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Analysis of written resources for parents of children discharged from a paediatric emergency department

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Abstract

The aim of this study was to profile the information and readability of parent-focused resources to support care at home following a child's discharge from a paediatric emergency department (ED). Analysis included recording the scope, source, readability scores and benchmarking the contents against previous recommendations for discharge information. Information from 46 resources (on 41 conditions) from three separate sources was analysed. Overall, a wide range of resources was available. Inconsistency was evident in the framework and design of resources available. Approximately two-thirds of resources provided information about referral to community resources, and most had links to community health providers. Assessment of readability levels showed a predominant pitch towards a relatively high level of schooling. Existing written resources available for parents to use in caring for their child following discharge from an ED could improve with more streamlined designs as well as consistent references to community resources and additional health providers. Parents with low reading capacity may not be able to make the most of existing resources to care for their child at home following ED discharge. This framework was developed for reviewing the resources that could be useful for quality assessment of other parent-focused discharge information.

Keywords

Child health, discharge, emergency care, home care, parents

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Background

The emergency department (ED) is a dynamic and often busy healthcare setting. While it may not represent the ideal setting in which to educate parents about caring for their sick or injured child, it is contended that this is exactly where discharge planning and patient and family teaching and learning should begin (Akinsola et al., 2017; Curran et al., 2017). For paediatric patients in the ED, a nurse or other healthcare provider usually provides discharge information and instructions to the child's parents and/or carer using simple language (Al-Harthy et al., 2016). For a multitude of reasons, however, including anxiety (Curran et al., 2017), haste (Kaestli et al., 2016) or low levels of literacy (Al-Harthy et al., 2016), parents about to leave an ED with a child may not necessarily ask questions or remember all the information provided to them at this point.

Discharge instructions provide guidance to patients to facilitate home treatment, manage persistent symptoms, indicate what should be done in the possible event of deterioration and provide instructions for outpatient follow-up, if required (Al-Harthy et al., 2016). In this context, multiple forms of communication may facilitate greater understanding of healthcare needs (Ismail et al., 2016). However, having written resources to reinforce discharge information should serve to enhance or reinforce parents' understanding of how best to care for their child at home. It is essential that parents of children who have presented to the ED understand all discharge information provided to them, otherwise they may be unable to effectively manage their child's care at home. For example, previous studies have reported that some parents are poor judges of their child's pain and do not adequately understand pain management at home (Crocker et al., 2012; Gourde and Damian, 2012). Provision of written resources is advantageous because they can be accessed at home when the parent may be more relaxed and receptive to information. In the paediatric ED setting, it is therefore important that the design and content of generic written discharge information is scrutinised for consistency, relevance and utility.

The utility of written discharge information is characterised by several elements: strategies and instructions for the management of the child at home; information about potential signs and symptoms requiring further medical follow-up or return to the ED; follow-up referral to other healthcare professionals; and information about relevant community health services (Engel et al., 2012; Samuels-Kalow et al., 2012). Furthermore, it is recommended that the readability level of health information material should be equivalent to that of years 5–8 schoolchildren (Stossel et al., 2012).

The aim of this study was to profile the information, readability and potential usefulness of parent-focused resources (available at the time of the study) to support care at home following a child's discharge from a paediatric ED.

Methodology

A documentary analysis of resources available from a paediatric ED was undertaken. The document review method was chosen to determine how current protocols, procedures, guidelines and resources for providing discharge information in the ED align with expected standards. This included recording the scope, source and readability scores (Simple Measure of Gobbledygook (SMOG)) of discharge information documents and benchmarking their contents against existing discharge information recommendations.

Document review is a method to collect data by reviewing existing documents (Department of Health & Human Services, 2009). Such reviews typically collate and analyse information from

internal or external sources such as policies, guidelines and related resources (Department of Health & Human Services, 2009). Their purpose is to generate findings that will benefit patients and the programs of care for them (Shankar et al., 2011). Documents can be in printed or electronic formats. Patient information documents must assist their purpose to advise readers, and comprehensibility is a critical indicator of the suitability of printed patient information (Luk and Aslani, 2011). Comprehensibility can be considered as a measure that merges readability of the material and health literacy of the patient (Luk and Aslani, 2011). Traditionally, document analyses of health resources have focused on readability or the presentation of materials (Luk and Aslani, 2011).

Setting

The setting for this study was a paediatric ED within a tertiary referral hospital in South East Queensland, Australia. The ED is open 24 hours, 7 days per week and currently receives around 30,000 presentations annually. The study was approved by the relevant hospital and university human research ethics committees (refs: HREC/15/QPCH/70; 2015-124R) prior to the commencement of data collection.

Data collection

A researcher first contacted the ED nurse manager to explain the purpose, time frame and general procedures of a document analysis of resources. The ED nurse manager then provided confidential advice about a hospital-specific intranet search for paediatric ED resources. An online search of the setting-relevant statewide health service intranet was then conducted to identify written information resources that were available to ED staff and provided information that could be given to parents of children discharged from the ED. Data collection was designed to determine how documents informed and supported the provision of discharge information.

Data analysis

Document analyses of written resources that were available for parents following their child's discharge from paediatric ED used both quantitative and qualitative methods. Descriptive statistics were used to profile the features of the various resources that were retrieved, and qualitative review was used to describe other aspects. Content analysis was used to examine the written text of the identified resources. Essentially, the resources comprised English language clinical information pamphlets, which were printed as fact sheets and which patients/parents could take from displays around the ED. Initially, 12 types of information within the retrieved resources, from three separate sources, were extracted (where available) for analysis. Content was then categorised according to five main themes (see Table 1), which were drawn from the literature (Engel et al., 2012; Samuels-Kalow et al., 2012).

Resources were also assessed for readability using the SMOG formula (McLaughlin, 1969), which has been used previously in other healthcare settings. It provides an estimate of the level of education required to understand the text contained within a fact sheet. Readability level ranges from 1–2 (basic elementary) to 14 (tertiary education) (Kondilis et al., 2010). The SMOG grade is calculated using the following simple formula:

$$3 + \sqrt{\text{polysyllable count}}$$

Table 1. Information categories.

Category of information	Type of information
Patient status and treatment	• definition of each disease, condition, illness or common injury • likely causes of each diagnosis • signs and symptoms • treatment • what to expect
Self-care information	• first aid • prevention • home care • key points to remember
Community resources	• where to seek help for additional information
Follow-up/return to ED instructions	• when to come back to the hospital • follow-up
Relevant community referrals	• where to find help for additional information

ED: emergency department.

Results

A total of 46 different written resources for parents related to a child presenting to a paediatric ED were retrieved from the setting-relevant statewide health service intranet. At the time of retrieval, they were dated between 2008 and 2013. The resources were produced by three organisations: the study ED, the statewide health service and a children's hospital in Victoria; with the majority of resources developed by the latter organisation ($n = 29$) (see Table 2). A variety of topics were covered, and more than one resource was available for some of the more common ED-related health conditions. For example, three resources about asthma were found initially, but each targeted a different purpose: one provided general information about home care of asthma, another provided instructions on how to use a spacer and a third offered an asthma action plan regarding medication to prevent and relieve asthma (dose and frequency). However, the latter was excluded from the analysis as it was designed for medical staff. Parent-relevant resources for five other health conditions (epistaxis, febrile convulsion, head injury/concussion, influenza and pulled elbow) were produced by two organisations. Thus, inevitably, some duplication of topic content was observed.

Information for parents

Categorisation of information following content analysis of the documents is shown in Table 2. All 46 resources displayed information about two important sources of information by addressing patient status and treatment and providing information on patient self-care. With the exception of one resource (lumbar puncture), all resources provided information or instruction about follow-up and return to ED. Of the 41 conditions described in the resources, two-thirds ($n = 28$) provided information about community resources. All but four of the resources referred children and/or their families to community health providers, such as paediatric dietitians, physiotherapists or sports medicine practitioners. Community health provider referral information was not provided in relation to four conditions (herpes simplex, Henoch-Schönlein purpura, impetigo and threadworms).

Table 2. Categorisation of information and readability (SMOG score).

	Category of information provided					Source of information			
Resources on childhood conditions for parents	Patient status and treatment	Patient self-care information and instructions	Information about community resources	Follow-up instructions and return to ED instructions	Referrals to community health providers	Children's hospital ($n = 29$)	Study setting (ED) ($n = 6$)	Statewide health service ($n = 11$)	SMOG score
Hand, foot and mouth disease	✓	✓	✓	✓	✓	✓			8
Lumbar puncture	✓	✓	✓	X	✓	✓			8
Penis and foreskin care	✓	✓	X	✓	✓	✓			8
[1]Asthma (use of spacers)	X	X	X	X	✓	✓			9
[1]Asthma (in children)	✓	✓	✓	✓	✓			✓	10
Bronchiolitis	✓	✓	✓	✓	✓			✓	9
Colic, crying and unsettled babies	✓	✓	✓	✓	✓	✓			9
[2]Epistaxis	✓	✓	X	✓	✓	✓			9
[2]Epistaxis	✓	✓	x	✓	✓			✓	10
Glue ear	✓	✓	X	✓	✓	✓			9
Respiratory syncytial virus	✓	✓	X	✓	✓	✓			9
Threadworms	✓	✓	X	✓	X	✓			9
[3]Viral illness	✓	✓	✓	✓	✓			✓	9
[3]Fever in children	✓	✓	✓	✓	✓		✓		10
[3]Influenza	✓	✓	✓	✓	✓	✓			12
Abdominal pain	✓	✓	✓	✓	✓			✓	10
Chicken pox	✓	✓	✓	✓	✓	✓			10
Constipation	✓	✓	✓	✓	✓			✓	10
Cough	✓	✓	X	✓	✓	✓			10
Croup	✓	✓	✓	✓	✓			✓	10
Eczema	✓	✓	✓	✓	✓	✓			10
[4]Febrile convulsion	✓	✓	✓	✓	✓			✓	10
[4]Febrile convulsion	✓	✓	✓	✓	✓		✓		11
[5]Head injury (minor)	✓	✓	✓	✓	✓			✓	10
[5]Post-concussion syndrome	✓	✓	X	✓	✓		✓		12

(continued)

Table 2. (continued)

Resources on childhood conditions for parents	Category of information provided					Source of information			SMOG score
	Patient status and treatment	Patient self-care information and instructions	Information about community resources	Follow-up instructions and return to ED instructions	Referrals to community health providers	Children's hospital ($n = 29$)	Study setting (ED) ($n = 6$)	Statewide health service ($n = 11$)	
Henoch-Schönlein purpura	✓	✓	X	✓	X	✓			10
Gastroenteritis	✓	✓	✓	✓	✓			✓	10
Herpes simplex	✓	✓	X	✓	X	✓			10
Impetigo	✓	✓	✓	✓	X	✓			10
Migraine headache	✓	✓	✓	✓	✓	✓			10
Nappy rash	✓	✓	✓	✓	✓	✓			10
Plasters (casts) and fractures	✓	✓	✓	✓	✓		✓		10
Procedural sedation	✓	✓	X	✓	✓		✓		10
[6]Pulled elbow	✓	✓	✓	✓	✓	✓			10
[6]Pulled elbow	✓	✓	✓	✓	✓		✓		10
Reflux	✓	✓	X	✓	✓	✓			10
Roseola infantum	✓	✓	X	✓	✓	✓			10
Scabies	✓	✓	✓	✓	✓	✓			10
Slapped cheek (fifth syndrome)	✓	✓	✓	✓	✓	✓			10
Wound care after use of stitches and/or glue	✓	✓	X	✓	✓	✓			10
Accidental poisoning	✓	✓	✓	✓	✓			✓	11
Conjunctivitis	✓	✓	X	✓	✓	✓			11
Meningococcal infection	✓	✓	✓	✓	✓	✓			11
Otitis media	✓	✓	X	✓	✓	✓			11
Meningitis	✓	✓	✓	✓	✓	✓			12
Pneumonia	✓	✓	X	✓	✓	✓			12

SMOG: Simple Measure of Gobbledygook.
Note: Superscript numbers (1–6) represent similar topics grouped together.

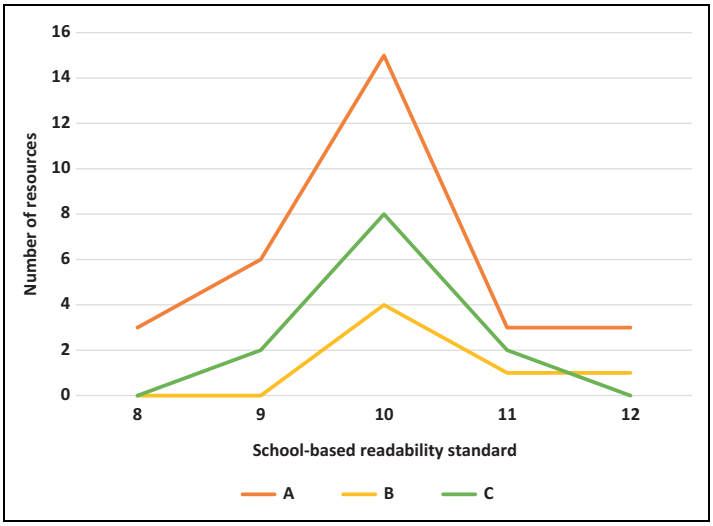

Figure 1. Readability level of resources by original source. A: children's hospital; B: study site; C: statewide health service.

Analysis of the resources using the suggested fundamental standards for children's emergency care from the International Federation for Emergency Medicine (2012) also provided generally positive findings about information for parents. Specifically, all resources contained some information relating to the progress of the child's condition and requirement for care at home, including recognition of important deterioration. One resource (on reflux) lacked advice about appropriate medication, and one resource (on threadworms) omitted advice about what to do if the condition worsened. It was apparent that all resources had been designed as part of an ED discharge planning process to assist parents with care of their child at home. However, direct reference to the care of children after discharge was stated infrequently.

Literacy levels

All resources were available in the English language only. Although the average SMOG scores of the resources developed by each of the three organisations were similar (children's hospital = 10; study ED = 11; statewide health service = 10), there was inconsistency at an individual resource level, with scores ranging from 8 to 12 (see Table 2). Qualitative review of content revealed that whereas some resources provided information using simple words and diagrams, others offered complex explanation. Only three resources were analysed to be at the desirable reading standard of year eight schoolchildren. Most commonly, year 10 readability was identified, and four resources were found to be at year 12 readability level (see Figure 1).

Discussion

It was an encouraging finding that all resources provided some self-care information, instruction and some information relating to the progress of the child's condition. Moreover, all resources

provided the requirement for care at home, including recognition of important adverse changes. However, direct reference to care after discharge from an ED was not apparent.

A major finding of this document analysis was that ED resources for parents to take home demonstrated inconsistency in their frameworks, use of language and design. Some inconsistency may be due to the different origination of the resources. However, even when documents were developed by the same organisation, a diversity of information type was found. This may potentiate confusion for parent-users of these resources. Previous studies have recommended that certain types of information should be provided to parents, including individualised patient self-care information and instructions (Nibhanipudi et al., 2015) and patient referrals. It is also important to ensure that patients or carers comprehend the support required and have the capacity to provide care within the home setting (Kaestli et al., 2014; Weiss et al., 2017).

Inconsistencies in discharge information may pose a risk to patient health (Curran, 2014). Specific concerns about the risks of inadequate discharge information in the paediatric ED include parents' potential confusion about the diagnosis, medications and advice about care at home. Even the *International Standards of Care for Children in Emergency Departments* (International Federation for Emergency Medicine, 2012) makes limited reference to the discharge process for children, dedicating only one paragraph to this topic.

When designing discharge information, authors should check the degree of difficulty of the text to ensure that the readability level is not too high. Also, where appropriate, the text should be reviewed to ensure that it is culturally inclusive. As well, information should be provided about other resources that be useful for parents, including information about how and where to access it. When designing resources, it is important to consult with other expert groups. And, where possible, resource developers should consider using a standardised template to present the information. Specifically, this should include use of similar-level language using lay terms and subheadings to assist parents' understanding, especially as they may be provided with more than one resource on discharge or may visit a paediatric ED on more than one occasion.

Standardised information should include relevant contact telephone numbers for parents to seek advice and, where appropriate, information about follow-up appointments (International Federation for Emergency Medicine, 2012). In this study, document analysis revealed that specific information about where to seek help or additional information, including contact numbers, was lacking. For example, within the bronchiolitis resources, this type of information could be critical for managing a potentially serious condition for infants, such as calling an ambulance, or inclusion of health call centre information (telephone-based triage and referral is available statewide 24 hours a day within the study setting), and provision of validated weblinks that offer further information.

Most of the resources analysed in this study were at a relatively high literacy level; beyond the sixth to eighth grade level recommended for healthcare information (Stossel et al., 2012). This could pose a challenge for some parents who might find these resources difficult to understand, and arguably, some of the more complex written resources analysed in this study would be difficult for most parents to understand. This is relevant, as a previous investigation of the literacy standards of parents leaving a paediatric ED, showed many lacked the capacity to understand college-level information that was provided by some of the resources (Morrison et al., 2013). Materials pitched at school grade 11 standard of literacy may cause difficulties in comprehension, affecting ability to follow instructions and potentially compromising health outcomes (Betschart et al., 2017).

While the resources reviewed in this study may be appropriate for the majority of parents in Australia, given that approximately 74% of the population has completed high school education (Mitchell Institute, 2015), the literacy scale used to assess the documents assumes competency in

the English language. Since 28% of Australia's estimated resident population was born overseas (Australian Bureau of Statistics, 2016), the findings of this study are of concern, and further research is recommended to evaluate the suitability of available resources for parents whose first language is not English.

Limitations

This document review was limited by the availability of information at a single site, so our results may be site-specific. Also, since the documents were retrieved for this study, many may have been updated and improved. Nevertheless, the results provide an important indication of content and literacy level that may be used as a source of evidence to inform the generation or modification of future resources for parents of children discharged from ED. The framework for document analysis used in this study could be readily applied to other settings and could also contribute to future investigations about how well parents are able to understand information and the effectiveness of available resources that are designed to support the care of children at home following ED discharge.

Conclusions

In Australia, this is the first study to have specifically examined resources for parents of children discharged home following an ED presentation. An extensive range of resources pertaining to multiple conditions found commonly in children presenting to ED was retrieved and analysed. A positive finding was the consistent, albeit indirect, provision of discharge information for parents needing to care for their child at home. However, many resources could be improved with more direct notation of discharge information for parents of children leaving the ED. Benchmarking the overall content of existing and future resources against the criteria developed in this study may help the quality and consistency of child health resources for paediatric EDs to increase their potential usefulness to parents.

It is recommended that all discharge information should have a similar structure, ensuring that 'care at home' sections are highlighted to parents by ED staff on discharge. Where appropriate, discharge information should also provide links to other resources where parents can find further information that has been vetted by the resource developers. Furthermore, all forms of discharge information require regular review and revision to ensure that up to date information is provided.

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Author contributions

The study design for the present study was performed by all authors; data collection by KP; data analysis by KP, KF and PF; article drafting, critical review and approval of final draft by all authors.

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