

Finding Top Tips for Tiny Toes: A thematic analysis of internet-based information about children's foot health

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ABSTRACT

Background and Purpose

Parents use diverse strategies to source information on their children's health and the internet offers a convenient method for this. Foot development, foot health and foot care are important, but often overlooked, components of childhood and it is important to understand what information is available to parents when they are searching the internet for advice. The aim of this study was to explore the content of internet-based resources about children's foot health and foot development, to characterise the typical health messages that parents find online.

Method

Eighty-one key words were entered into three internet search engines (Google, Bing and Yahoo) and primary and secondary sources were collated for analysis. A thematic analysis was undertaken.

Results

Nine primary themes were identified: (1.) *Shoes*; (2.) *Stages of Development*; (3.) *Socks and other clothing*; (4.) *Movement and Actions*; (5.) *Foot and limb development*; (6.) *Footcare practices*; (7.) *Accessing Health Professionals*; (8.) *Relationships between general health and foot health*; (9.) *Influencing Parent Behaviours*.

Conclusion

The study outlines the breadth of web-based information about children's foot health. Shoes were the primary focus of online information and commercial resources were more prominent than health resources. Credible and authoritative health-based websites may not be as visible compared with commercial sources of information and may not reach the intended audiences. This could introduce doubt about the validity of information conveyed in the most visible resources.

Keywords: Internet; Health; Information; Infant; Feet; Online

Introduction

Recent advances with technology and technology-accessibility has seen the internet emerge as a common and very popular resource for searching and sharing health information (Cole et al, 2016). The internet has seen considerable growth as a health-information platform and parents often find themselves balancing information from many sources (Pehora et al., 2015; Plantin and Daneback, 2009; Bernhardt and Felter, 2004); often from a combination of sources such as health professionals, family, the media and other sources. Given the constant growth of online platforms, little is known about the information that is available, the accuracy of the information, or influence on health behaviours (Turan et al., 2015). Research has reported mixed opinion on the accuracy of online health information for some health conditions (Farrell, 2018; Fabricant et al., 2015; Impicciatore et al., 1997)

and there is increasing concern that information shared online may be inaccurate or anecdotal (Farrell, 2018; Jordan & Chambers, 2016). It has also been shown that parents search the internet for health information even when a health professional has advised against it (Barton et al., 2019; Walsh et al., 2015), and the impact on engagement with health professionals has been discussed (Tan and Goonawardene 2017). This exposes the need for parents to be able to understand and evaluate web-based health information yet concerns about how parents evaluate the reliability of resource(s) that they access online have been raised (Yardi et al., 2018). Given this, there is a need for professional communities to take greater responsibility for the dissemination of accurate, current and reliable health information which offers parents clear, coherent and accessible information.

As discussed, parents search the internet for a wide range of health issues (Barton et al., 2019; Yardi et al., 2018; Slomian et al., 2017), including foot health (Hodgson et al., 2019). Whilst there are many sources of foot health advice that are free of commercial motives (e.g. National Health Service; Association of Paediatric Chartered Physiotherapists, College of Podiatry), whether these sources are prominent and frequently accessed by parents is not known. Findings from our recent study exploring parents' perspectives about foot development highlighted that parents wanted accurate, accessible foot health information and that health professionals have an important role in supporting parents to achieve this (Hodgson et al., 2019). There are assumptions that web-based resources used by parents cover topics they feel are most relevant, and up to date. It is within the context of parents accessing web-based health resources, and uncertainty about the sources, scope and quality of children's foot health information on the internet, that we undertook this study. The aim of this study was to explore the content of internet-based resources about children's foot health and foot development. Through undertaking this work we are seeking to characterise the typical information that parents are sourcing online.

Method

Data collection

This study was part of a larger research project exploring parent and professional perspectives of children's foot health and ethical approval for all stages of the work was granted from the Research Ethics Panel within the School of Health Sciences, University of Brighton. A list of 81 key words relating to children's foot health, foot development and product use (e.g. shoes, baby walkers) was created from a preliminary search of websites accessed via a Google search. These keywords were reviewed by the research team (including health professionals) and discussed with a group of parents who subsequently agreed that the terms reflected what they would use. Two researchers (CG and LH) undertook the searches.

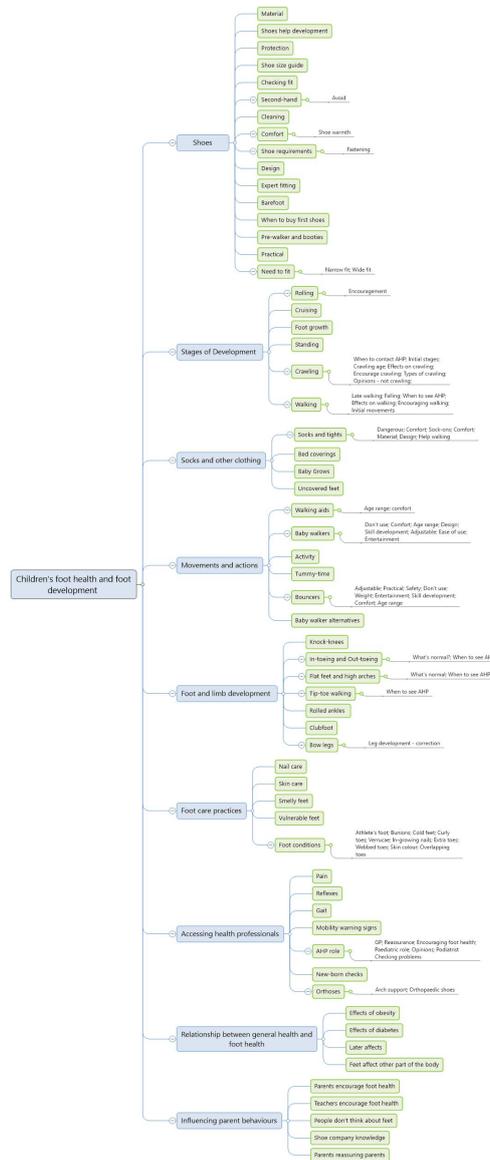
A qualitative coding protocol was devised prior to the online searching, ensuring that the same process was adopted by both researchers. Key search terms were inputted into three commonly used search engines (Google, Bing and Yahoo) and the top 10 websites from each search were then recorded, including any secondary sources (web links). Adverts placed at the top or sides of the search pages were excluded. Data collection was limited to information found on the website landing page and secondary sources that were found via links (which might take users to external web information or other locations on the website/PDFs etc). Screenshots or PDFs were created from each website, coded (e.g. CF01- the first two letters related to the key word used, such as children's feet (CF), Infant's feet (IF), Baby Development (BD) etc), and entered into a data table. Using the first 10 results from the search engine ensured that we captured a breadth of information, which reflected typical searching habits (Klawitter and Hargittai 2018). As well as the primary and secondary webpages returned from the search, the date the information was published, the country of origin and what type of webpage (health, commercial, etc.) was noted where available. Once the data had been collected (an original list of over 2500 webpages), this was cleaned to remove duplicates, screened for web content pertaining to complex foot health conditions and any sites that had expired. All were removed from the database.

Data analysis

Thematic analysis (Braun & Clarke, 2006) of the content from the websites was undertaken. This involved familiarisation with the data, generation of initial codes, searching for themes, reviewing draft themes and defining and naming the final themes and sub-themes. The data were coded using NVivo (version 11) and were re-read whilst systematically creating and adding to the codes. The data were also reviewed by the second researcher who followed a similar pattern of analysis during the review of the themes (familiarisation with the data, validating existing codes, creating additional codes where necessary) which helped build rigour into the process. The analysis of the data resulted in 150 codes. These were then organised into nine main (top-level) themes by two researchers working collaboratively. Any disagreements on coding or theme generation were resolved through discussion between themselves and the wider research team.

Results

The final data set comprised of 413 websites. We were unable to verify the age of most of the information collected or accredit sources of information. The majority of the information (50%) was sourced from commercial providers. Nine main themes and sub-themes were determined from the data (see Figure 1). Findings are illustrated by using direct narratives from online comment forums and information from websites are illustrated using verbatim quotes. The quotes are accompanied by key word search code.



Shoes

Shoes and shoe-related content was the most frequently observed theme; appearing in greater than 50% of websites accessed. Most of the sub-theme content was from commercial sources; this also included commercial items other than shoes. This theme comprised of information relating to size guides, checking fit of shoes, shoe requirements, when to buy first shoes, pre-walkers, booties, comfort and materials among other shoe related information (see Figure 1). *Shoe Requirements* (23% of websites) was the most common information that we encountered and this conveyed information relating to the features of the shoe. For example, “*Shoes should be lightweight and flexible to support natural foot movement*” (Source BFG 16). This theme was quite broad and included *Need to Fit* (which referred to fitting characteristics), *Design*, and *Material* of shoes, *shoe size guides and checking for fit* (see Figure 1).

Stages of Development

Information relating to stages of development throughout infancy and childhood was frequent (37% of the websites) and included information relating to *crawling, rolling, cruising and walking*. Unlike some of the other findings, this theme consisted of a greater number of third-level sub-themes. For example, *Crawling* included *How to Encourage Crawling*, *Opinions on Not Crawling*, and *When to Contact a Health Care Professional* (see Figure 1). Information relating to *Developmental Events* was most frequently observed in blogs or parent specific pages and health websites.

Socks and other clothing

Socks and other clothing-related to information, advice, products and discussions about items that covered baby’s feet that were not shoes; content included *Socks and Tights*, *Bed Coverings*, *Baby Grows* and *Uncovered Feet*. *Uncovered Feet* was observed frequently (67% of resources within this theme) and this related to information about children being without shoes and why children should be barefoot as much as possible: “*By allowing the feet to feel the floor or ground, going shoeless actually helps kids develop their balance, strength, and coordination.*” (Source BFG20).

Movements and Actions

Movement and actions related to strategies promoted to parents for encouraging them with supporting their children to move. This theme comprised of six sub-themes such as *Tummy Time*, *baby walkers*, and *Activity*. Sub-themes relating to *Bouncers and Baby Walkers* had similar third-level themes, such as the age at which it was suitable to use these products, what safety measures should be put in place, and how these products may conflict with a child’s safety.

Foot and limb development

Information relating to foot conditions (common developmental presentations and conditions) accounted for 21% of the sources accessed. This included sub- themes relating to information about *Knock Knees*, *Bowlegs*, *In and Out Toeing*, *Flat Feet and High Arches*, *Clubfoot* and others. For example, “*You may see at various times your child’s foot turn in or out or may pronate due to the fact that the foot arch has not yet fully developed. This is normal, but if they begin to complain about pain, they should be taken to a foot doctor.*” (Source CF 1.20G).

Foot Care Practices

This theme consisted of sub-themes that centred on advice to parents or describing foot related conditions including *Skin care* and *Nail care*, and *Foot Conditions*. Foot conditions consisted of multiple third level sub-themes that related to a range of foot concerns, such as commonly encountered skin infections and toe problems such as curly-toe and overlapping toes.

Accessing Health Professionals

This theme represented the role of health professionals in children’s foot care it included information about *Health Care Professionals*, including content that related to the role of health professionals checking children’s feet. This theme also included information provided to parents about *Pain*, *Newborn Checks*, *Orthotics*, and advice on flags that a child’s development may warrant further investigation. For example, “*Signs that your child may have a*

problem needing investigation include frequent tripping and falling, withdrawing from sport and recreation, or lagging well behind other children during sport and play” (Source CF G14).

Relationship between General Health and Foot Health

This represented information about how wider health concerns impact on foot health and development, for example *Effects of Obesity or Diabetes* and how these can affect foot development. This also included *Later Effects* that considered whether problems with foot development had further effect later in life: “*Doctors argue that most foot problems and pains in adulthood stem from ill-fitting shoes or poor foot experiences during childhood.*” (Source CF 1.20G) Following on, this theme links with *Feet can Affect Other Things*, which included information explaining how a problem with the foot might lead to problems in other parts of the body. For example, “*Neglecting foot health invites problems in other parts of the body, such as the legs and back.*” (Source BF G18).

Influencing parent behaviours

This theme was the least observed within the online sources (4.84%) and the content reflected information that could inform parents’ habits and notions of how to support foot health. This included content about *How Parents can Encourage Foot Health*, *Parents reassuring parents*, *How Teachers can Encourage Foot Health* and the impact of *Shoe Company Knowledge*. The sub-theme relating to *Parents Reassuring Parents* explored peer support networks and the connections parents can have. This is often displayed in a mutual experience ending with a positive reassurance another parent: “*My daughter did the same too and she’s running about fine now. You hear all sorts of comments about what this could “mean” but most children just find their best way of getting about quickly*” (Source CA G9). The sub-theme *how People Don’t Think About Feet*, relates to the lack of awareness people tend to have when it comes to their children’s feet. For example, “*Parents so often worry about their children’s teeth, eyes, and most other parts of the body, but do not worry so much over the developing foot*” (Source CF G10).

Discussion

This study provides a description of information about children’s foot health that is readily available from an internet search. Capturing this provides some information about how the internet might be informing and conceptualising parent’s knowledge about their children’s foot health. Given the many different resources available to parents, it is important to examine the dominant topics and sources of information so that health care providers can understand what is being learnt by parents, identify where inconsistencies may be evident and provide more consistent and accurate health resources. Given the challenges with accrediting the sources of information presented across the websites, there is a clear risk of unvetted opinions and beliefs being promoted. Very few web sites referred to published research which exposes the risk of outdated information being perpetuated. It is important for parents (and health professionals) to understand the opportunity but also risks that online resources pose and learn how best to evaluate information that is available (Hesse et al., 2005).

Shoes represented most of the results when searching for children’s foot health and the majority of the information was from commercial websites. This may reflect the view that when thinking about foot health, footwear and shoes are likely the first thought, rather than how feet may be linked to general health (Sinclair et al., 2018, Rodriguez-Sanz et al., 2018). *When to Buy First Shoes* and *Checking the Fit* of those shoes may be the first-time parent’s see their children’s feet as an area that requires attention, to enable them to move more effectively and comfortably. The dominance of commercial providers was anticipated and highlights their position in influencing parent knowledge; it places them in a strong position to influence knowledge, attitudes and actions. This finding echoes our earlier study which reported that the quality and ease of information about footwear fit and measurement is of a moderate standard and efforts are needed to improve the information (and tasks) presented to parents (Price et al., 2020).

Perhaps more work is required to help align online sources from commercial providers with information from healthcare sources. This way duplication and mixed messages can be avoided by providing collective, evidence-based health messages. Health professionals need to be aware of the dominance that commercial providers have

online and therefore be mindful about how these information sources could impact on parent's knowledge, and how it might guide their decision making about their children's feet. A partnership between sectors would allow for quality, evidence-based health messages to be communicated.

Unsurprisingly, there was a considerable amount of information centred on developmental events. This indicates that this is an important topic for parents and suggests that parents are likely to search for information during times of change, or concern with attainment of developmental events (Williams, Mughal & Blair, 2008). These are important events and efforts to ensure that parents access accurate and consistent advice are important. The findings reported in this study suggest that there is a potential for inconsistent messages across different online platforms (i.e. commercial websites and parent forums). This can be illustrated by the ongoing debate about *baby walkers* where information is promoted from commercial companies, parents' own experiences and information from health professionals. Inconsistent and inaccurate information may affect parent's choices and potentially their children's foot health. Although people may recognise the need to appraise the quality of information online (Farrell 2018, Yardi et al., 2018), they seek it to learn and inform their health behaviours (Office of National Statistics 2019, Barton et al., 2019; Slomian et al., 2017). Although this study has not commented on the accuracy of information available on children's foot health, we suggest that further studies are needed to assess the quality and impact of the information being disseminated to parents.

It is acknowledged that online resources are constantly evolving and some of the information sourced in this study may have changed, been removed or altered since our search was undertaken. Consequently, this may affect the external validity of the results. For example, our initial collection of websites took place in winter (2017-2018) when footwear options focused on warmth and protection. This information would change seasonally and what requirements are put forward for the 'best' footwear in one season may change in another. This is also true over time and through generations as fashion trends, brand influence and commercial drives change.

Whilst this study has documented the typical content that parent's access when searching online, we have been unable to determine how parents view this information, and the extent to which they use this. It is important to acknowledge that socio-economic and literacy factors will affect how parents interpret information and use this to inform their decisions. The findings from this study have helped to identify the typical parent-facing, online content about children's foot health. This information is useful for clinicians and suggests there is merit in further work to explore the accuracy and quality of online information. Clinicians might use the findings reported in this study to inform conversations with parents and to signpost to good quality information sources.

Conclusion

This study has provided the first analysis of web-based information relating to children's foot health. The data supports the view that commercial providers have a powerful voice in providing information about children's foot health, and shoes are the primary focus of online information and resources. The provision of information from health professionals and health providers appears to have limited visibility and clinicians should be encouraged to signpost parents to credible, online sources. By understanding the information available to parents, we can begin to consider what informs parents' habits and promote greater collaborative efforts to influence the quality of information that parents are accessing about their children's feet.

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