

PEDIATRICS

Demography of pediatric emergency care in Halifax, Canada

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ABSTRACT

Objectives: Demography affects emergency department (ED) utilization and influences the health care needs of patients, yet the demographics of the caregivers who accompany children to pediatric EDs are not well described. The objective of this study was to provide a demographic description of this population. The hypothesis was that single parent status, annual income less than \$20 000, and education no greater than high school constitute a social triad that might reduce the ability to provide health care for a sick child.

Methods: Over a 1-month period, a convenience survey of caregivers who brought children to a pediatric ED was conducted. Twelve hundred surveys were distributed to 1733 eligible subjects. Social and economic determinants were captured, including age, gender, visible minority status, income group, employment, single parent status and education level.

Results: In total, 1018 (85%) of 1200 surveys were returned — a population response rate of 59%. Single parent status, income less than \$20 000/yr, and education no greater than high school were found to be risk factors for altered delivery of health care. Overall, 40.9% of caregivers had at least one risk factor, including 43.2% of women, 63.4% of those under 30 years of age, 65.1% of those with visible minority status, and 71.6% of women who were from a visible minority. In addition, 41.7% of single parents had no more than a high school education, and 75.7% of single parent families had incomes of less than \$40 000 per year.

Conclusions: It was found that a high level of educational, social and financial disadvantage in our population. These factors may adversely affect parental capability to provide health care at home for their child. The extent of this problem in other regions is not well defined and should be a focus of future research. It is recommended that inquiry into parental income, education and single parent status be a routine part of the history in pediatric emergency populations.

Key words: demographics; socioeconomic status; pediatric emergency care

RÉSUMÉ

Objectifs : La démographie a une incidence sur l'utilisation du service des urgences et influence les besoins en soins de santé des patients. Or, les données démographiques des fournisseurs de soins qui accompagnent les enfants aux services d'urgence pédiatrique sont mal connues. Notre objectif était de donner une description démographique de cette population. Notre hypothèse était que

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le statut monoparental, un revenu annuel inférieur à 20 000 \$ et un niveau d'éducation ne dépassant pas les études secondaires constituent une triade pouvant réduire la capacité à offrir des soins à un enfant malade.

Méthodes : Au cours d'une période d'un mois, nous avons effectué un sondage auprès d'un échantillon de commodité de fournisseurs de soins ayant amené des enfants à un service d'urgence pédiatrique. Mille deux cents sondages furent distribués à 1 733 sujets admissibles. Les déterminants socio-économiques furent saisis, incluant l'âge, le sexe, le statut de minorité visible, la catégorie de revenu, la situation d'emploi, le statut monoparental et le niveau d'éducation.

Résultats : Au total, 1 018 sondages sur 1 200 (85 %) furent retournés, pour un taux de réponse de 59 %. On a constaté que le statut monoparental, le revenu inférieur à 20 000 \$ par année et le niveau d'éducation ne dépassant pas les études secondaires représentaient des facteurs de risque pour une mauvaise qualité des soins offerts aux enfants. Globalement, 40,9 % des fournisseurs de soins présentaient au moins un facteur de risque; parmi ce groupe, 43,2 % étaient de femmes dont 63,4 % étaient âgées de moins de 30 ans; parmi ces dernières, 65,1 % faisaient partie d'une minorité visible; 71,6 % de toutes les femmes faisaient partie d'une minorité visible. De plus, 41,7 % des parents seuls avaient seulement un diplôme d'études secondaires et 75,7 % des familles monoparentales avaient un revenu inférieur à 40 000 \$ par année.

Conclusions : Nous avons constaté un net désavantage du point de vue de l'éducation, du statut social et financier chez la population à l'étude. Ces facteurs peuvent avoir des effets négatifs sur la capacité d'un parent à offrir des soins de santé à son enfant à domicile. L'ampleur de ce problème dans d'autres régions n'est pas bien connue et devrait faire l'objet de recherches futures. Nous recommandons que des questions concernant le revenu parental, le niveau de scolarité et le statut monoparental fassent partie de l'anamnèse courante de la population pédiatrique à l'urgence.

Background

Existing literature demonstrates an interaction between emergency department (ED) utilization, health care delivery and patient demography. In Ireland and the UK, adults seen in emergency settings are more likely to be unemployed^{1,2} and to receive social assistance.¹ US and Irish studies^{3,4} have found that ED patients are more likely to be male and single. Frequent adult attendees were often socially disadvantaged, with lower levels of social support, poorer mental health and higher rates of social assistance.^{4,5} In Canada, socially disadvantaged asthmatic children were found to have greater asthma morbidity and more ED visits,⁶ much like adults in the US.⁷ Socioeconomic disadvantages associated with specific demographic labels have been shown to affect the delivery of health care for adults.^{5,8}

Although the influence of patient demographics is well studied, the demography of parents who accompany children to pediatric emergency departments (PEDs) is not. Of the references above, only 2 dealt with PED patients,^{1,6} and 1 of these was limited to a discussion of children with asthma.⁶ In emergency pediatrics, caregiver competence is critical: we rely upon parents to understand our diagnoses, purchase and implement our treatment regimes, stay awake at night to monitor children for deterioration and adverse

effects, and transport them to follow-up appointments. Demographic variables such as poverty, poor education and absence of a parenting partner could limit the ability to perform these important tasks, yet there are few data describing PED parent characteristics. The objective of this study was to provide a demographic description of the parent population of a PED. The hypothesis was that *single parent status, annual income less than \$20 000 and education no greater than high school* constitute a social triad that might reduce the ability to provide health care for a sick child and increase ED utilization.

Methods

Setting and subjects

During a 4-week period in October and November of 2005, an anonymous, paper-based survey of adults who accompanied children to the PED at the Isaac Walton Killam (IWK) Health Centre in Halifax, Nova Scotia, Canada, was conducted. A convenience sample was enrolled, directing surveys to one adult from each ED patient registration — preferably the patient's parent or current caregiver. Exclusion criteria included unwillingness to complete the survey and the inability to read English at a Grade 8 level. Subjects were required to complete the survey without assis-

tance from research staff. Consent was implied by return of the completed survey, and the study was approved by the IWK Research Ethics Board.

Data collection

Social and economic determinants included visible minority status, income group, employment, single parent status and education level. Personal information included age and gender. For the following questions, a binary (e.g., male/female, yes/no) response was permitted: *What is your gender? Do you consider yourself a single parent? Do you work outside of the home? and Do you consider yourself or any child(ren) you have brought to the department today to be part of a visible minority in Canadian society?*

The question *What category best describes your annual household income (the total of all wage earners in your home)?* was coded on a 6-point ordinal scale ranging from “<\$20,000/year” to “>\$100,000/year.” The question *What category best describes the level of education you have attended?* was coded as a 4-point nominal scale including “High school,” “Trade or industrial college,” “University (degree)” and “Graduate studies.” The survey also solicited information about the relationship of the respondent to the child receiving care.

Data analysis

After survey completion, data were entered into a Microsoft Access® database and analyzed using MINITAB® software (Minitab Inc., State College, Pa.). Means and proportions were determined using standard formulae. The statistical significance of observed differences in categorical outcomes was assessed using χ^2 analysis.

Results

During the study period, 1733 potential subjects brought children to the ED of IWK, 1200 surveys were distributed and 1018 were returned, producing a survey response rate of 85% and a population response rate of 59%. Of the 1018 respondents, 1011 identified themselves as parents or guardians, 4 as other relatives and 2 as having some other relationship with the patient. One respondent did not clarify his relationship with the patient.

Seven hundred and seventy-eight (77.1%) respondents were female, 207 (20.5%) were single parents, 217 (21.9%) were unemployed and 166 (16.9%) described themselves as a visible minority. Table 1 and Table 2 show that overall, 121 respondents (12.3%) reported household incomes <\$20 000/yr and 274 (27.4%) had no more than high school education. Because the study was anonymous,

information on those who refused to participate was not available, and it could not be determined whether responders were similar to non-responders.

Marked gender differences were apparent. Women were younger than men (mean, 34.9 v. 37.7 yr; $p < 0.001$), less likely to be employed (73% v. 94%; $p < 0.001$) and more likely to be in the lowest income category (14.4% v. 5.5%; $p < 0.001$). They were also twice as likely to be single parents (23.6% v. 10.4%; $p < 0.001$), and 88.4% of all single parents were female. Overall, 43.2% of women had at least 1 of the hypothesized “social triad” characteristics (i.e., single parent status, annual income <\$20 000, education no greater than high school), compared with 33% of all men ($p < 0.01$). Only 52 respondents (5.1%) had all 3 triad characteristics, but 49 (94%) of these were women.

Table 3 shows that visible minority status was significantly associated with lower income levels ($p < 0.001$): 31.9% reported <\$20 000/yr annual household income, and 67.5% reported incomes <\$40 000/yr, compared with 7.7% and 24%, respectively, of those not of visible minority status. Visible minority respondents were also more likely to be in the lowest educational category (39.4% v. 23.5%, $p < 0.01$) and less likely to be employed (71.2% v. 81.6%, $p < 0.05$) (Table 4). With regard to the social triad, 65.1% of visible minority parents (and 71.6% of women) had at least 1 of those characteristics compared with 34.9%

Table 1. Income* category for the 1018 study respondents, by gender

Income, \$	Female, %	Male, %	Total, %
<20 000	14.4	5.7	12.3
20 000–40 000	21.7	14.0	19.9
40 001–60 000	19.7	27.9	21.6
60 001–80 000	17.0	14.8	16.5
80 001–100 000	10.8	17.9	12.4
>100 000	16.4	19.7	17.1

*Annual household income (total income of all wage earners in the home).

Table 2. Education* category for the 1018 study respondents, by gender

Education	Female, %	Male, %	Total, %
High school	29	23	27.4
Trade school	31	35	31.9
University (degree)	30	28	29.3
Graduate studies	10	14	11.4

*Highest level attended.

of those without visible minority status ($p < 0.001$). Among caregivers who had all 3 of the social triad characteristics, 41.3% described themselves as being in a visible minority, compared with only 10.0% of those who had none of the 3 characteristics ($p < 0.001$).

Parental age <30 years was associated with greater rates of single parenthood (32.9% v. 16.4% for parents aged 30–39 years and 17.3% for parents >39 years of age; $p < 0.001$) and lower rates of employment (67.5% v. 80.7% and 82.5%, respectively; $p < 0.001$). Of subjects <30 years of age, 60.3% reported family incomes of <\$40 000/yr, compared with 26.1% and 20.8% in the older groups ($p < 0.001$).

With regard to education, 46.6% of those <30 years of age reported their education to be at the high school level, despite the fact that only 4.1% of that group (9 subjects) were <20 years old. In contrast, 20.6% and 23.6% of the older age groups reported only high school education ($p < 0.001$).

Again, in terms the social triad, 63.4% of those <30 years of age had at least 1 factor, compared with 32.9% of

those 30–39 years, and 35.4% of those >39 years ($p < 0.001$). Of the individuals who had all 3 of these characteristics, 53.1% were <30, compared with only 13% of those who did not have any of the 3 characteristics ($p < 0.001$). Those who were >39 were more likely than those aged 30–39 to report household incomes >\$100 000 (25.7% v. 17.5%, $p < 0.05$). Otherwise, comparisons between the 2 oldest groups did not show significant differences.

Almost half of single parent families (41.4%) reported household incomes of <\$20 000/yr, and 75.7% reported incomes <\$40 000. In contrast, only 5% of dual parent families had incomes <\$20 000, with 20.2% reporting <\$40 000 ($p < 0.001$) (Table 5). With regard to education, 41.7% of single parents reported their education to be at the high school level, while this applied to only 23.7% of those without single parent status ($p < 0.001$, Table 6).

Discussion

Cogent arguments can be made that parents with a lower income may have greater difficulty purchasing medications or transporting children to emergency care or follow-up

Table 3. Household income* category for the 1018 study respondents, by visible minority status

Income, \$	Visible minority, † % of respondents	
	Yes	No
<20 000	31.9	7.7
20 000–40 000	35.6	16.3
40 001–60 000	17.8	22.7
60 001–80 000	4.9	19.2
80 001–100 000	1.8	14.8
>100 000	8.0	19.3

*Annual household income (total income of all wage earners in the home).
†As described by the respondent. The question was *Do you consider yourself or any child(ren) you have brought to the department today to be part of a visible minority in Canadian society?*

Table 4. Education* category for the 1018 study respondents, by visible minority status

Education level	Visible minority, † % of respondents	
	Yes	No
High school	39.4	23.5
Trade school	32.1	32.2
University (degree)	20.6	31.9
Graduate studies	7.9	12.5

*Highest level attended.
†As described by the respondent. The question was *Do you consider yourself or any child(ren) you have brought to the department today to be part of a visible minority in Canadian society?*

Table 5. Household income* category for the 1018 study respondents, by single parent status

Income, \$	Single parent, † % of respondents	
	Yes	No
<20 000	41.4	5.0
20 000–40 000	34.3	16.2
40 001–60 000	12.1	24.0
60 001–80 000	6.6	19.1
80 001–100 000	1.0	15.3
>100 000	4.5	20.3

*Annual household income (total income of all wage earners in the home).
†Question was *Do you consider yourself a single parent?*

Table 6. Education* category for the 1018 study respondents, by single parent status

Education level	Single parent, † % of respondents	
	Yes	No
High school	41.7	23.7
Trade school	36.8	30.7
University (degree)	13.2	33.4
Graduate studies	8.3	12.2

*Highest level attended.
†Question was *Do you consider yourself a single parent?*

visits. Similarly, parents with limited education and poorer literacy may have greater difficulty understanding physicians, or reading information sheets; and single parents may have greater difficulty delivering care or monitoring their child for deterioration compared with those who have the benefit of a parenting partner to assist them.

Access barriers come in many forms, ranging from those that are generated by long wait times and inadequate resources (thus inhibiting contact between health care professionals and patients) to those that occur in a more functional sense and act to impair appropriate delivery of health care once a patient has been seen. It is not difficult to believe that social disadvantage might represent risk factors for the at-home delivery of health care to children, and emergency physicians are in a unique position to respond. Some of these demographic characteristics have been linked to differences in resource utilization and morbidity;^{9,10} however, literature that links these factors to the altered delivery of health care after an ED visit is sparse.⁶

Awareness of low income permits the activation of social support programs that can assist with the purchase of medications or the availability of transportation to facilitate return to the ED. In many cases, ED social workers can respond to this need, but only after it is identified. Recognition of a limited education can mean a different approach to informing parents, with more time spent in discussion, targeting language and concepts at an appropriate level, and less reliance on generic written handouts. An understanding of the fatigue and other concerns experienced by single parents permits the consideration of short stay or even inpatient units as a disposition option. In short, consideration of the social circumstances of the parent can enable the clinician to engineer a patient care pathway that is more feasible from the parent's perspective. Responding to such issues requires the routine exploration of social circumstance in the emergency history and physical, and willingness to, if necessary, change the approach, activating social services appropriately. Primarily, however, the response of emergency physicians depends upon an awareness of the scope of the problem. These data show that, in this centre, these social characteristics are common in the parents bringing their children for emergency care and are extremely common in certain subgroups of that population.

Indeed, it is remarkable and somewhat distressing to recognize the degree of social and economic disadvantage in this population of parents. According to Statistics Canada, the incidence of low income in Halifax is the lowest in the region.¹¹ The unemployment rate in Halifax was reported to be 5.0% in November 2005, compared with 6.5% in Saint John (New Brunswick) 7.5% in St. John's (New-

foundland and Labrador), 6.0% in Toronto, 8.8% in Montréal and 4.4% in Vancouver.¹²⁻¹⁵ Halifax is home to several universities, and the IWK Health Centre is located in a wealthier part of the municipality. I suspect that the proportion of low income, low education or single parent families might be higher in centres that do not enjoy such a positive economic environment.

Particularly remarkable is the dramatic interaction between specific social labels (e.g., "young parent," "single parent," "female," "visible minority") on income and education. Single parenthood is a special case. More than 40% of all single parent families had no more than a high school education, and more than three-quarters had incomes in the lowest 2 categories. These data suggest that parental income, education and single parent status should be a standard part of the history in pediatric emergency populations. This is particularly important for parents who are characterized by the demographic labels given above.

Although social disadvantage is common in the study's PED population, research into its consequences on the patients is not, and the degree to which it represents a functional access barrier is not clear in the published literature. Canadian emergency physicians are well positioned to help deal with some of these issues — perhaps most importantly by including an assessment of these risk factors as part of bedside teaching to students. Unfortunately, quality assurance processes that measure our response to these needs are, again, not easy to find in the literature. Finally, data documenting the scope of this problem from other Canadian PEDs are lacking. It would seem that social disadvantage among parents of children in EDs is a rich area for potential research.

Limitations

This survey assumed Grade 8 reading ability, and it is possible that individuals with limited education may have excluded themselves and be under-represented in the data. The anonymous nature of the study, necessary to help respondents feel less inhibited in their responses to items related to education, income and race, made it impossible to compare respondents to non-respondents or conduct follow-up. Furthermore, because of demographic variation, it may be difficult to generalize these findings to other Canadian PEDs, or indeed to general EDs that see children. It is quite possible, even likely, that the socioeconomic characteristics of the visible minority population in Halifax are quite different from the self-defined visible minority populations in other centres.

Despite these limitations, a high prevalence of poverty, limited education and low income in the parent population

was found. Further, it was found that these characteristics are related to gender, visible minority status and the respondent age.

Conclusions

A high level of educational, social and financial disadvantage in this population was found. These factors may adversely affect parental capability to provide health care at home for their child. The extent of this problem in other regions is not well defined and should be a focus of future research. It is recommended that inquiry into parental income, education and single parent status be a routine part of the history in pediatric emergency populations.

Competing interests: Email to Penny

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