2009 report by the Australian National Health and Hospital [Reform](#) Commission recommended encouragement of continuity through financial incentives awarded to practices whose patients enrol with them as a 'health care home'.⁴ The concept of a medical home for all children has been long supported by the American Academy of Pediatrics, with continuity being a key domain of the definition of a medical home.²

This widespread support for continuity of care is backed by evidence showing beneficial outcomes. For example, continuous primary care has been shown to be associated with lower emergency department (ED) use.⁵⁻⁹ Attention to strategies reducing ED use is important for the State of Victoria given that the number of ED presentations is increasing. In particular, the 0-4 year age group showed an increase of ED visits of 29% in the last 11 years.¹⁰

Australasian data surrounding continuity of care is scarce. The limited available literature is only focused on adults, and shows mixed findings. A New Zealand study showed that those with poorer health are more likely to have a regular primary care physician¹¹ whereas a study from Australia showed those in good health are more likely to have a regular primary care physician¹². Association between continuity of care and ED use has not been studied in Australia or New Zealand^{asia}.

One study reports the number of adults who usually or always see the same General Practitioner (GP) in Australia as 89%, with 57% always seeing the same GP.¹² A report from the National Health Performance Authority, an independent agency ~~who~~ monitors the performance of hospitals and primary care services, states that the percentage of adults with a preferred GP ranges from 78% to 95% across Medicare Local populations nationally.¹³ However, no data exist regarding the number of children in Australia with a regular source of primary care.

The aim of this study was to investigate the prevalence of a regular source of primary care for children presenting with lower urgency conditions to one of four emergency departments in Victoria, Australia. We also aimed to explore characteristics of those children who have a regular source of primary care.

Methods

The data used for this report were collected as part a larger project to investigate why increasing numbers of children are presenting to Victorian EDs for lower urgency conditions.

Sample and recruitment

Recruitment took place at three public general hospitals and one specialist children's hospital in metropolitan Melbourne from May – November 2014. The sample consisted of parents or guardians (referred to collectively as 'parents' from here on) of patients (≤ 9 years of age) attending the ED at one of these four Victorian hospitals. Only parents whose child was assigned an Australasian Triage System triage category of 4 or 5 (lower urgency) were included in this analysis. Parents with limited English proficiency were ineligible to participate and those who appeared to be in significant distress were not approached. Trained research assistants invited parents to participate and provided them with an information letter. On completion of the survey, participants were offered a \$10 gift card to a local supermarket chain in appreciation for their time.

Survey

The survey was developed based on a review of the existing literature and in consultation with ED directors from all four hospitals. A pilot test was undertaken with ten parents before the final version of the survey was created. Pilot data were not used in the final analyses. The final version of the instrument included 81 items with branching logic, altering the survey according to responses to specific questions. Responses were provided as single or multiple choice, or Likert-scale.

Data collection

Survey responses were collected on an iPad supplied to respondents by research assistants. The data were collected and managed using REDCap electronic data

capture tools hosted at The University of Melbourne.¹⁴ Recruitment was carried out across all time periods including during work, after hours, and on weekends.

Data analysis

Survey questions related to having a regular source of primary care were analysed for this report. These questions included; whether the child has a usual place where he/she receives primary care, the type of practice where this care is received, by whom the care is provided, and the last time the place of primary care was changed.

Statistical analyses were performed using STATA 13.0 (StataCorp College Station, TX). Frequency and descriptive analyses were initially undertaken to examine the data. Subsequently, bivariate analyses using chi-square statistics were conducted to determine the differences, if any, among respondents based on age of child (<5 years vs. ≥ 5 years), age of the primary carer (≤ 30 vs. > 30 years), household income ($\leq \$100K$ vs. $> \$100K$), education level, and hospital location. For this final variable, hospital location was used as an indicator of SEIFA (socio-economic indexes for areas), with responses from two hospitals in lower ranked SEIFA locations combined and two hospitals in higher ranked SEIFA locations combined to produce a binary outcome. We also examined associations between whether the child has a regular source of primary care with ED presentations and perceptions. Logistic regression was used to examine the independent effects of variables on the odds of having a regular source of primary care.

This project received ethics approval from The University of Melbourne and all four hospital Human Research Ethics Committees. Responses were confidential, voluntary and anonymous.

Results

In total, 1146 parents completed the survey. Approximately equal numbers of respondents were recruited from each of the four hospitals. Demographic characteristics of the sample are presented in Table 1.

The majority (80%, N=911) of respondents stated their child has a usual place where he/she receives primary care. Of these, 71% (N=639) indicated care is received in GP group practices with three or more GPs. Most of the remaining participants (21%, N=194) responded that care was received at solo or 2 GP surgeries. Other answers included; community health centre (3%), general paediatrician surgery (2%), hospital-based specialty clinic (1%), hospital-based GP clinic (1%), and emergency department (1%). Primary care is provided by a GP for 95% (N=1077) of children whose parents answered the survey.

Respondents were asked when they last changed where their child receives primary care, with approximately half (53%; N=606) having never changed (Table 2). When asked about their number of visits to the GP in the past 12 months, 38% (N=436) had taken their child 3-5 times, 29% (N=333) had taken their child 1-2 times, and 29% (N=328) had taken their child more than 5 times. Only 4% (N=45) of respondents had not taken their child to see a GP in the past 12 months.

We examined associations between having a regular source of primary care and ED presentations and perceptions. When comparing respondents who indicated having a regular source of care for their child with those who do not, no significant difference was observed in number of ED visits in the past 12 months (Table 3). Additionally, no

differences were seen among those who attempted to make a GP appointment before attending the ED (43% with regular source vs. 41% without regular source; $p>0.05$). However, those without a regular source of care were more likely to perceive that it is more convenient to bring their child to the ED than to the primary care provider (39% without regular source vs. 18% with regular source; $p<0.0001$).

When examining the demographic characteristics of respondents, those more likely to have a regular source of primary care for their child were older parents (over 30) compared to younger parents (83% vs. 74% $p=0.001$), parents with a higher household income (annual $> \$100,000$) compared to those with a lower household income (87% vs. 76% $P<0.0001$), parents with a higher level of education (Table 4), and responses collected from hospitals in higher ranked SEIFA, compared to lower ranked (Table 5). There were no differences based on birth order, age of child, time of ED presentation or presence of chronic illness in the child.

We further evaluated the independent associations of demographic factors with whether respondents have a regular source of primary care for their child through logistic regression. In a logistic regression model including parent age, income, education and hospital location, results were in the same direction as bivariate analyses (Table 6). However, only annual household income ($OR=1.7$; 95% CI, 1.1-2.5) and level of education ($OR=1.6$; 95% CI, 1.1-2.3) were statistically significant, indicating that the likelihood of having a regular GP is higher for those with a higher annual household income ($> \$100K$) and higher education (beyond secondary school).

Discussion

One of the most important findings from this study is that 80% of children presenting to the ED in Victoria for lower urgency conditions have a regular source of primary care. Although this is a positive finding for a great majority, it also suggests that 1 in 5 children in Victoria are without a regular source of care. Importantly, this is nearly double the reported number of Australian adults without a regular source of care (11%).¹² Continuity of care has been shown to contribute to improved quality of care.¹⁵

The recent Hospital and Health Care Reform Commission suggested one strategy to improve continuity of care in Australia is the provision of financial incentives to practices who register patients, in particular, families with young children and people with chronic illness.⁴ An alternative scheme exists in New Zealand whereby patients are charged lower GP consultation fees if they are registered with a specific practice. The rate of continuity of care in New Zealand has been reported as 92% for the adult population.^{11, 16} Further research regarding the impact of registration with a primary care practice on continuity of care in Australia should be conducted to assess the utility of these strategies for the nation.

Of concern among our findings is that children whose parents have a low annual income ($\leq \$100K$) and low education (secondary school or less) are less likely to have a regular source of primary care. Children from these demographic backgrounds will often be in poorer health than the general population and therefore may benefit more from receiving continuity of care.^{17, 18} In addition, research suggests that continuity of care is most highly valued by vulnerable patients.¹⁹

As noted, research has shown that having a regular source of primary care can lead to a reduction in ED visits.⁵⁻⁹ Our results did not show an association between regular source of primary care and number of visits to the ED. However, we did observe that in the absence of a regular source of primary care provider, parents are more likely to perceive visiting the ED as more convenient. It is possible that frequent attenders of EDs are even less likely to have a regular source of care,⁷ though due to the small number of frequent attenders in our sample we were not able to adequately study this association. Further studies are needed to examine the association between regular source of primary care and ED use in Australia.

Surprisingly, among the children presenting to the ED for lower urgency conditions, there were no differences in the prevalence of having a regular source of primary care for children with a chronic illness compared to those without. It is possible that those with chronic illness are more likely to present to the ED with more urgent conditions. However, individuals with chronic illness will often receive care from a variety of health care professionals; therefore a medical home is of particular importance to coordinate care in these circumstances. The concept of the medical home was originally developed from a need for children with chronic illness to have improved continuity and coordination of care.²⁰

Our study provides new information regarding the delivery of primary care to children in Victoria. Most parents in our study indicated that primary care for their child is received in GP group practices with three or more GPs. This finding speaks to the current reality that care provided in solo practices is becoming less common. This finding matches that of a report of general practice activity in Australia over ten years,

comparing data from 2000-2001 to 2009-2010, which showed a decrease in the prevalence of solo practices from 19% to 9% in a sample of 1000 GPs.²¹

This study has some limitations. Our sample only included parents visiting the ED for their child's lower urgency condition and with adequate English proficiency. As such, our results may not be generalisable to all children in Australia. Additionally, the survey relied on parents to recall information and thus responses may be affected by recall bias. Nevertheless, our findings provide information regarding the regular source of primary care for Victorian children, which is not available elsewhere.

Conclusion

One in five Victorian children presenting to ED for lower urgency conditions do not have a regular source of primary care. Of concern, this figure is greater for low income and low education families. Policy options to improve continuity of care for children include introduction of incentives to providers or patients who register with a primary care practice. This may in turn reduce ED visits. Additional research in an Australian setting to assess the impact of such policies changes is warranted.

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Table 1: Respondent characteristics (N=1146)

Characteristic	% (N)
Age of child	
<1 years	23 (258)
1-4 years	51 (583)
5-9 years	26 (302)
Household income	
0 - \$25 000	13 (137)
\$25 001 - \$50 000	16 (173)
\$50 001 – \$80 000	23 (251)
\$80 001 - \$100 000	17 (184)
>\$100 000	32 (350)
Age of child's primary carer	
≤20	4 (48)
21-30	27 (306)
31-40	52 (590)
>40	16 (185)
Highest education of child's primary carer	
Secondary school or less	20 (226)
Trade or other certificate level qualification	20 (226)
Undergraduate diploma	13 (141)
Bachelor degree	28 (316)
Postgraduate qualification	19 (215)

Table 2: Responses to question: when was the last time you changed where your child receives primary care? (N=1134)

Response options	% (N)
I have never changed where I take my child for Primary Care	53 (606)
Less than a year ago	19 (215)
More than a year ago	17 (188)
I have always taken my child to see a variety of Primary Care providers	11 (125)

Table 3: Bivariate analysis of: how many times has your child been to any ED in the past 12 months? by: does your child have a usual place where he/she receives primary care? (N=1119)

Does your child have a usual place where he/she receives primary care?			
	Yes	No	P-value
	(N=891)	(N=228)	
	% (N)	% (N)	
0	51 (451)	48 (109)	0.2
1-2	37 (331)	37 (84)	
3-5	10 (90)	10 (24)	
>5	2 (19)	5 (11)	

Table 4: Bivariate analysis of: does your child have a usual place where he/she receives primary care? by: what is the highest level of education that you/primary carer has completed? (N=1117)

Does your child have a usual place where he/she receives primary care?			
	Yes	No	P-value
	% (N)	% (N)	
Secondary school or less (N=226)	70 (158)	30 (68)	<0.0001
Trade or other certificate level qualification (N=225)	80 (181)	20 (44)	
Undergraduate diploma (N=139)	79 (110)	21 (29)	
Bachelor degree (N=314)	85 (266)	15 (48)	
Postgraduate qualification (N=213)	85 (180)	15 (33)	

Table 5: Bivariate analysis of: does your child have a usual place where he/she receives primary care? by hospital location (N=1143)

	Hospital located in area with lower SEIFA ranking (N=529)	Hospital located in area with higher SEIFA ranking (N=614)	P-value
	% (N)	% (N)	
Yes	76 (401)	83 (510)	0.002

Table 6: Logistic regression analysis for regular source of GP

	Odds of not having a regular GP		
	OR	95% CI	P-value
Primary carer ≤ 30 years	1.3	0.9-1.7	0.08
Education (lower) †	1.6	1.1-2.3	0.01
Hospital location (lower SEIFA)	1.3	0.9-1.7	0.2
Annual Household Income $\leq \$100k$	1.7	1.2-2.5	0.006

†Education 'lower' = Secondary school or less.

References

1. Donaldson MS, Yordy KD, Lohr KN, Vanselow NA. Primary care: America's health in a new era: National Academies Press; 1996.
2. American Academy of Paediatrics. The medical home. *Pediatrics*. 2002;110:184-186.
3. Royal Australian College of General Practitioners. Standards for general practices, 4th ed. 2013.
4. National Health and Hospitals Reform Commission. A healthier future for all Australians: final report June 2009. 2009.
5. Brousseau DC, Meurer JR, Isenberg ML, Kuhn EM, Gorelick MH. Association between infant continuity of care and pediatric emergency department utilization. *Pediatrics*. 2004;113:738-741.
6. Romaine MA, Bell JF, Grossman DC. Health care use and expenditures associated with access to the medical home for children and youth. *Med Care*. 2012;50:262 - 269.
7. Gill JM, Mainous III AG, Nserekro M. The effect of continuity of care on emergency department use. *Arch Fam Med*. 2000;9:333 - 338.
8. Cooley WC, McAllister JW, Sherrieb K, Kuhlthau K. Improved outcomes associated with medical home implementation in pediatric primary care. *Pediatrics*. 2009;124:358-364.
9. Christakis DA, Mell L, Koepsell TD, Zimmerman FJ, Connell FA. Association of lower continuity of care with greater risk of emergency department use and hospitalization in children. *Pediatrics*. 2001;107:524-529.
10. Freed GL, Gafforini S, Carson N. Age distribution of emergency department presentations in Victoria. *Emerg Med Australas*. 2015:1-6.
11. Jatrana S, Richardson K, Crampton P. Is change in global self-rated health associated with change in affiliation with a primary care provider? Findings from a longitudinal study from New Zealand. *Prev Med*. 2014;64:32-36.
12. McRae I, Yen L, Gillespie J, Douglas K. Patient affiliation with GPs in Australia--who is and who is not and does it matter? *Health Policy*. 2011;103:16-23.
13. National Health Performance Authority. Australians' experiences with primary health care in 2010-11. Canberra: National Health Performance Agency: 2013.
14. Harris PA, Taylor R, Thielke R, Payne J, Gonzalez N, Conde JG. Research electronic data capture (REDCap)—a metadata-driven methodology and workflow process for providing translational research informatics support. *Journal of Biomedical Informatics*. 2009;42:377-381.
15. Haggerty JL, Reid RJ, Freeman GK, Starfield BH, Adair CE, McKendry R. Continuity of care: a multidisciplinary review. *Br Med J*. 2003;327:1219-1221.
16. Jatrana S, Crampton P, Richardson K. Continuity of care with general practitioners in New Zealand: results from SoFIE-Primary Care. *N Z Med J*. 2011;124:16 - 25.
17. Australian Medical Association. Position statement: Social determinants of health and the prevention of health inequities 2007 [30 April 2015]. Available from: https://ama.com.au/system/tdf/documents/AMA_Position_Statement_on_the_Social_Determinants_of_Health_and_the_Prevention_of_Health_Inequities_2007_0.pdf?file=1&type=node&id=40625.

18. Michael M. The Status Syndrome: How social standing affects our health and longevity. Bloomsbury, London; 2004.
19. Nutting PA, Meredith AG, Flocke SA, Zyzanski SJ, Stange KC. Continuity of primary care: To whom does it matter and when? *Ann Fam Med*. 2003;1:149-155.
20. Sia C, Tonniges TF, Osterhus E, Taba S. History of the medical home concept. *Pediatrics*. 2004;113:1473-1478.
21. Britt H, Miller GC, Charles J, et al. General practice activity in Australia 2000–01 to 2009–10: 10 year data tables. Canberra: AIHW: 2010.

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