Original Article

Paediatric-appropriate facilities in emergency departments of community hospitals in Ontario: A cross-sectional study

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BACKGROUND: We assessed whether the paediatric-appropriate facilities were available at Emergency Departments (ED) in community hospitals in a Canadian province.

METHODS: We conducted a cross-sectional survey of EDs in community hospitals in Ontario, Canada that had inpatient paediatric facilities and a neonatal intensive care unit. Key informants were ED chiefs, clinical educators, or managers. The survey included questions about paediatric facilities related to environment, triage, training, and staff in EDs.

RESULTS: Of 52 hospitals, 69% (*n*=36) responded to our survey. Of them, 14% EDs (*n*=5) had some separated spaces available for paediatric patients. About 53% (*n*=19) of EDs lacked children activities, e.g., toys. Only 11% (*n*=4) EDs were using paediatric triage scales and 42% (*n*=15) had a designated paediatric resuscitation bay. Only half of the ED (*n*=18) required from their staff to update paediatric life support training. Only 31% (*n*=11) had a designated liaison paediatrician for the ED. Paediatric social worker was present in only 8% (*n*=3) of EDs in community hospitals.

CONCLUSION: Most of the Ontario community hospital EDs included in this survey had inadequate facilities for paediatric patients such as specific waiting and treatment areas.

KEY WORDS: Child-friendly; Environment, Survey; Triage; Waiting area

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INTRODUCTION

Emergency Departments (ED) in the Canadian community hospitals treat over 10 million patients annually.[1] Children account for about 30% of these patients.[2] These statistics are unsurprising as toddlers are expected to have 4–8 upper respiratory tract infections in a year.[3] Other health conditions such as infections and injuries are also common in children.[2,3]

Paediatric patients often have unique ED care needs, and often large urban centers have a separate paediatric hospitals with an adapted ED.[4] However, these centers only provide services to a small proportion of population. For instance, in Ontario, only 15% of paediatric patients receive care in a paediatric-only facility.[5] It is possible

that the overall ED environment in community hospitals might not be appropriate for paediatric patients.[6]

For example, it has been argued that paediatric patients must not be considered as small adults.[7] Each age group in these patients has unique needs based on their stage of development. For instance infants would require quiet spaces for breastfeeding, which can often be of critical importance in an acutely-ill child.[2] Toddlers, on the other hand, could be curious and might start exploring needlessly the ED environment and spaces, if they are not engaged in a safe space with age appropriate toys and books.[7]

We noted that several countries such as United Kingdom, the United States and Australia have already developed specific guidelines for paediatric facilities in the EDs of community hospitals.[4,7,8] To date, there is limited information about paediatric facilities available at the ED in Canadian community hospitals.[9] A knowledge gap therefore exists about whether similar guidelines about paediatric facilities are needed in the Canadian settings.[10] We conducted a survey to assess the availability of paediatric-appropriate facilities in the EDs of community hospitals in a large Canadian province.

METHODS

Study design and setting

We designed a cross-sectional survey to assess EDs in community hospitals in Ontario, which is the most populous province of Canada.[11] We included those community hospitals that had an ED and inpatient paediatric facilities including an inpatient unit and a neonatal intensive care unit. About 52 hospitals met our inclusion criteria. Ethics approval was obtained from the Research Ethics Board of the Scarborough and Rouge Hospital in Toronto.

Data collection

We used a standard questionnaire to inquire about the availability of paediatric facilities at the ED (Table 1). For each respective hospital, we approached a key-informant, i.e., an individual who would have knowledge of paediatric care in their ED, such as the chiefs of ED, managers, and clinical educators. We initially contacted these individuals by a phone call and an e-mail to introduce the study. This brief contact was followed by a link to an online survey. We followed up each informant with two e-mail reminders to complete the survey. In case of a non-response, a hardcopy of the survey was sent to their address. Finally, a research assistant visited community hospitals within a 100-km radius of the Greater Toronto Area to complete the survey.

Table 1. Survey questionnaire

Questionnaire items
1) Configuration of the ED (i.e. combined or separated entrances) for pediatric patients.
a) Separate pediatric area with a separate pediatric entrance to the ED
b) Separate pediatric area with a common entrance to the ED
c) Combined areas for both pediatric and adult patients (children and adults being managed in the same department)
d) Other. Please describe your ED configuration for the care of children
2) Estimate of total annual volume of patients seen at your ED.
a) <25 000
b) 25 000–49 999
c) 50 000–74 999
d) 75 000–100 000
e) >100 000
3) Estimate of total annual volume of pediatric patients seen at your ED.
a) <5 000
b) 5 000–9 999
c) 10 000–14 999
d) 15 000–19 999
e) >20 000
4) Is there a separate child-specific waiting area in your ED?
a) Yes
b) No
5) Is there a separate child-specific treatment area in your ED?
a) Yes
b) No
6) Does your hospital ED provide spaces for the following: breast feeding/diaper changing/child-friendly washrooms? (Please indicate which ones apply to your hospital)
a) Breast feeding
b) Baby changing
c) Child-friendly washrooms
d) None of the above
7) In your ED, are there age-appropriate toys and activities for toddlers/ children/teenagers?
a) All ages
b) Toddlers only
c) Children only
d) Teenagers only
e) None of the above
8) Does your hospital's ED have a pediatric emergency care trolley/ bag available?
a) Yes
b) No
9) Does your hospital's ED have a designated resuscitation bay for pediatric patients?
a) Yes
b) No
10) Does your hospital's ED have 24/7 access to the following attending physicians: adult emergency physician/ physician with interests in paediatrics/ pediatric emergency medicine physician/ paediatrician with a special interest in emergency medicine/ paediatrician?
a) Adult emergency medicine physician
b) Adult emergency medicine physician with interest in pediatrics
c) Pediatric emergency medicine physician
d) Pediatrician with a special interest in emergency medicine
e) Pediatrician
11) Does the hospital have a designated liaison paediatrician for the ED?
a) Yes
b) No
12) Is it mandatory for the ED staff to have their pediatric life support training updated according or national guidelines?
a) Yes
b) No
13) Does the department conduct/support refresher courses (e.g. neonatal resuscitation program/pediatric advanced life support/ advanced trauma life support) ?
a) Neonatal Resuscitation Program (NRP)
b) Pediatric advanced life support (PALS)/advanced pediatric life support (APLS)
c) Advance trauma life support (ATLS)
d) None of the above

Questionnaire items

14) How many nurses trained in paediatrics are present in your hospital's ED during a shift?
   a) 1–3
   b) 4–6
   c) >6
   d) None
15) Does your hospital's ED have acute pediatric order sets or guidelines tailored to your hospital/facility?
   a) Yes
   b) No
16) Which type of triage system is utilized at your hospital (Canadian triage and acuity scale/pediatric Canadian triage and acuity scale/ emergency triage assessment and treatment/simple triage and rapid treatment/emergency severity index)?
   a) Canadian Triage & Acuity Scale (CTAS)
   b) Pediatric Canadian Triage & Acuity Scale (P-CTAS)
   c) Emergency Triage Assessment & Treatment (ETAT)
   d) Simple Triage and Rapid Treatment (START)
   e) Emergency Severity Index (ESI)
   f) Other (please specify)
17) Is there an established ED protocol for managing pain using topical anaesthesia e.g. EMLA or maxilene before I.V. line insertion and blood work?
   a) Yes
   b) No
18) Does your hospital's ED have designated pediatric social workers?
   a) Yes
   b) No
19) Does your hospital have child life programs/specialists available to support children and families during difficult procedures and situations?
   a) 24-hour services available
   b) Peak time availability
   c) On-call for difficult cases
   d) None of the above
20) Are ED staff provided with training regarding child protection?
   a) Yes
   b) No
21) Are trained interpreter services (telephone/in person) available for families with language barriers?
   a) Yes
   b) No
22) Are visitor identification badges/bands provided to families with children?
   a) Yes
   b) No
23) Are there parent/patient satisfaction common forms available?
   a) Yes
   b) No
24) In your hospital, are there plans to develop a separate pediatric area with child-tailored facilities?
   a) Yes
   b) No
   c) Do not know
   d) If yes, when? (year)
25) Do you feel that having access to standardized guidelines for managing pediatric patients in the emergency departments of community hospitals would be beneficial in providing the highest quality of care for children across Canada?
   a) Yes
   b) No
   c) Please write your comments or feedback

Measures

The survey included 25 items about facilities. The major themes covered in the assessment were environment, staffing, triage, and training. The respondents were asked to identify if the items mentioned in the questionnaire were present, or were part of the process of being developed in their hospital.

Statistical analysis

The responses were entered directly on to the SurveyMonkey® web-based platform. Personal identifying information like hospital name or the name of key informant was removed from the analysis. The entries were assessed by an investigator to ensure accuracy, and where needed, the research assistant confirmed the responses from key informant. Finally, we conducted a descriptive analysis of the findings using analysis application of SurveyMonkey®.

RESULTS

A total of 52 hospitals in Ontario met our inclusion criteria. Of them, we received information on 69% (n=36) EDs. Annually, 11 EDs received 5 000–9 999 paediatric patients, 7 received 10 000–14 999 patients, 6 received 15 000–19 999 patients, and 4 received more than 20 000 patients.

We found lack of separated spaces and entrances for children in most of the surveyed EDs (Table 2). Only one

Table 2. Paediatric facilities availability at Emergency Departments (ED) of community hospitals in Ontario, Canada

Questionnaire items	*n*	%
Total ED patients per year		
<25 000	2	6
25 000–49 999	10	28
50 000–74 999	14	39
75 000–100 000	7	19
>100 000	3	8
Paediatric patients per year		
<5 000	5	14
5 000–9 999	11	31
10 000–14 999	7	19
15 000–19 999	6	17
>20 000	4	11
Configuration of ED		
Separate paediatric space and entrance	1	3
Separate paediatric space but common entrance	3	8
Same space and entrance	30	83
Others	2	6
Child-specific waiting area	5	14
Child-specific treatment area	5	14
Space available for		
Breast feeding	9	25
Baby changing	18	50
Child-friendly washrooms	4	11
None of the above	16	44
Plans of separate paediatric facilities		
Yes	7	19
No	21	58
Do not know	8	22
Age-appropriate toys/activities available		
All ages	3	8
Toddlers only	9	25
Children only	12	33
Teenagers only	3	8
None of the above	19	53
Paediatric emergency care trolley/bag available	28	78
Designated resuscitation bay for paediatric patients	15	42
Designated liaison paediatrician for the ED	11	31
Mandatory paediatric life support training for ED staff	18	50

Questionnaire items	*n*	%
Departmental support for refresher courses		
Neonatal Resuscitation Program (NRP)	19	53
Paediatric advanced life support (PALS)	29	81
Advance trauma life support (ATLS)	10	28
None of the above	4	11
Nurses trained in paediatrics in ED		
1–3	14	39
4–6	4	11
>6	8	22
None	10	28
Acute paediatric order set or guidelines	22	61
Triage system at hospital		
Canadian Triage & Acuity Scale (CTAS)	31	86
Paediatric Canadian Triage & Acuity Scale (P-CTAS)	4	11
Other (please specify)	1	3
ED protocol for managing pain in paediatric patients	20	56
Designated paediatric social worker(s)	3	8
Child life program/specialist(s) for difficult procedures		
24-hour services available	1	3
Peak time availability	4	11
On-call for difficult cases	1	3
None of the above	30	83
Child protection training	20	56
Trained interpreter services	33	92
Visitor identification badges for families	2	6
Patient satisfaction forms available	26	72
Need of paediatric specific guidelines for ED facilities	34	94

ED had a separate space and an entrance for children. About 8% (*n*=3) EDs had a separate space but a common entrance. About 14% (*n*=5) EDs reported separate waiting and treatment spaces for paediatric patients.

Most hospitals (86%, *n*=31) hospitals did not have a specific treatment area for children. Also, just under half (44%, *n*=16) of hospitals did not have any facilitates for breast-feeding, diaper changing or child-friendly washrooms. With respect to toys or activities, 53% (*n*=19) did not have any for toddlers, children or teenagers. A total of 28 (78%) had a paediatric emergency care trolley or bag available in the ED. A separate resuscitation bay designated for children was present in 42% (*n*=15) of hospital EDs. More than half of ED (58%, *n*=21) had no plans to develop a separate paediatric space in near future.

Access to a paediatrician 24 hours a day was available in 92% (*n*=33) of EDs. A designated liaison paediatrician for the ED was available in 31% (*n*=11) of EDs. About 50% (*n*=18) EDs required ED staff to update paediatric life support training as per the national guidelines.

The majority of EDs (72%, *n*=26) had multiple nurses with some specific paediatric training during each shift. Specialized staff such as a paediatric social worker was present in only 8% (*n*=3) of EDs in community hospitals. In 83% (*n*=30) EDs, the hospitals did not have access to child-life specialists. Accesses to interpreter services were available in 92% (*n*=33) of EDs in community hospitals, trained for supporting patients and parents through difficult procedures. Patients had access to satisfaction or comment forms in 72% (*n*=26) of EDs. Overall 56% (*n*=20) respondents indicated that the staff received specialized training for child protection. Similarly, only 6% (*n*=2) of EDs provided families with visitor identification badges. Lastly, 94% (*n*=34) of key informants thought that a standardized guideline for designing and managing ED services for paediatric patient population is needed in Canada.

DISCUSSION

Our survey indicates that ED of community hospitals in Ontario might be lacking paediatric-patients appropriate facilities. For example, separate spaces for paediatric patients were available in only one in seven EDs. Similarly, over half of the EDs lacked common facilities such as rooms for breast-feeding or rest rooms. Simple interventions such as toys and activities for children were available in limited settings. Triage and staff training requirements for providing care for paediatric patients were also found to be inadequate in over half of the EDs.

Our study has several limitations. Firstly, we had a response rate of 69%. It is likely that we might have overestimated the availability of facilities as the responses from hospitals away from the largest urban center like Toronto were not captured. Limited resources prevented the study staff from visiting community hospitals beyond 100 km from Toronto. Nonetheless, we feel that this survey is still useful in showing availability trends of paediatric facilities in ED across Ontario. Furthermore, we usually collected responses from one key informant per hospital. Ideally, more than one key informant could provide a more accurate assessment of facilities. Lastly, a small sample precluded us from conducting sub-group analysis.

Our survey identified many potential areas for improvement such as establishing separate waiting areas and resuscitation bays for paediatric patients. The results also support the notion of developing guidelines for standardizing environments for paediatric patients across community hospitals.[10] Of particular importance, 94% of our responders thought that a guideline would be beneficial resource for hospitals to plan and improve their paediatric ED services. One respondent stated "using standardized guidelines would help healthcare professional in providing the same standard of care for this population". Our findings could be interesting for pediatric emergency literature that has focused on the care related equipment and supplies.[12–14] These findings highlight the need to consider pediatric facilities in conceiving ED of community hospitals.

Our survey illustrated some easily implementable interventions. We noted that the majority of hospitals

did not have age appropriate playing, rest rooms or breast-feeding facilities. We also noted that ED liaison paediatrician and mandatory updates for paediatric ED care trainings were not available in about half of the settings. These shortcomings can easily be addressed by developing appropriate guidelines.[15,16]

We suggest that developing a guideline for the ED care of paediatric patients in Canada would address the imminent needs of paediatric patients and their parents during difficult circumstances. The major areas that need attention in these guidelines might be paediatric appropriate spaces, triage for patients, protection and safety, equipment, and up-to-date training for healthcare professionals. A US study noted that only 7% of EDs had all recommended pediatric supplies and equipment at triage.[12] Lacunas like these and others as noted in our study could potentially put pediatric patients at risk of iatrogenic conditions. Prolonged wait times have been a concern and availability of paediatric appropriate facilities can improve patient satisfaction and reduce stress.[9,10] Performance indicators developed based on comprehensive guidelines can address the highlighted challenges and positively influence patient safety.[12,17]

CONCLUSION

In conclusion, these findings should serve as a baseline for planning pediatric ED facilities in the community hospitals in Ontario. We suggest that provincial and national guidelines for serving paediatric ED patients could provide the expected level of services. Guidelines from comparable settings such as the United States, United Kingdom and Australia can be adopted to serve this purpose.[4,7,8]

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Contributors: Ariz A proposed the study and wrote the first draft. All authors read and approved the final version of the paper.

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