

## Patterns of internet use by parents of children attending a pediatric surgical service

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### Abstract

**Purpose** The internet has revolutionised the way we search for information. We determined the level of internet use by parents of children attending general surgical services and identified trends in online information-seeking behaviour.

**Methods** A questionnaire based on the work by Boston and Tassone was distributed to parents attending both the day surgical units and surgical outpatients department in a paediatric tertiary referral centre.

**Results** There were 214 (82.3 %) questionnaires returned, with 82 (38.3 %) of respondents having searched the internet regarding their child's surgical issue. Access to a smartphone, a university education and private health insurance were factors that positively influenced online searching ( $p < 0.005$ ). Of those respondents who searched the internet, 42 (51 %) felt that information they found online was understandable, while only 14 (17 %) admitted to online sourced information influencing the treatment decisions they had made for their children. When asked to rank information sources on Likert-type scales in terms of importance; parents ranked the surgeon as most important (mean = 4.73), whilst the internet ranked lowest (mean = 3.02).

**Conclusion** We demonstrated significant use of the internet amongst those attending paediatric general surgical services. Clinician sourced information remains important, however we should engage with patients to utilise this vast resource effectively.

**Keywords** Internet · Smartphone · Smartphone application

### Introduction

The world wide web has revolutionised the way we search for information with 56 % of those in the EU now accessing the internet on a daily basis [1]. Healthcare has not been immune to this phenomenon with both patients and physicians alike using the internet to their advantage [2]. Use of the internet as a source of health information has been postulated to represent a number of benefits to the end-user including supplementation of information received from health practitioners and a means of empowerment in seeking help for medical conditions [3]. In Europe, 54 % of patients employ the internet to access health related information [1, 4] and are 60 % more likely to contact a health care provider on the basis of this information than those that have not searched online [5].

While providing comprehensive information, internet sites can equally provide information that is misleading or difficult to interpret leading to increased anxiety, termed "Cyberchondria" [6]. Although not a new phenomenon, this anxiety frequently leads to extra time being spent in the outpatient setting correcting misconceptions and has been shown to alter the doctor–patient relationship [7].

To date, there is no published evidence on the level of internet use by parents of children attending a general

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surgical service. This present work aimed to ascertain how frequently parents of children attending a paediatric surgical service consulted the internet and current trends in their health information seeking behaviour.

## Materials and methods

A questionnaire modelled on those employed by Boston et al. [8] and Tassone et al. [9] was used to collect basic demographic information and information regarding internet use and access. Ethical approval for the study had been sought and obtained from the hospital's ethics committee. Questionnaires were distributed from September 2011 to December 2011 to all parents attending both the outpatient clinic and day surgery unit. The case complexity of the patients attending the outpatient clinic had a good spread across minor, intermediate and major, however the complexity of those attending day care surgery were limited to minor or intermediate. Consecutive parents attending with their children were invited to participate. Those who had completed the questionnaire in the outpatient setting were not asked to submit a second form to the day case unit. Consent was obtained at the time of distribution. Data was entered into a database and analysed using Excel and SPSS software. Where responses were left blank, they were excluded from data analyses, and percentages were expressed relative to the number of respondents who answered individual questions. The Chi Squared and Mann–Whitney *U* tests were employed to assess for significant differences; *p* values <0.05 were considered significant.

## Results

Of the 260 questionnaires distributed, 214 (82.3 %) were returned; 136 from the out-patients department and 78 from the day-case unit. The demographic data is presented in Table 1.

### General patterns of internet use

A total of 194 (90.7 %) respondents reported access to the internet in the home, with only 15 (7 %) having no internet access. There were three parents (1.4 %) with access to the internet limited to the workplace and there was a single parent (0.5 %) who reported accessing the internet in a public library.

There were 156 (72.9 %) and 31 (14.5 %) of parents who reported accessing the internet on a daily or weekly basis, respectively. Less commonly reported was monthly or rarely using the internet, at four (1.9 %) and 22

**Table 1** Demographics data

Variable	Count
Relationship to child	
Mother	169
Father	43
Grandparent	1
Aunt/Uncle	1
Age	
<18	2
18–40	166
41–65	46
Education level	
Did not complete high school	42
Completed high School	87
University education	79
Unknown	6
Private health insurance (day cases = 136)	
Yes	39
No	96
Unknown	1

(10.3 %), respectively. Half of the respondents reported that they or their partner had a phone with internet access.

### Patterns of online research

Regarding the 82 respondents who performed an internet search about their child's condition, 30 attended the day ward and 52 the out-patient clinics. Of those respondents who attended the clinic for the first time (*n* = 49), 13 (26.5 %) had been on-line prior to this visit (Table 2).

Just over half the respondents (51.2 %) described the information they found on-line as understandable. Just under half of the respondents (46.3 %) agreed that the information they found was helpful. Only 17.1 % (*n* = 14) of respondents admitted that the on-line information they

**Table 2** Patterns of on-line searching

Variable	Count (%)
Respondents who searched on-line about their child's condition	82/214 (38.3)
Day ward attendance	30/78 (38.5)
Out-patient attendance	52/136 (38.2)
First out patient visit ( <i>n</i> = 49)	13/49 (26.5)
Respondents who planned to discuss the information retrieved from the internet with their surgeon	35/82 (42.7)
Respondents who performed an internet search on their surgeon	30/214 (14)
Respondents who reported that this search influenced their choice of surgeon	8/30 (26.7)

**Table 3** Assessment of on-line information retrieved

Variable	Agreed (%)	Partially agreed (%)	Uncertain (%)	Disagree (%)
Understandable	42 (51.2)	33 (40.2)	4 (4.9)	3 (3.7)
Helpful	38 (46.3)	34 (41.5)	5 (6.1)	5 (6.1)
Influenced decisions	14 (17.1)	14 (17.1)	14 (17.1)	40 (48.7)

**Table 4** Factors affecting parental internet searching of child's condition

Variable	Count (%)	<i>p</i> value
Age <40 years	65/166 (39.2)	0.78
Age ≥40 years	17/46 (37)	
Postgraduate education	41/78 (52.6)	0.0073*
Early exit from formal education	40/129 (31)	
Private health insurance	19/39 (48.7)	0.0427*
No private health insurance	34/96 (35.4)	
Daily internet usage	74/155 (47.7)	<0.0001*
Less frequent internet usage	8/58 (13.8)	
Smartphone	49/106 (46.2)	0.0187*
No smartphone	32/105 (30.5)	

\* *p* < 0.05

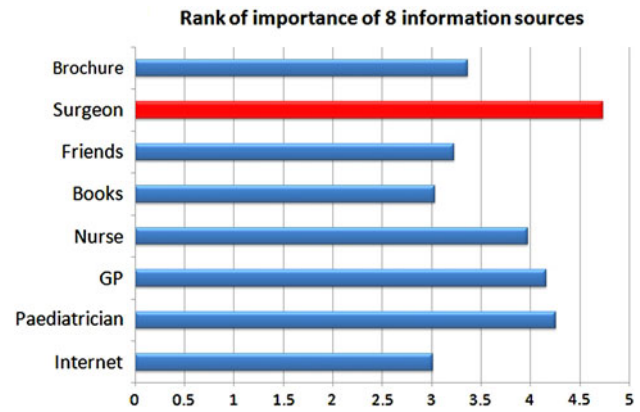
found had influenced the treatment decisions they had made for their children (Table 3).

There were 35 (42.7 %) responders who had discussed or intended to discuss the information they had found on-line with their surgeon. Interestingly, 30 (14 %) of parents had searched for information regarding their child's surgeon and 8 (26.6 %) of these reported that it influenced their choice of surgeon. (Table 2).

Parents were significantly more likely to search on-line in relation to their child's health if they had a university education (*p* = 0.007), accessed the internet on a daily basis (*p* < 0.0001) and were in possession of a smart phone (*p* = 0.0187) (Table 4).

**Comparison with traditional research information**

When asked to rank the importance of eight information sources on Likert-type scales ranging from 0 (did not use) to 5 (very important); parents ranked the internet and health books as least important (3.02 and 3.03, respectively) (Fig. 1). The surgeon was ranked as most important (mean = 4.73), followed by the paediatrician (4.25) and the general practitioner (4.17). Respondents attending the day-case unit were asked specifically if they had received an information leaflet relating to their child's condition or proposed procedure; 34.6 % (27/78) reported that they had, and these respondents gave the leaflets a mean score of 4.14 in terms of importance in information gathering.



**Fig. 1** Ranks the importance of eight information sources using Likert-type scales ranging from 0 (did not use) to 5 (very important)

**Future plans**

Of the 205 respondents, 78 (38.0 %) claimed they would “definitely use” the internet in the future to search for information regarding their child's health, with 93 (45.4 %) who would “consider using” the internet and 34 (16.6 %) who said they “would not”. There were nine respondents who did not complete this part of the questionnaire. When asked if they would use a smartphone application with information regarding their child's surgical problem, were it to be developed, 48.8 % (100) of respondents reported that they would “definitely use” it, whilst 33.7 % (*n* = 69) said they would “consider” it, and 17.6 % (*n* = 36) said that they “would not” use it.

**Discussion**

The internet is becoming increasingly important in daily life and healthcare is not immune to this phenomenon. Results of this study reiterate this with more than 90 % of respondents accessing the internet from their homes. Many studies have shown the prevalence of internet access by patients searching for health related information [10] but this study is the first of its kind to ascertain the level of internet access by parents of children attending paediatric general surgical services. Our finding that 38.5 % of respondents had searched online for information regarding their child's medical condition is consistent with findings published in other paediatric specialities [11, 12]. Similar to another recent paper, higher level of educational achievement, private health insurance status and access to an internet enabled smartphone were positively associated with health information seeking behaviour [12].

The internet, while a useful tool, is an ungoverned resource, confounded by the fact that material can be published online without any accurate basis of information.

Material found following an internet search can thus be biased and misleading making it difficult for parents of patients to distinguish reliable from unreliable resources. A recent study reported just 51 % of websites accessed by parents of children attending paediatric urology services as being affiliated to an academic institution or physician [11].

While patient or indeed parent anxiety can be heightened by inaccurate information sourced via the internet, miscomprehension of information is also a key element. Internet based information provided by the Pediatric Orthopaedic Society of North America had readability scores considered too high for the general population [13]. While websites relating to oral pathologies have been accused of poor readability [14]. However, 49 % of parents felt that the material accessed online did not influence health care related decisions that they made for their children. This sits in contrast with similar work in paediatric urology where 43 % of parents felt that web-based information influenced subsequent health care related decisions made [11].

Of our patient cohort, 57 % of those who accessed the internet for information discussed or intended to discuss the material found online with their surgeon. As parents become more involved in the decision making and management of their children's conditions, we as surgeons need to be cognisant of their access to health related information. Online research by parents should be used as an opportunity to positively engage with them and provide clarity in the decision making process. When we compared the internet with traditional information resources, web based information was ranked as least important. As noted elsewhere [8, 15] the clinician remains the most important source of information for parents.

While just 38.5 % of parents had accessed the internet regarding their child's health condition 83.4 % of parents reported that they would possibly or definitely use it as an information source in the future. Similarly 82.6 % of respondents would at least consider using a smartphone application containing relevant information in the future. Given the ubiquity of the internet and the increasing use of smartphones it is plausible that in future, the majority of patients will access health information in this manner. There are now multiple health care related smartphone applications available, which have been developed with doctors in mind, and as we adopt this new technology in improving our own knowledge, we may point our patients in the direction of appropriate clinician provided web resources and applications.

As with all questionnaire-based studies, we acknowledge that this work has certain weaknesses. There is the potential for selection bias when a 100 % response rate is not achieved for a certain question and this can result in an

over estimation of a positive or negative result. The internet is a dynamic phenomenon and websites are updated and developed daily, changing the quality of information available.

In conclusion, this study has shown the substantial use of the internet amongst those attending paediatric general surgical services. While clinician sourced information still ranks high in importance, the popularity of the internet can only increase owing to its speed and ease of access. As clinicians, we should engage our patients via the internet to provide the best possible evidence and information available.

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