

Understanding decisions leading to nonurgent visits to the paediatric emergency department: caregivers' perspectives

Phek Hui Jade Kua¹, MRCS, FAMS, Li Wu², PhD, E-Lin Tessa Ong³, Zi Ying Lim⁴, BN, AdvDipNR, Jinmian Luther Yiew¹, BSc, Xing Hui Michelle Thia¹, BN, AdvDipNR, Sharon Cohan Sung^{2,4}, PhD

INTRODUCTION A significant percentage of paediatric emergency department (ED) attendances worldwide are nonurgent, adversely affecting patient outcomes and healthcare systems. This study aimed to understand the reasons behind nonurgent ED visits, in order to develop targeted and effective preventive interventions.

METHODS In-depth interviews were conducted with 49 caregivers to identify the decision-making factors related to taking children to the ED of KK Women's and Children's Hospital, Singapore. Interviews were carried out in the emergency room of the hospital after the children had been diagnosed with nonurgent conditions by the attending physician. Interview transcripts were analysed based on grounded theory principles.

RESULTS The demographics of our study cohort were representative of the target population. The main reasons given by the caregivers for attending paediatric EDs included perceived severity of the child's symptoms, availability of after-hours care, perceived advantage of a paediatric specialist hospital and mistrust of primary care physicians' ability to manage paediatric conditions. Insurance or welfare was a contributing factor for only a small portion of caregivers.

CONCLUSION The reasons provided by Singaporean caregivers for attending paediatric EDs were similar to those reported in studies conducted in Western countries. However, the former group had a unique understanding of the local healthcare system. The study's findings may be used to develop interventions to change the knowledge, attitudes and behaviours of caregivers in Singapore.

Keywords: nonurgent paediatric emergency department attendance

INTRODUCTION

The use of the emergency department (ED) for nonurgent care is a worldwide concern.⁽¹⁻⁵⁾ Singapore, the most economically developed country in Southeast Asia, is no exception. In 2013, approximately 60% of visits to the paediatric ED of KK Women's and Children's Hospital (KKH), Singapore, were for nonurgent conditions. Nonurgent use of the ED leads to overcrowding, long waiting periods, increased costs, high staff burden, caregiver dissatisfaction and lower quality of care for patients requiring urgent care.⁽⁶⁻⁸⁾ Therefore, understanding the factors related to nonurgent ED use is paramount and may have far-reaching impact.

A constellation of variables influences caregivers' decision to attend paediatric EDs. Previous studies on caregivers' perspectives revealed perceived need as a common reason; this perceived need is related to the perceived severity of the child's illness,^(7,9-13) the need to seek assurance on the course of the illness⁽⁷⁾ and the expectation that medical tests, such as radiography, will be needed.^(7,10,13) Caregivers' perceptions of primary healthcare providers are also a key contributing factor to the nonurgent use of paediatric EDs. Several studies indicated that caregiver dissatisfaction with primary healthcare providers was due to accessibility and scheduling issues,⁽⁹⁻¹¹⁾ as well as the perception that the quality of care given by primary healthcare providers is

lower than that given at the ED.⁽¹⁴⁾ In addition, overseas studies have indicated that factors such as insurance coverage and welfare are related to nonurgent paediatric ED attendance.^(9,15)

In the Behavioural Model of Health Services Use,⁽¹⁶⁾ Andersen suggested that the use of health services is shaped by the interaction between individual characteristics and contextual factors (e.g. health services and policies). Singapore has a network of primary healthcare providers consisting of 18 government polyclinics and approximately 1,500 private general practitioner (GP) clinics.⁽¹⁷⁾ Primary care professionals are usually the first point of contact for patients, and if needed, can refer them to medical specialists and hospitals. The healthcare financing system in Singapore espouses the philosophies of individual responsibility and affordable healthcare for all. The government subsidises low-income families, citizens and permanent residents seeking care in the public sector.⁽¹⁸⁾

While previous studies and theoretical frameworks provide some insight into the factors related to the nonurgent use of paediatric EDs, this issue has not been explored in a Southeast Asian population. Thus, the present study aimed to qualitatively explore questions on paediatric ED attendance from the perspective of caregivers who presented at KKH, a large public children's hospital. The findings of this study may be used to develop effective and targeted interventions to reduce unnecessary paediatric ED attendance.

¹Department of Emergency Medicine, KK Women's and Children's Hospital, ²Office of Clinical Sciences, Duke-NUS Graduate Medical School, ³Yong Loo Lin School of Medicine, National University of Singapore, ⁴Department of Child and Adolescent Psychiatry, Institute of Mental Health, Singapore

Correspondence: Dr Phek Hui Jade Kua, Consultant, Department of Emergency Medicine, KK Women's and Children's Hospital, 100 Bukit Timah Road, Singapore 229899. jade.kua.ph@kkh.com.sg

METHODS

This was a qualitative study that utilised the grounded theory approach, which aims to identify and study social processes by developing theories and theoretical propositions grounded in real-life experiences.⁽¹⁹⁾ Semi-structured, in-depth interviews were conducted with caregivers using a semi-structured interview guide rather than a validated questionnaire. The caregivers were approached immediately after their visits to the paediatric ED at KKH, the only tertiary care government hospital in Singapore with a paediatric ED. The interview was conducted in a quiet discussion room within the ED to minimise inconvenience and discomfort to the caregivers and patients. All interviews were conducted over an eight-week period, from July 2014 to September 2014.

Caregivers were eligible to participate if their children had been diagnosed with typical nonurgent conditions, namely fever, nosebleed and minor head injury, by the attending physician in the ED. We chose to study these diagnostic groups for the following reasons: (a) the majority of our nonurgent paediatric ED attendances are made up of patients presenting with simple fever; and (b) the majority of the nonurgent minor trauma cases seen at the paediatric ED are patients with minor head injury and uncomplicated nosebleed. Patients with these diagnoses are usually discharged without investigation or specialist follow-up. We used the widely accepted criteria for nonurgent visits, which excludes cases with abnormal vital signs or conditions warranting urgent attention at triage point, cases in which additional investigations (e.g. laboratory tests, radiography, electrocardiography and electroencephalography) are ordered by the attending physician, and cases that result in hospital admission.⁽²⁰⁾ In cases of fever, patients with prolonged symptoms or who had laboratory tests ordered upfront by the triage nurses were excluded. Cases that were referred to the ED by primary healthcare providers were also excluded, as the caregivers did not attend of their own volition. We also excluded patients who had been brought to the ED for associated problems, such as poor feeding, as our focus centred on uncomplicated cases that could have been potentially managed without attending the ED. In general, ED staff educated parents that poor feeding is a red flag that warrants a visit to the ED.

We used purposive sampling to include caregivers with a range of characteristics, including age, gender, socioeconomic status, time of visit (patients who visited the ED during and after office hours were recruited), to ensure a wide variety of perspectives. Sampling proceeded to saturation or until no more unique themes emerged from successive patients. The interviewers used a predefined interview guide and added probing questions for elaboration or clarification during the interview. The interview guide included the opening question, 'Why did you bring your child to the ED of KKH today?', and had the following closing question, 'Will you come back next time when your child is in a similar situation?'. Each interview took 15–25 minutes. The interviewers were trained and included a female doctor, three nurses (one male and two female) and a female medical student at KKH. The majority of interviews were conducted in English and a select few in Mandarin, according to the preference of the interviewees.

This study was approved by the SingHealth Centralised Institutional Review Board before commencement. Informed consent was obtained before the interviews began and the participants were informed that the interviews would be audiotaped for transcription purposes. Each audiotaped interview was transcribed. Data analysis was done based on the grounded theory approach.⁽²¹⁾ Three of the authors worked together to code the transcripts for significant themes and subthemes. The data analysis process included several steps of coding and data reduction. These authors first familiarised themselves with the data and created initial codes to reflect the central characteristic of the narratives. Thereafter, they conducted axial coding to reduce the data by collapsing the basic categories into initial conceptual categories – the themes and subthemes. Subsequently, the rest of the authors coded the transcripts independently, and reviewed and refined the conceptual categories. We continually discussed and carefully compared our coding scheme with potential deviant cases until we reached an agreement. This helped to increase the rigour and trustworthiness of the results obtained.

RESULTS

A total of 50 eligible caregivers were approached for this study. Of these caregivers, 49 agreed to participate in the study and gave their consent. Among the 50 caregivers, 23 (46.0%) were fathers, 26 (52.0%) were mothers and 1 (2.0%) was a grandmother. Collectively, these 50 caregivers attended the paediatric ED with 50 children (47.0% girls, 53.0% boys). The mean age of the children was 4.3 (range 0–15) years; 30.0% were aged ≤ 3 years, 50.0% were aged 4–7 years, and 20.0% were aged ≥ 8 years. Among the patients, 88.0% were diagnosed with upper respiratory tract infection, 6.0% with minor head injury and 6.0% with nosebleed. These proportions are consistent with the presenting complaints for nonurgent cases reported in September 2014 at KKH's ED (taken from the KKH Online Paediatric Emergency Care [OPEC] database). According to OPEC, among the 2,301 recorded cases, 88% of patients were diagnosed with upper respiratory tract infection, 8% with minor head injury and 3% with nosebleed. In our study, the caregivers described a variety of factors relating to their decision to seek care at KKH's ED. These factors were classified into six themes: (a) perceived severity of the child's symptoms; (b) availability after hours; (c) perceived advantage of KKH as a paediatric specialist hospital; (d) mistrust of primary healthcare providers' ability to manage paediatric conditions; (e) insurance or welfare; and (f) future decision-making.

Many of the caregivers explained that they took their child to the ED for care because they perceived the child's symptoms to be serious. Although they would seek primary care providers for usual care, they did not feel confident about management at home and management by primary care providers when the child's symptoms were perceived as serious. Caregivers perceived the illness or injury as serious if the child had a high fever (with or without accompanying symptoms), a nosebleed or a head injury; medication did not make the child's symptoms better; or the child was very young. The majority of the caregivers sought care at the

ED because the child had a high fever. Caregivers felt anxious if they considered the fever to be very high; their reported criteria for a high fever were often related to the age of the child. A few caregivers with school-aged children perceived a fever of over 39.0°C as very high, while several caregivers of children aged < 3 years believed that a temperature above 38.5°C was serious.

Several caregivers stated that their primary reason for attending the ED was that the child's fever was accompanied by other symptoms, such as increased crying, loss of appetite, fatigue, coughing and sore throat. One father stated that he was worried about the symptoms of his five-year-old son, *"He [was] having running nose, cough, breathing issues, high fever... Yesterday, the fever [was] getting very high, more than 100 °F. He became very tired, [and] his eyes, nose, and face also totally changed."* In several cases, the accompanying symptoms made the caregivers suspect certain diseases, such as dengue fever, or hand, foot and mouth disease (HFMD). One father said, *"Fever is ok, but we were worried about the cause, [for] example, HFMD. The symptoms seemed serious – [the child had] fever and mouth ulcers."*

A smaller proportion of caregivers sought ED care for children with minor head injuries and nosebleeds. However, these caregivers demonstrated high levels of anxiety. One mother described her son's head injury as *"very dangerous"* and continued to express her fear of potential brain damage. One father felt uneasy about his eight-year-old daughter's nosebleed, *"We thought it was more serious and [that] KKH [ED] would have [the] equipment to stop the bleed. I guess we were paranoid, but it seemed not normal. It was so sudden... We were worried about internal injury."*

Caregivers reported that they felt anxious if the fever was not brought down by over-the-counter drugs (e.g. paracetamol and ibuprofen) or medicine prescribed by a primary care provider. One mother brought her child to the ED because the child's fever remained high after ibuprofen intake; she said, *"It is supposed to [be] a very effective drug to bring [the] temperature down. But it didn't even work last night."* A father expressed his worry for his daughter after her fever did not respond to the medicine prescribed by their GP, *"The main reason we are here today was basically for fever that did not go down. Nowadays, [there are] a lot of dengue [cases], so we don't actually know what happens."*

Caregivers with young children reported their lack of confidence in managing the children's symptoms. The mother of a three-year-old boy said, *"We are worried because we do not know [how] long the kid's fever will drag. Because he is still young, we are worried that it will go up high and I do not want to wait until the last minute when things cannot [be rectified]; [when] it is so serious that we start to regret. I don't want to go to that stage."*

The lack of accessibility to primary care providers after hours, coupled with the perceived severity of the child's sickness, also contributed to ED visits. The respondents who were interviewed after hours perceived their children's symptoms as serious and in need of urgent attention. A typical answer from the caregivers who were interviewed at night was *"I think at this time, [the] emergency [department] is the only available one. If this*

happened during [the] daytime, I would have gone to the GP. I think it's easier. It's just downstairs. Then, based on the GP's recommendation, if we need to come here, then we will come back to KKH ED. Usually [the] emergency [department] has a pretty long queue, so we try to avoid it if it is possible." Working parents stated they were unable to take the child to the doctor during the day, *"Polyclinics were closed when I was back from work. Even if it is not closed, the queue is so long, and by that time, they are ready to close."* High GP charges for after-hours care also inclined caregivers to seek care at the ED of KKH.

The perceived advantage of KKH as a reputable children's hospital played a part in the caregiver's decision to take the child to its ED. One mother believed that doctors in KKH's ED were more experienced in caring for children than primary healthcare providers; she stated, *"To specialise in children's illnesses, KKH must always provide a specialist for children. Ultimately, this [case] is still [better placed] under KKH, [since it] specialises in this specific area of treatment."* Another caregiver thought that the medicines provided by GPs were *"general"*, while those provided by KKH's ED could be more suitable for younger children. Several caregivers described the need for reassurance from specialists. One mother stated, *"I wanted [a specialist to] check her lungs; we wanted to perform radiography [examination]. [After] both of the doctors heard her lungs and said that they were clear, I did not feel [that] radiography was needed. Initially, my intention [for visiting the ED] was for radiography and blood test."*

Caregivers regarded KKH's ED as a 'one-stop shop' where radiography, blood tests and other medical tests could be performed if needed. Several caregivers doubted that primary care providers could conduct blood tests or urine tests. In the words of one father, *"This afternoon, we had to take a urine sample. I'm not too sure if the GP will be able to take a urine sample for children."* Moreover, the caregivers thought that it was efficient to do the medical tests at KKH's ED. One father said, *"If I go [to the] GP to get a blood test, I will [still] have to wait at least [a] few days [for the results]."* The respondents also expressed that since KKH's ED was in the hospital, *"if [it was] something serious, [the child] can just get admitted [immediately]"*.

Quite a few caregivers described mistrust of the paediatric care provided by primary care physicians. As expressed by one father, *"It is quite hard for me to really trust the GP to take care [of] or diagnose problems in kids."* Several caregivers acknowledged their low confidence in the medicine prescribed by primary care physicians. One mother reported that the physician in a polyclinic did not give her medicine during her last visit for her son's fever. Another mother was concerned that her daughter was given the same medications every time she was taken to the GP. She said, *"Even [when I] asked for antibiotics, the doctor told me it was just a normal virus [and did not prescribe antibiotics]."* One father stated, *"I do not [go to primary care providers] because their medication comes in simple white bottles with no labels. I don't know what the ingredients in the bottles are. I prefer to go to the hospital. At least I know what medication [is] given – there are clear labels; I can [look up] Wikipedia if I want to know more."* Due to the caregivers' mistrust of primary healthcare providers,

a small proportion of them used KKH's ED as their usual choice of care for their children. One father said, "*Usually [when] my children [are] sick, I come to KK [straightaway]. I don't go to [the] polyclinic or GP.*"

Only a few caregivers pointed to insurance as a factor that influenced their decision to attend the ED. The caregivers generally perceived medical care at KKH's ED to be more expensive than that at primary care providers. However, two parents reported insurance coverage as a reason for taking their children to KKH's ED. One of these two cases was a referral by a medical social worker, as the family was on social welfare and would receive subsidies for attending KKH's ED.

When the caregivers were asked if they would take their children to KKH's ED should a similar situation arise in the future, a few caregivers who sought care for high fever indicated that they would monitor the child for several days before taking the child to KKH's ED. One parent said, "*I think because we got some advice from the doctor, I will want to go to the nearby GP. [But] if [my child has] 2–3 days of fever with no improvement, I will still want to come back. But we got more advice from the doctor on how to deal with such a situation. [We] don't need to immediately rush to KKH's ED if there is a fever.*" Some of the caregivers stated that they were not sure and were likely to return to KKH's ED if the "*symptoms are serious*". Several caregivers indicated that they would definitely come back because they were "*confident of staff here [at KKH's ED]*".

DISCUSSION

In order to design effective interventions, it is important to understand why caregivers attend EDs for nonurgent paediatric care. Similar to the findings of previous studies,⁽²²⁾ the present study showed that paediatric ED attendance for nonurgent conditions involves the caregiver's assessment of the benefits and disadvantages of attending an ED compared to visiting a primary care provider. The results of our study confirm previous findings that caregivers are heavily influenced by the perceived severity of the disease in the child when deciding on where to go for medical care.^(9–13) Most of the caregivers in our study had a regular source of care for their child and attended the ED for problems perceived as serious. Even though those visits were classified as nonurgent by clinicians, the caregivers may have engaged in 'appropriate' behaviour based on their existing knowledge.^(13,23) Thus, it is essential to improve the knowledge of caregivers on child health matters; this will help to optimise the caregivers' navigation of the healthcare system.⁽²⁴⁾

Caregivers also attended paediatric EDs due to their need for assurance and the perceived advantage of paediatric EDs over primary care providers. However, some of these paediatric conditions can be well-managed by primary care providers or the caregivers themselves in the comfort of their own homes. The present study highlights the importance of health literacy education for Singaporean caregivers, who need to be informed about the appropriate management of high fevers, necessity of medical tests, home care of infants and young children, and symptoms of regionally specific diseases, such as dengue fever and HFMD.

Similar to previous findings, some of the caregivers in our study attended paediatric EDs due to the unavailability of primary healthcare providers after hours and a mistrust of the primary care physician's ability to manage paediatric cases.^(5,9,10) However, these are not strong caregiver decision-making factors. Primary care is highly accessible in Singapore due to the nationally distributed network of providers. It is geographically more convenient for most families to access primary care clinics than to present to KKH's ED. Most of the caregivers in the present study had a regular source for primary care and used the ED for medical conditions that they perceived to be serious and in need of urgent care. Only a small portion of respondents indicated that they were likely to use the ED as a usual source of care due to mistrust of primary care providers. These findings suggest that the role of primary care should be enhanced rather than marginalised.^(5,25) Intervention programmes should target building trust between caregivers and GPs and/or polyclinic physicians. Meanwhile, a viable solution might be to encourage primary care doctors to act as coordinators rather than gatekeepers.⁽²⁵⁾ GPs could guide caregivers through the healthcare navigation process, coordinate specialist care and build trust with the caregivers. Extended opening hours for primary care services are also recommended.

Studies conducted in the United States indicated an association between nonurgent ED use and having Medicaid insurance.⁽⁹⁾ However, insurance and social welfare was only a minor factor in nonurgent ED use in the present study; this is likely because Singapore is not a social welfare state. Nevertheless, the use of the healthcare system by local low-income families might deserve further attention.

The fact that the interviews in the present study were conducted in a discussion room in the ED indicates that ED visits might be a suitable time to educate caregivers who seek care for perceived emergencies that are ultimately deemed nonurgent. Health education pamphlets or booklets on the appropriate use of the ED could be made readily available at the paediatric ED to help decrease future nonurgent ED use. A health aid book for caregivers to use at home also has the potential to help reduce nonurgent ED attendance.⁽²⁴⁾ KKH's ED currently has patient information pamphlets on how to manage conditions such as fever, nosebleed and minor head injury at home, as well as recognition of symptoms that necessitate an ED visit. These pamphlets or booklets could be distributed at primary care provider clinics to preemptively educate caregivers who would otherwise choose to attend the ED at a later date for perceived emergencies. In order to reach caregivers with a low reliance on primary healthcare providers, interventions at the community level, such as online education programmes, can be considered.⁽²⁶⁾ Concurrent interventions targeted at building trust between caregivers and primary care providers are necessary.

The present study is the first to use qualitative research methods to investigate nonurgent paediatric ED attendance from the perspective of local caregivers. It adds to the literature, as it investigates the qualitative experiences of caregivers in the context of an Asian population. Our findings are similar to those of studies conducted overseas. The results provide insight into the local community's perceptions and attitudes in this area of

healthcare, which we believe is helpful for the development of effective healthcare interventions in Singapore.

This study was not without its limitations. First, it used a sample of caregivers whose children had been determined to have nonurgent conditions by the attending ED doctor. This may have influenced their responses in the interview, which was conducted after the consultation. As these interviews were conducted after the child had been seen by the clinician and the caregiver had been informed that the condition was nonurgent, the caregiver may have responded differently from one who had not been informed of the nonemergency diagnosis. However, we chose this method in order to minimise interference with clinical care and ensure that all the included cases were truly nonurgent. Studies conducted in the community or with a study cohort consisting of caregivers who were interviewed prior to being seen by the emergency medicine physician may be warranted. As our study sought to examine the reasons why caregivers chose to visit the ED, we excluded cases that were referred by primary care providers, as the decision to present to the ED did not come from the caregivers alone. Further research could include this subgroup of caregivers and explore all the possible reasons for nonurgent ED attendance.

Second, the present study used a convenience sample of caregivers for three specific conditions: high fever, minor head injury and nosebleed. This may not have been a representative sample of all nonurgent cases that present to the paediatric ED. Although the demographic characteristics of our study sample are similar to those of all patients who attended KKH's ED (in terms of gender, ethnicity and proportion of case-mix) during the same time period, the sample size was not sufficient to allow the stratification of other demographic variables that might affect the nonurgent use of the ED. The present study focused only on the reasons provided by the caregivers and did not explore the effect of their demographic characteristics on nonurgent ED attendance. Future research could employ quantitative methodologies and a larger sample size to examine the associations between the sociodemographic characteristics of caregivers and their reasons for nonurgent ED visits.

Third, the interviews in the present study were conducted either in English or Mandarin, as per the caregivers' preference. We did not interview any participants in Malay, Tamil or other Chinese dialects, which are spoken by a minority of caregivers in Singapore. Thus, we were unable to seek the perspectives of caregivers from this minority cohort, which may have added further depth to our analysis. Fourth, the present study was conducted using a qualitative research methodology, as the purpose of the study was to answer a 'why' question, based on the perspectives of caregivers who brought their children to the ED. We did not assume that these reasons were already known, although they could have been derived from personal clinical experience or data obtained from studies conducted overseas. However, the limitation of this study is that it did not allow for the measurement of qualitative/frequency data to estimate the relative importance or priority of the factors identified. Future studies, such as prospective quantitative cross-sectional studies involving a large number of participants, could be conducted to address this gap.

Fifth, some factors such as the unavailability of primary care after hours could be further examined by comparing the nonurgent visits that occurred during office hours and after hours. This could also be addressed in a future study with a larger sample size. Lastly, as this was a single-centre study, our results may not be generalisable to all nonurgent attendances at other EDs. Since previous studies on nonurgent ED use were conducted in the context of different healthcare systems from Singapore,^(8,14,15) our results may not be broadly applicable outside the local context. There may also be variations in the reasons parents attend other EDs for nonurgent care. However, our hospital is one of two public hospitals with paediatric emergency departments in the country and, as it is the only Level 1 tertiary hospital providing paediatric care, it sees the majority of paediatric emergency cases in the nation. Hence, the findings of the present study are likely to be a fair representation of paediatric cases in Singapore.

We identified multiple reasons for nonurgent ED attendance, as viewed from the caregivers' perspectives. This information may be used to design interventions that could help to redirect patients with nonurgent conditions to more appropriate sources of care. Our qualitative findings also revealed caregivers' understanding of the local healthcare system and how they compared the advantages and disadvantages of ED and primary care in their decision-making process. Nonurgent ED use could potentially be reduced by educating caregivers on making appropriate judgements regarding the severity of their child's symptoms, managing common nonurgent medical conditions, promoting greater confidence in primary care physicians and increasing primary care physicians' accessibility after office hours. Reducing the use of EDs for nonurgent health problems will optimise the use of healthcare resources and lead to higher-quality emergency care.

The present study was the first step in a series of studies that we intend to conduct, to collect information for the development of educational materials for caregivers and subsequently assess the effectiveness of the materials. In this first study, we sought to capture broad themes in order to start implementing measures at the hospital, cluster and community level. These measures include electronic learning for caregivers, as well as educational posters and videos. It would be useful in the future to study the importance and weight of the factors that lead to nonurgent ED visits, so that targeted interventions and specific policies can be implemented. In addition, it would be interesting to examine whether the health-seeking behaviour of the local population differs from that of other populations. This can be achieved if Singapore is part of a research network that compares health-seeking behaviour across cities, regionally or worldwide.

REFERENCES

1. Sarver JH, Cydulka RK, Baker DW. Usual source of care and nonurgent emergency department use. *Acad Emerg Med* 2002; 9:916-23.
2. Carret ML, Fassa AG, Kawachi I. Demand for emergency health service: factors associated with inappropriate use. *BMC Health Serv Res* 2007; 7:131.

3. Guttman N, Nelson MS, Zimmerman DR. When the visit to the emergency department is medically nonurgent: provider ideologies and patient advice. *Qual Health Res* 2001; 11:161-78.
4. Young GP, Wagner MB, Kellermann AL, Ellis J, Bouley D. Ambulatory visits to hospital emergency departments. Patterns and reasons for use. 24 Hours in the ED Study Group. *JAMA* 1996; 276:460-5.
5. Truman CD, Reutter L. Care-giving and care-seeking behaviours of parents who take their children to an emergency department for non-urgent care. *Can J Public Health* 2002; 93:41-6.
6. Krakau I, Hassler E. Provision for clinic patients in the ED produces more nonemergency visits. *Am J Emerg Med* 1999; 17:18-20.
7. Mayefsky JH, el-Shinaway Y, Kelleher P. Families who seek care for the common cold in a pediatric emergency department. *J Pediatr* 1991; 119:933-4.
8. Chin NP, Goepf JG, Malia T, Harris L, Poordabagh A. Nonurgent use of a pediatric emergency department: a preliminary qualitative study. *Pediatr Emerg Care* 2006; 22:22-7.
9. Fieldston ES, Alpern ER, Nadel FM, Shea JA, Alessandrini EA. A qualitative assessment of reasons for nonurgent visits to the emergency department: parent and health professional opinions. *Pediatr Emerg Care* 2012; 28:220-5.
10. Masso M, Bezzina AJ, Siminski P, Middleton R, Eagar K. Why patients attend emergency departments for conditions potentially appropriate for primary care: reasons given by patients and clinicians differ. *Emerg Med Australas* 2007; 19:333-40.
11. Phelps K, Taylor C, Kimmel S, et al. Factors associated with emergency department utilization for nonurgent pediatric problems. *Arch Fam Med* 2000; 9:1086-92.
12. Kalidindi S, Mahajan P, Thomas R, Sethuraman U. Parental perception of urgency of illness. *Pediatr Emerg Care* 2010; 26:549-53.
13. Williams A, O'Rourke P, Keogh S. Making choices: why parents present to the emergency department for non-urgent care. *Arch Dis Child* 2009; 94:817-20.
14. Berry A, Brousseau D, Brotanek JM, Tomany-Korman S, Flores G. Why do parents bring children to the emergency department for nonurgent conditions? A qualitative study. *Ambul Pediatr* 2008; 8:360-7.
15. Sturm JJ, Hirsh DA, Lee EK, et al. Practice characteristics that influence nonurgent pediatric emergency department utilization. *Acad Pediatr* 2010; 10:70-4.
16. Andersen RM. National health surveys and the behavioral model of health services use. *Med Care* 2008; 46:647-53.
17. Ministry of Health Singapore. Primary Healthcare Services. Available at: https://www.moh.gov.sg/content/moh_web/home/our_healthcare_system/Healthcare_Services/Primary_Care.html. Accessed April 30, 2015.
18. Ministry of Health Singapore. Costs and financing. Available at: https://www.moh.gov.sg/content/moh_web/home/costs_and_financing.html. Accessed April 30, 2015.
19. Creswell JW. *Qualitative Inquiry and Research Design: Choosing Among Five Approaches*. SAGE Publications, 2012.
20. Mistry RD, Hoffmann RG, Yauck JS, Brousseau DC. Association between parental and childhood emergency department utilization. *Pediatrics* 2005; 115:e147-51.
21. Strauss A, Corbin JM. *Basics of Qualitative Research: Grounded Theory Procedures and Techniques*. SAGE Publications, 1990.
22. Shaw EK, Howard J, Clark EC, et al. Decision-making processes of patients who use the emergency department for primary care needs. *J Health Care Poor Underserved* 2013; 24:1288-305.
23. Stanley R, Zimmerman J, Hashikawa C, Clark SJ. Appropriateness of children's nonurgent visits to selected Michigan emergency departments. *Pediatr Emerg Care* 2007; 23:532-6.
24. Herman A, Young KD, Espitia D, Fu N, Farshidi A. Impact of a health literacy intervention on pediatric emergency department use. *Pediatr Emerg Care* 2009; 25:434-8.
25. Bodenheimer T, Lo B, Casalino L. Primary care physicians should be coordinators, not gatekeepers. *JAMA* 1999; 281:2045-9.
26. Mo P. The use of internet for health education. *J Biosafety Health Educ* 2012; 1: e102.