

Title: The “price-tag” of foot health in infancy and early childhood: a cross sectional survey of UK parents.

Declaration statements

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Abstract

Children’s feet are complex structures and strategies for supporting good foot health throughout childhood are important, but can be challenging. Greater awareness of the contemporary factors influencing decisions, such as footwear purchases, is needed to inform health narratives which are more closely aligned to parents’ attitude and behaviours. The aim of this study was to explore parent’s knowledge of children’s foot health, understand the common foot health concerns and experiences with footcare services. A purposeful sampling approach was used to recruit parents of children aged 5 years and under. Participants completed a self-administered, online survey which consisted of 39 questions across six sections: (1) Participant demographics; (2) Developmental events (milestones such as crawling and walking); (3) Foot health concerns; (4) Developmental aids (products such as baby bouncers and baby walkers); (5) Footwear; and (6) Foot health information. Both adaptive and mandatory questions were used. Descriptive statistics were used to summarise closed-ended questions and a summative content analysis was adopted to draw inferences from the text data. Two-hundred and thirty-nine parents completed the survey, and this represented female participants (n=213) aged between 34-42 (n=126) or 25-34 (n=83) years of age. The survey generated responses from a wide geographical spread across the UK but the majority of these were from the North West of England (n=75) and South East of England (n=46). Four main themes were drawn from the content analysis: (1) foot health concerns and seeking advice; (2) information and advice; (3) how parents support infant milestone events; and (4) footwear. *Conclusion:* This work provides insight into parents’ perspective on the broad topics of children’s foot health, identifying common experiences and concerns about their children’s foot health and the factors which influence decision making. Understanding more about these issues will help health professionals support parents during infancy and early years.

Key words

Children's foot health, health information, children's footwear, Health services, parent behaviours

Abbreviations

A-Level – Advance Level qualification

CTVE- Congenital Talipes Equino Varus

GCSE- General Certificate of Secondary Education

GP – General Practitioner

HV – Health Visitor

NHS – National Health Service

N= - Number of

What is known

- Maintaining good foot health throughout childhood is important and many factors influence decision-making.
- There is little understanding about how parents care for their children's feet and their understanding of good foot health practices and services.

What is new

- Insight into the common factors which influence parents' approaches to supporting early development and the typical concerns that parents encountered about their children's overall foot health and footwear.
- Identifies areas of children's foot health for health professionals to target when developing information sources for parents.

Background

The anatomical, biomechanical, and functional development of children's feet throughout childhood represents the emergence of a highly complex musculoskeletal configuration, with considerable changes across life stages [29]. Maintaining good foot health throughout childhood is dependent on many factors [15,22], and health professionals are key to supporting parents through their decision-making, with advice about foot development, footcare intervention(s) and education (e.g. footwear advice). Despite this, there are challenges with promoting consistent health information due to inconsistent practices across professional communities [1,4-6,10,19,23] and limited literature within the field [8, 14, 21, 22]. Given the complexity of this topic, there is a need for further research which helps promote good foot health strategies in the early years.

Whilst parents are primarily responsible for making decisions relating to their children's feet, the knowledge underpinning these decisions is poorly understood [27]. Footwear is a topic that raises anxiety for parents and this can include; the type of shoe(s) that should be worn, when the child should start wearing shoes, whether a professional is engaged in shoe fitting and how long the child spends wearing shoes. However, the conflicting evidence perpetuates confusion amongst parent communities and mixed practices between healthcare professionals. Health professionals (e.g. health visitors, physiotherapists and podiatrists) have an important role in translating research evidence for parents to help make informed foot health decisions. In the absence of clear guidance, parents often attempt to seek out their own solutions to supplement information from health professionals. The internet is a common platform for information seeking where parents can source a range of information relating to diagnosing and treating health conditions, and advice about child development and parenting [3]. Despite the accessibility of this information, literacy and comprehension of the important for ensuring that health information is accessible and supports improving parents' decisions [27]. Nutbeam [24] proposed three levels to improving health literacy; transmission of factual information, skill development and understanding of social and economic determinants of health to drive organisational and policy change, and development of health information. To develop accessible information aimed at improving foot health literacy for parents, an understanding of factors that are closely aligned to parents' existing practices, decision making, influences and behaviours towards their children's foot health and development is required. This study aims to explore parent's knowledge of children's foot health, understand the common foot health concerns and experiences with footcare services.

Methods

This study was an online, cross-sectional survey. The survey looked at how parents accessed foot care/foot health services for children, and what messages about foot health and footwear advice that parents believed to be important. Through undertaking this work, we anticipated developing a richer understanding of the factors that inform parent's knowledge, beliefs and approaches. Ethical approval was granted from the School of Health and Society Research Ethics Panel, University of Salford (HSR1718-112).

Survey design

The questionnaire was designed within Online Surveys (www.onlinesurveys.ac.uk) and enabled the research team to disseminate the survey across a wide geographical region [7, 30]. Five parents known to the project team reviewed the initial draft of the survey and cognitive one-to-one interviews, lasting between 15-30 minutes, were conducted to explore participant's experiences of the survey to reduce response error [28] and to ensure quality of reporting [13]. The research team were able to gauge responses to questions, meaning and interpretation of questions. In addition, the researchers were able to ask questions about the survey design and function. Following the cognitive interviews, the survey was revised to address minor language adjustments and the order of questions were changed to improve the flow of the survey.

The final survey consisted of 39 questions across six sections and both adaptive and mandatory questions were used. The sections of the survey covered the following topics: (1) demographics; (2) developmental events (milestones such as crawling and walking); (3) foot health concerns; (4) developmental aids (products such as baby bouncers and baby walkers); (5) footwear; and (6) foot health information. The survey used a mix of questions, seven open-ended questions, 23 closed questions (multiple-choice or dichotomous) and nine questions which combined both. In each section, open-ended (free text boxes with no word restriction) and fixed questions that had a choice of "other" allowed participants to enter a free-text response and these were used to expand on closed questions. The use of closed questions were for the purpose of quantifying common behaviours e.g. the number of parents which engage with a service, or source of information. Using open-ended questions like 'What did you do to encourage your child to crawl?' or 'What foot health concerns do you have or have had?', were designed to explore parents' beliefs, strategies and practices around children's foot health information to develop understanding and to provide narrative beyond solely using close-ended questions [25].

Participant recruitment

The survey adopted a purposeful sampling approach [26]. The online survey had a landing page which described the study; informed consent was obtained on a separate page. If participants agreed to participate, they could enter the survey and answer questions.

Participants were required to be a parent of a child aged 5 years and under and have had access to the internet, and able to give informed consent prior to starting the survey. Parents of multiple children aged 5 years under were asked to base their responses on their youngest child when completing the survey. Responses were anonymous and parents were invited to participate via online and social media platforms (e.g. the project Facebook® account). Using a social media platform to disseminate the survey increased the opportunity for the survey link to be shared by respondents. Similar to snowballing, respondent-driven sampling [30] enabled parents to easily share through their private and community networks. The research team acknowledged the potential for respondents to introduce a respondent's bias. Despite this, using social media and social networking groups coupled with purposive sampling, population characteristic of target audience such as parents would minimise biases associated with snowball sampling [27, 31]. It was considered it would increase the opportunity of the survey being shared among different demographic and wide geographical groups of parents and thus seemed an appropriate sampling approach [2]. The survey was live for four months between December 2018 and March 2019.

Data analysis

All data was exported to Excel® to be cleaned. Individual survey entries were all checked and screened for completion by hand by one of the researchers (LH). Any responses which contained inappropriate responses (unrelatable to the questions 'prank entries') or from non-UK residents were removed. A total of 31 entries were removed prior to analysis. Two researchers (LH and MH) organised close-ended responses and independently analysed the quantitative data. Descriptive statistics were used to summarise closed-ended questions. One researcher (LH) analysed open-ended (free text) responses using a summative content analysis approach. This allowed the researchers to explore and quantify common keywords to understand the frequency of responses present in the free text data [12, 17]. In addition, the summative analysis enabled researchers to develop understanding of the common meaning used by respondents typed word(s)/phrase(s) [17]. One researcher (LH) read through each free-text response to ensure familiarity with the content. Once this was completed, keywords and similar phrases were coded, and the frequency of common word(s)/phrase(s) documented. Once coding was completed, the researcher reviewed codes for accuracy and began organising, sorting and grouping content with similar underlying meaning. This was then combined with the data from closed-ended responses to develop initial themes, understanding and to interpret meaning from the whole data. These themes were discussed with the wider research team (LH, MH, SM) to finalise overarching conceptual narrative and meaning. An overview of Qualitative Coding framework and Final themes can be found in the Online Resources 1.

Results

The completion rate for the survey was 239. The majority of respondents were female (n=213) between the ages 34-42 (n=126) or 25-34 (n=83). The survey generated responses from a wide geographical spread across the UK but most responses were from the North West of England (n=75) and South East of England (n=46). A large proportion of survey respondents were educated to a postgraduate (n=92) and undergraduate level (n=73) with fewer respondents only being educated to a GCSE (n=5) or A-Level (n=28). Respondents were in a full-time (n=112) or part-time (n=93) employment and reporting a combined household income of £60,000 or more (n=83), £50,000-£59,999 (n=33). However, a number of participants chose not to respond to this question (n=36). There was a small response from parents with a GCSE or A-Level education level and with an annual household income less than £29,999 or lower (n=34) (Table 1).

Table 1: Participant Characteristics

Gender	
Male	23
Female	213
Other	1
Prefer not to say	1
Blank	1
Age	
18-24	12
25-34	83
34-42	126
42+	17
Prefer not to Answer	1
Region	
North Wales	2
South Wales	17
North West England	75
North East England	15
Midlands	36
South West England	22
South East England	46
Scotland	14
Northern Ireland	1
Prefer not to answer	10
Other	0
Blank	1
Education	
GCSE	5
A-Level	28
Undergraduate Degree	73
Postgraduate degree	92
Specialist Qualification	32
Prefer not to Answer	6
Other	3
Employment	
Full Time	112
Part Time	93
Student	11
Retired	1
Not Working	14
Prefer not to answer	2
Other	4
Blank	1
Household Income	
£0-9999	3
£10,000 - £19,999	13
£20,000 - £29,999	18
£30,000 - £39,999	21
£40,000 - £49,999	32
£50,000 - £59,999	33
£60,000+	83
Prefer not to answer	36

Themes

There were four main themes generated from the data: (1) foot health concerns and seeking advice; (2) information and advice; (3) how parents support infant milestone events; and (4) footwear.

Foot health concerns and seeking advice

Forty-two respondents reported a concern about their children's feet. The main concerns related to positional or structural problems such as Congenital Talipes Equino Varus (CTEV), in toeing and toe problems (n=28).

Some parents noted that they had not sought or were not intending to engage with a health professional (n=8), whilst only 3 parents said they had or were seeing a health professional about their concerns. Some were adopting a wait and see strategy and looking at whether the concerns would interfere with their child's development. Parents reported "I haven't been to a health professional yet"; "not yet" and "going to see if he walks in line with expected development". All children with CTEV were under the care of a health professional and these parents were able to describe clearly who and where they would seek advice.

Information and advice

Two-hundred and thirty-nine respondents identified that they would seek advice from multiple health professional sources for information including a GP (n=124) and/or would discuss with a Health Visitor (n=188). Twenty-six reported that they would see either a podiatrist (n=16) or a physiotherapist (n=10). Whilst a high proportion identified where they would seek advice, only forty-five parents reported that they had received advice about their children's foot health from such sources as health professionals.

A small number of parents sought online information only (n=35). However, there were many responses where online resources or an internet search were accompanied by use of other resources, such as following a visit with a medical or health professional (n=59): "I would go to a GP or Health Visitor first then google for explanation and extra information" and "I would go to a podiatrist first then I might use google following that". When using online platforms, parents were asked to indicate what types of resources they might use for information. The majority reported that they would use NHS or Health authority websites (n=148), but some respondents reported "reputable shoe shops" (n=36) or "parent forums" (n=32) would be used. There appeared to be some uncertainty about where to look for advice, with some parents describing they were "unsure", or "don't know" (n=38). Some of the parents used "generic google searches" (n=20) to explore what existed or look for a "government website" (n=18). Out of the 239 respondents, five parents reported using resources that were evidence-based (literature, professional articles) or endorsed by a professional body (e.g. leaflets, or websites).

Parents were also asked to identify any resources that they would not use for information. Ninety-six parents reported that there were no resources that they would avoid. However, 36 parents reported forums and social networks as resources to avoid e.g. "forums with unqualified input". Respondents also indicated that parents were not always in favour of seeking advice from health professionals (n=25) stating phrases such as "I haven't had great experiences gaining advice...so I would probably avoid talking to them. I prefer to speak to the GP."; "not sure I would go back ..."; and "...advice is variable and often outdated".

How parents support infant milestones events

At the time of completing the survey, 188 of parents reported that their child had crawled and 51 that their children did not or were not yet crawling. A greater number of participants encouraged their children to crawl (n=129) than didn't (n=73). Most parents reported that their child was walking (n=178) (Fig. 1).

Most of the sample reached this milestone between 6-9 months (n=133) and ten parents reported that they were unsure of the age their child first crawled (Fig. 2). Seventeen parents reported that their child learned to crawl prior to 6 months and 28 reported it to occur after 9 months of age.

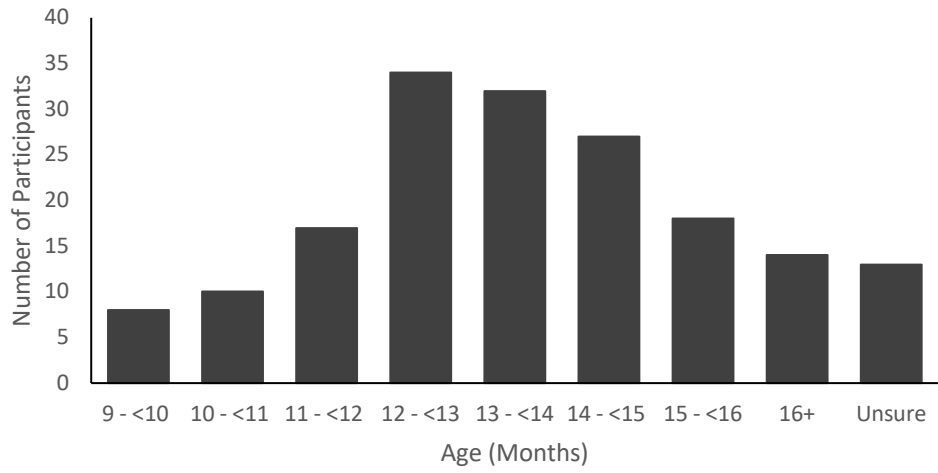


Fig. 1 Age at which children started to walk

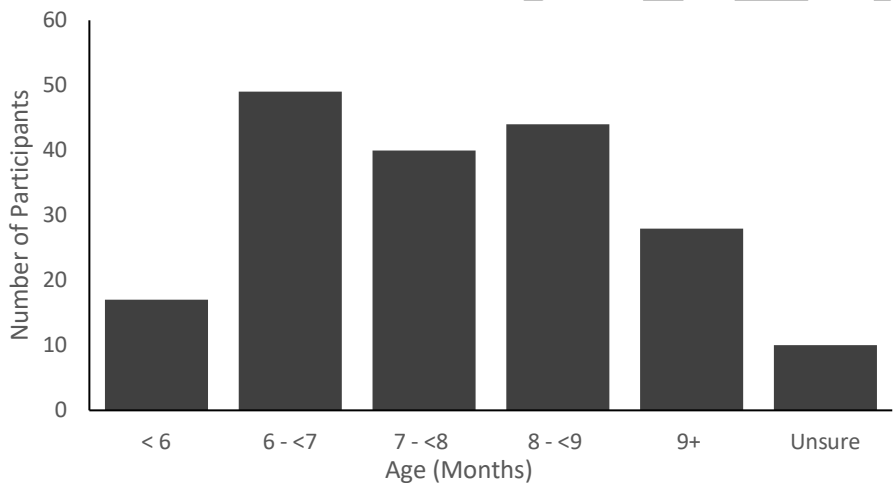


Fig. 2 Age at which children started to crawl

The survey asked parents about their strategies to support attainment of developmental milestones. Strategies included tummy time (n=210), using crawling bawls (n=74) or favourite toys to encourage and motivate movement on the belly (n=68), reaching with hands, pushing with legs. Similarly, when children were ready to walk parents would use other strategies such as holding hands and walking with the child (n=215), using favourite toys placed away from the infant to encourage movement towards the object (n=91). In qualitative response parents indicated it was incorporated as part of play and would use opportunities to practice and encourage walking with their infants: "it all happens as play"; "making a game out of it because they like it"; "it entertainment, fun, they like it and that is how it happens, you don't go right I'm going to structure crawling practice, you play with your child instead and find something they like for enjoyment." In addition, parents used developmental aids such as baby Jumperoo (bouncers) and walkers to encourage crawling and walking (Fig. 3).

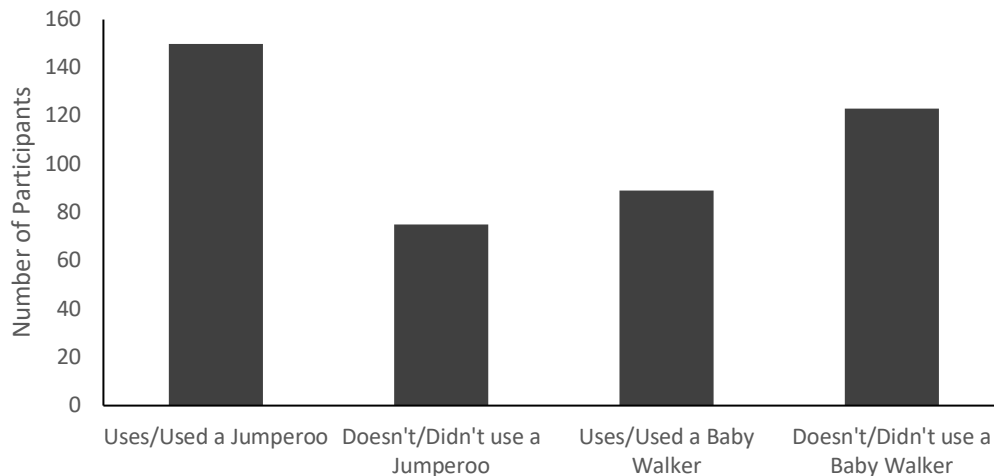


Fig.3 Use of development aids

One hundred and fifty respondents had used a Jumperoo (bouncer) and of the remaining 89, 14 were not ready to use one. Eighty-nine responded that their child used a baby walker, with 123 having not used one and 27 were not ready. In open-ended responses parents were asked to explain their motivations for using these products, in a collection of descriptions many parents described their reasons as centring around notions that *"it builds leg strength"* (n=88) or *"helps with co-ordination"* (n=120). Content analysis of respondents phrases also indicated positive engagement with using these types of products and used other phrases such as: *"enjoyment for the infant"* (n=155); *"it provides entertainment"* (n=81); *"opportunity to practice"* (n=32); *"simulated movements [walking]"* (n=28); and *"developed motor skills"* (n=43). Other reasons, such as it being recommended by other parents or family (n=68) was a strong motivation as to why parents used or bought these products. When parents were asked why they would not use a product (e.g. a baby bouncer and/or walker), many noted reasons such as health professionals or health visitors had advised against using them (n=34). Parents appeared to believe that developmental products were better than others (for example, choosing a bouncer over a walker). All stated similar reasons why they would not use the other product type, using phrases such as *"it's not good for the hips"*; *"you should not leave them in them for too long"*; *"could affect their feet and hips"*; *"it is not safe"*; and *"it's not good for their development"*.

Twelve respondents had noted that Health Visitors provided advice against using a sit in walker and bouncer such as *"about limiting [their] child's time in the sit in walker"*; *"it is not safe"*; *"little to show it helps with development"*. Seventy of respondents had used parent forums to look up advice about which development product was suitable e.g. best price, quality and where to buy.

Footwear

The survey indicated that 186 of respondent's children were wearing footwear and owned a variety of shoe types. Trainers/Sneakers (n=131) and Wellies (n=115) were most commonly owned. Boots (n=89) and Slippers (n=74) were the next commonly owned footwear type (Fig.4).



Fig.4 Type of shoes owned

When parents were asked to rank the top three factors informing their selection of footwear, 200 parents included 'fit' in their top three, with 164 selecting it as most important factor. One hundred and ninety-two parents ranked 'comfort', 98 ranked 'durability' and 84 ranked 'cost/price' in their top three. Each factor was ranked by at least one parent in their top three. However, the fit and the comfort of the shoe were the two most ranked factors that influenced parent's choices when selecting footwear for their children (Fig.5).

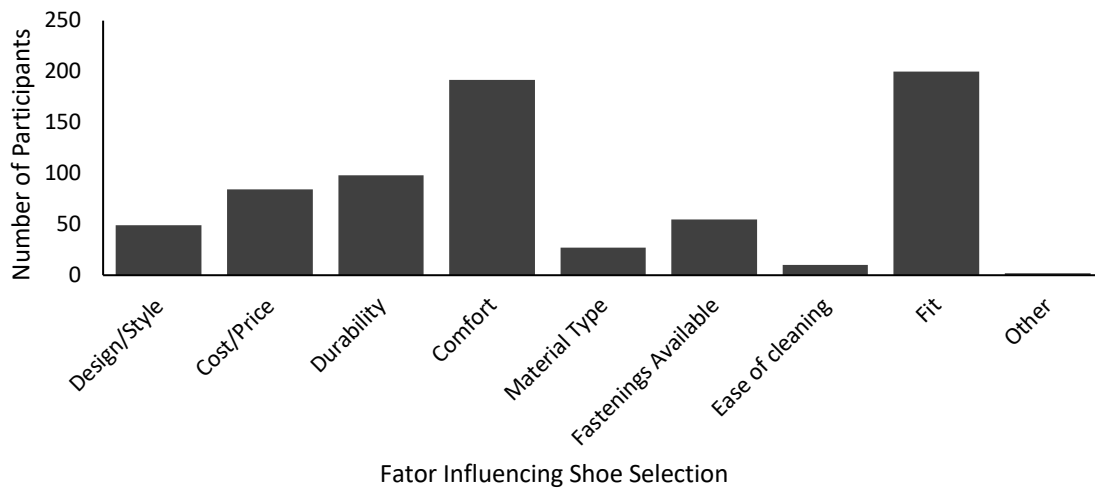


Fig.5 The factors influencing shoe selection for children.

Parents reported difficulties in finding suitable footwear for children (n=124). Parents indicated that differences in their child's foot shape (e.g. flat feet, wide or narrow feet) could impact on the suitability of some footwear and could influence on footwear decisions. Over half of the sample highlighted inconsistency in how shoe-shops measured children's feet (n=141), the styles and fit of shoes available (n=125). Parents also noted that advice from footwear providers could be "confusing" and made it difficult for parents to make purchasing decisions. Parents often commented that there was lack of footwear companies offering fitting advice and reasonably priced children's footwear (n=153). A considerable number of qualitative responses from parents reported a concern with cost of footwear and often noted that there was a "price tag associated

with fitted footwear" (n=150) and it influenced decisions about purchasing shoes. Parents *'shopped around'* for footwear and did not always use popular high-street retailers/fitting advice to purchase their children's footwear and sought out alternatives such as online retailers and supermarkets.

Parents were asked if they would use second-hand footwear. One hundred and five reported that they would use second-hand footwear, 99 stated they would not, and 35 of respondents were unsure. When parents were asked to provide more information about this, they used descriptions that indicated a margin of acceptability relating to why and when they might consider using second-hand for their children's footwear. Parents used phrases such as *"I would not use second-hand shoes but would consider using them if they were the right size"* (n=88), *"were not worn in"* (n=84), *"soles were intact and not scuffed"* (n=102); the second-hand shoe was from a *"reputable high street footwear company"* (n=95) or it *"had been used by an older sibling"* (n=90). It also appeared that it would depend on what the purpose of the shoe was being used for e.g. if the shoe was for short periods of time meant that they would be more likely to purchase shoe types such as wellies or trainers.

Discussion

The aim of this study was to explore parent's knowledge of children's foot health, understand the common foot health concerns and experiences with footcare services. Four main themes were drawn from the analysis and these offer novel insight into parent perspectives on children's foot health. These results describe common experiences about their children's foot health and explores the factors which can impact on decision making. It also highlights some of the concerns about choosing, measuring and identifying appropriate footwear for children.

The results indicated that developmental changes affecting the feet and legs (e.g. in-toeing, knock knees, tip-toe walking) were a concern but parents appeared to adopt wait and see strategy before deciding to seek advice. Whilst we didn't capture the reasons for this, our findings appear to be contrary to other studies which have highlighted that parents commonly seek referrals into clinical services for typical developmental events [5]. There is indication that foot health is a low priority for parents compared with other concerns and if the child is walking and not exhibiting signs of being in pain, it remains a low-level concern. However, this influences how quickly parents might engage with health professionals and highlights there may be trepidation about engaging with paediatric services. Our previous work identified that some health professionals lacked specific foot knowledge [16], and indeed, Jandial et al. [18] reported that most UK medical school teaching of core paediatric musculoskeletal skills was limited. There appears to be a level of usual practice adopted by parents, utilising and seeking typical routes into primary care, i.e. gateway professionals such as GPs or Health Visitors [16]. This may also indicate limited knowledge of other health professionals roles/expertise, or a higher level of confidence in more familiar health professionals. It is possible that parents have a reliance on traditional gateway professionals to help guide through complex health systems to and support access appropriate services for their children [20]. Improving parent's knowledge of paediatric foot health services and important foot health messages may promote earlier engagement with health professionals. This in turn could achieve earlier detection of foot health concerns. Similarly, extending health professionals' understanding of the common concerns that parents experience could ensure that professionals are responsive; promoting health will positively improve engagement with health professionals [9].

This study highlighted that the children experienced milestones within expected timeframes, such as crawling between 6-9months and walking around 12-13 months. Parents appeared to adopt several techniques to help their children progress towards and achieve expected milestone events and bouncers, walkers and sit in walkers appeared to be popular product choices. Parents appeared to be influenced to use products if friends or family had success with them, or if their child gained enjoyment from them. It was difficult to ascertain the reasons and origins of belief about the advantages of using development products e.g. beliefs such as *"developed motor skill"* and *"helps to strengthen [legs or feet]"*. Parents had similar beliefs but appeared to use these to select one product over another and, despite being aware of health professionals'

concerns, were still making decisions to use these products. These decisions also appeared to be supported and beliefs reinforced by friends and family members and suggests that the familiar voice is often favoured over a professional one [24, 27].

Parents reported well-fitting and comfortable footwear to be important and this is consistent with our previous work which reported that parents viewed footwear as important for maintaining good foot health in children [16]. Despite the fact that most parents were not reporting foot health concerns, many reported problems with fitting and purchasing footwear. Parents found it difficult to find appropriate shoes when the child had differences in the shape of their feet (e.g. wide feet). However, parents experienced difficulties in finding dependable advice and inconsistency in fitting services between different high-street footwear companies. Footwear companies provide a range of footwear choices; however, the results of this study highlight parents continue to experience difficulties when purchasing shoes. They highlighted experiences of conflicting and confusing advice about footwear choices which makes it difficult for parents to feel confident in the choices they are making for their children [22]. The cost of footwear was an important factor for parents and influenced purchases. It is possible that the level of dependency and action on these cost factors may have different implications across socio-economic groups [16]. This study indicated that some parents were purchasing footwear from shoe retailers that were not offering measuring/fitting advice and were costing less than some major high-street footwear companies. Cost could influence consideration of second-hand footwear and there was a margin of acceptability surrounding how parents identify *if* and *how* they would buy second-hand footwear. There are increasing social and consumer trends and pressure towards favouring recycling and repurposing for ethical, economic and environmental reasons make it increasingly acceptable to use secondhand clothing and may continue to influence the parent consumer. Despite recent work shifting attention of footwear on motor skill development [8, 11, 32], our data suggests that further research is needed to understand the impact of social factors on the parent consumer and the impact on children's foot health.

The findings of this study must be viewed in the context of some limitations. Efforts were implemented to ensure that a robust sample representing the views and experiences of a diverse group of parents was captured. Despite this, a small sample size of parents views were captured but builds on widening views points from earlier studies [16] and most of the respondents were from higher socio-economic groups and this introduces a sampling bias. Furthermore, the sample represents a cluster of parents in the North-West and South-East of England which limits the extrapolation of the findings.

Conclusion

The study provides insight into parent's perspectives on the broad topics of children's foot health, describing parents' common experiences and concerns about their children's foot health and the factors which can impact on decision making. The results offer contemporary experiences which clustered around themes of 1) foot health concerns and seeking advice; (2) information and advice; (3) how parents support infant milestone events; and (4) footwear. Parents appeared to rely on gateway professionals to guide and navigate through health services to seek out appropriate children's foot related services. There is some concern about the relevance of health professionals' knowledge and expertise, and this speaks to the need for opportunities for collaborative and joint training opportunities for health and medical professionals. Understanding the topics reported in this study is important to ensure that children's foot health information reflects the needs of parents and will help health professionals elevate and support parents' foot health literacy during infancy and early years.

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Ethical compliance and conflict of interest statement

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References

1. Badihian S, Adihian N, Yaghini O (2017) The Effect of Baby Walker on Child Development: A Systematic Review. *Iran J Child Neurol* 11(4):1-6. <https://doi.org/10.22037/ijcn.v11i4.15509>
2. Baltar, F. and Brunet, I. (2012), "Social research 2.0: virtual snowball sampling method using Facebook", *Internet Research*, Vol. 22 No. 1, pp. 57-74. <https://doi.org/10.1108/10662241211199960>
3. Bernhardt JM, Felter EM (2014) Online pediatric information seeking among mothers of young children: Results from a qualitative study using focus groups. *J Med Internet Res* 6(1):e7. [10.2196/jmir.6.1.e7](https://doi.org/10.2196/jmir.6.1.e7)
4. Buldt AK, Menz HB. (2018) Incorrectly fitted footwear, foot pain and foot disorders: A systematic search and narrative review of the literature. *J Foot Ankle Res* 11:43. <https://doi.org/10.1186/s13047-018-0284-z>
5. Carli A, Saran N, Kruijt J, Alam N, Hamdy R (2012) Physiological referrals for paediatric musculoskeletal complaints: A costly problem that needs to be addressed. *Paediatrics & Child Health* 17(9):e93-97. <https://doi.org/10.1093/pch/17.9.e93>
6. Chagas PSC, Fonseca ST, Santos TRT, Souza TR, Megale L, Silva PL, Mancini MC (2020) Effects of baby walker use on the development of gait by typically developing toddlers. *Gait Posture* 76:231-237. [10.1016/j.gaitpost.2019.12.013](https://doi.org/10.1016/j.gaitpost.2019.12.013)
7. Chang TZ, Vowles N (2013) Strategies for improving data reliability for online surveys: a case study. *Int J Electron Commer Stud*. 4(1):121-130. <http://dx.doi.org/10.7903/ijecs.1121>
8. Cranage S, Perraton L, Bowles KA, Williams C (2019) The impact of shoe flexibility on gait, pressure and muscle activity of young children. A systematic review. *J Foot Ankle* 12:55. <https://doi.org/10.1186/s13047-019-0368-4>
9. Coulter A, Ellins J (2007) Effectiveness of strategies for informing, educating, and involving patients. *BMJ* 335:24. <https://doi.org/10.1136/bmj.39246.581169.80>
10. Dars S, Uden H, Banwell HA, Kumar S (2018) The effectiveness of non-surgical intervention (Foot Orthoses) for paediatric flexible pes planus: A systematic review: Update. *PLoS One* 13(2):e0193060. <https://doi.org/10.1371/journal.pone.0193060>
11. D'Août K, Pataky TC, De Clercq D, Aerts P (2009) The effects of habitual footwear use: foot shape and function in native barefoot walkers. *Footwear Sci* 1(2):81-94. <https://doi.org/10.1080/19424280903386411>

12. Elo S, Kyngäs H (2008) The Qualitative Content Analysis Process. *J Clin Nurs* 62(1):107-115. <https://doi.org/10.1111/j.1365-2648.2007.04569.x>
13. Eysenbach G (2004) Improving the quality of Web surveys: The Checklist for Reporting Results of Internet E-Surveys (CHERRIES). *J Med Internet Res* 6(3):e34. [10.2196/jmir.6.3.e34](https://doi.org/10.2196/jmir.6.3.e34)
14. González Elena ML, Córdoba-Fernández A (2019) Footwear fit in schoolchildren of southern Spain: a population study. *BMC Musculoskelet Disord* 20:208. <https://doi.org/10.1186/s12891-019-2591-3>
15. Hill M, Healy A, Chockalingam N (2019) Key concepts in children's footwear research: A scoping review focusing on therapeutic footwear. *J Foot Ankle Res* 12:25. <https://doi.org/10.1186/s13047-019-0336-z>
16. Hodgson L, Growcott C, Williams AE, Nester CJ, Morrison SC (2019) First steps: Parent health behaviours related to children's foot health. *J Child Health Care* 24(2):221-232. <https://doi.org/10.1177/1367493519864752>
17. Hsieh H-F, Shannon SE (2005) Three Approaches to Qualitative Content Analysis. *Qualitative Health Research* 15(9):1277–1288. <https://doi.org/10.1177/1049732305276687>
18. Jandial S, Rapley T, Foster H (2009) Current teaching of paediatric musculoskeletal medicine within UK medical schools—a need for change, *Rheumatology* 48(5):587–590. <https://doi.org/10.1093/rheumatology/kep038>
19. Kendrick D, Illingworth R, Hapgood R, Woods AJ, Collier J. (2003) Baby walkers-health visitors' current practice, attitudes and knowledge. *J Adv Nurs* 43(5):488-495. doi:10.1046/j.1365-2648.2003.02746.x
20. Khoo K, Bolt P, Babl FE, Jury S, Goldman RD (2008) Health information seeking by parents in the Internet age. *J Paediatr Child Health* 44(7-8):419-423. <https://doi.org/10.1111/j.1440-1754.2008.01322.x>
21. Klein C, Groll-Knapp E, Kundi M (2009) Increased hallux angle in children and its association with insufficient length of footwear: A community based cross-sectional study. *BMC Musculoskelet Disord* 10:159. <https://doi.org/10.1186/1471-2474-10-159>
22. Morrison SC, Price C, McClymont J, Nester C (2018) Big issues for small feet: Developmental, biomechanical and clinical narratives on children's footwear. *J Foot Ankle Res* 11:39. <https://doi.org/10.1186/s13047-018-0281-2>
23. Morrison SC, Tait M, Bong E, Kane KJ, Nester C. (2020) Symptomatic pes planus in children: a synthesis of allied health professional practices. *J Foot Ankle Res.* 13:5. <https://doi.org/10.1186/s13047-020-0372-8>
24. Nutbeam D (2000) Health literacy as a public health goal: a challenge for contemporary health education and communication strategies into the 21st century. *Health Promot Int* 15(3):259-267. <https://doi.org/10.1093/heapro/15.3.259>
25. O'Cathain A, Thomas KJ (2004) "Any other comments?" Open questions on questionnaires – a bane or a bonus to research?. *BMC Med Res Methodol* 4:25. <https://doi.org/10.1186/1471-2288-4-25>
26. Palinkas LA, Horwitz SM, Green CA, Wisdom JP, Naihua D, Hoagwood K (2015) Purposeful Sampling for Qualitative Data Collection and Analysis in Mixed Method Implementation Research. *Adm Policy Ment Health* 42:533–544. <https://doi.org/10.1007/s10488-013-0528-y>

27. Penkala S (2012) Health literacy: Implication for shoe choices promoting foot health in children. *International Journal of Health, Wellness and Society* 1(4):88-97
28. Peterson CH, Peterson NA, Powell KG (2017) Cognitive Interviewing for Item Development: Validity Evidence Based on Content and Response Bases. *Measurement and Evaluation in Counseling and Development* 50(4):217-223. <https://doi.org/10.1080/07481756.2017.1339564>
29. Walther M, Herold D, Sinderhauf A, Morrison R (2008) Children sport shoes--a systematic review of current literature. *Foot Ankle Surg* 14(4):180-189. <https://doi.org/10.1016/j.fas.2008.04.001>
30. Wejnert C, Heckathorn DD (2008) Web-Based Network Sampling: Efficiency and Efficacy of Respondent-Driven Sampling for Online Research. *Sociological Methods & Research* 37(1):105-134. <https://doi.org/10.1177/0049124108318333>
31. Wong, T. (2008), "Purposive and snowball sampling in the study of ethnic and mainstream community organizations", paper presented at the Annual Meeting of the Western Political Science Association, Manchester Hyatt, San Diego, CA, available at: www.allacademic.com/meta/p238387_index.html (accessed 18th November 2020).
32. Zech A, Venter R, de Villiers JE, Sehner S, Wedscheider K, Hollander K (2018) Motor Skills of Children and Adolescents are influenced by growing up barefoot or Shod. *Front Pediatr* 6:115. <https://doi.org/10.3389/fped.2018.00115>

Supplementary material

Online Resource 1: Qualitative coding framework and final themes.

Overarching Theme	Second level theme	Third level theme	Codes
Foot health concerns and seeking advice	Conditions	Long term, complex concerns	Talipes (Bilateral, unilateral, calcaneaovalgus), flat foot, Feet turning inwards/pigeon toes, toes tucked under foot, toes curl upwards, toes overlapping, hypermobility, knock knees.
	Health professional's involvement with a existing concern	Short term concerns	
Foot hygiene concerns			Swimming pool, catching infections, rashes, verruca's
Impact on future development			Impact on sporting activities, learning to walk or just walking, meeting milestone events.
I see/have spoken with			GPs, Orthopaedic unit/staff, Midwives, Health visitors (in early infants) Physiotherapist, Orthotists, Podiatrist.
Information and advice	Information found Online information:	Health sites or with health content	NHS online, Podiatrist sites, health blogs
		Social networks	social media platforms listed
		Google	Orthitists, Google questions, look up search for terms, search and see where it takes the, children's shoes
		Online Retail	Specialist shoe stores online, General footwear brands listed
		Evidence based research searches	Journals
		Charity sites	Steps charity
		Government initiatives/services (online information)	Sure start
		Other media sites	Bounty
		Unaware of foot related information	Did not know where to go, did not know any information about feet/foot health
		Other advice sourcing	GPs/medical professional, shoes shops, Google searches, Podiatrists, family or friends, Physiotherapists, Health visitors, Did not know.
How parents support	Development movement aides	Reason to use push along walkers	Encouraging walking, independent/confident generating, steadiness, donated/a gift, encouraged motor movement, multifunction toy/activity, entertainment, helps balance,

<p>infant milestone events</p>	<p>Information/advice received about developmental advice/developmental aids/ footwear and general foot health</p>	<p>Reasons not to use push along walkers</p> <p>Reason to use a Jumparoo</p> <p>Reasons not to use a Jumparoo</p> <p>Reason to use a sit in walker</p> <p>Reasons not to use a sit in walker</p> <p>Shoe shops</p> <p>GPs</p> <p>Health Visitors</p>	<p>builds strength, advised to use by nursery, older siblings used one, recommended by friends.</p> <p>No space at home, bulky aid, did not see the benefits of it, Health professional advised against its use (Health visitor/physiotherapists), its not good for their limbs, it is unsafe, child not interested in using one.</p> <p>Donated/gifted, it helps to use feet and strengthen limbs, entertainment for the baby, child enjoyed it, it was recommended by other parents, older sibling had used one, allowed parents time to get on with chores, it develops motor skills, helped them to straighten upright, independent play.</p> <p>It was bad for clubfoot, it encourages tip-toe-walking, bad for hips, did not see the benefits in the child using one, cost, personal research did not support a reason to use one, Health professional advised against it (Physiotherapist, Health Visitor, Occupational Therapists, baby too heavy to use it, parent chose to use other developmental aid.</p> <p>Encourages sturdiness, encourages walking, increases mobility, allows independent development, it allows them to practice walking entertainment, older sibling used one, it develops gross motor skills, parent used one as a child, a family members child used one, it was recommended by friends and family, it allows parents to do other things, every baby has one, it was a donated/gifted.</p> <p>Did not understand the benefit of it, it is not good for hips or legs, preferred to use another developmental aid, fear of an accident happening, no space to use one, health professional advised against it (Health Visitors, Hospital (talipes), Physiotherapist), personal research into use did not think it was good for them, child was too big to use, it can shorten their achilleas.</p> <p>Do not use walkers/Jumparroos, do not use shoes until walking, how often to buy footwear, advice to measure and support foot. Cant cater for specialist footwear needs Regular fitting, measuring, no shoes until confidently walking, how to accurately measure children feet (a guide), need for cruising shoes.</p> <p>Do not use Jumparro's/walkers, advice about impact on turned in feet, skin issues, irritated skin conditions.</p> <p>Toe nail cutting, bowed legs, foot turned in, red book (received at birth)- milestones information, do not use shoes until walking, exercises for the foot/lower limb, look to them on how well their child is developing mentally and physically- meeting major milestones.</p> <p>Talipes information, delayed walking advice, hypermobility advice. Flat feet advice, insoles, footwear, where to buy specialist footwear for children.</p>
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		Physiotherpists Podiatrist Mother care	How to encourages walking, crawling- general movement, advice to use development aid for limited amounts of time -walkers/Jumparoo affect knees, age to start and stop using developmental aids.
Footwear	Experiences of purchasing footwear Where do you purchase footwear Secondhand footwear	Difficulties Good experiences Online retailers Supermarket Handmade Hand me downs from other siblings Reasons use secondhand footwear Reasons not to use What parents look out for	Conflicting advice received, difficult to find independent fitting/measuring services, limited choices if children have narrow or wide feet, shoe shops measure differently, cant just buy footwear as each shop sizes are different, shoes are expensive, fitted footwear cost a lot, limited supported footwear, shops don't measure too well, shoe shops recommend sizes too big, recommend too smaller sizes. Ranges are good, good shoe fitting service come at an expected and acceptable price. Footwear brands listed . Retail stores listed In good condition, not too much wear, only buy second hand pre-walkers, depends on what shoe I need, fitted well, would use what I learnt from shoe shop measuring to buy second hand, cost saving, only buy certain type e.g wellies, trainers, depends on babies foot growth, I would use but I would be concerned, only buy brands I recognise, I buy second hand Clarks or start rite shoes only, I buy for environmental reasons. Too worn, Dirty/un-hygienic, not comfortable with the idea, not supportive, heard it was not good, not good for long periods of wearing, restricts development as it is worn already. Good quality brands, hardly worn, check soles for wear, general condition of the shoe, would seek advice first.