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Version: Accepted Version

Article:
Kettle, J. and Marshman, Z. (2024) Powered toothbrushes and toothbrushing resistance in young children: a qualitative content analysis of an online parenting forum. Community Dental Health, 41 (1). pp. 60-64. ISSN: 0265-539X

https://doi.org/10.1922/CDH_00180Kettle05

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CDH-00180-2023
Date received: 22 August 2023
Date accepted: 13 November 2023
Open access: No
Extra charge: Dependent on typesetting

Powered toothbrushes and toothbrushing resistance in young children: a qualitative content analysis of an online parenting forum

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Keywords:

children, parents, oral health, internet, qualitative, powered toothbrush

Abstract

Background*:* Powered toothbrushes are an effective alternative to manual toothbrushes. Previous research found parents view powered toothbrushes as fun and motivating, although are less confident using them when children demonstrate resistant behaviour. Resistant child behaviour is a recognised barrier to achieving parental supervised brushing. Parents discuss strategies to address toothbrushing resistance on online parenting forums. ***Objective:*** To explore how those posting on an online parenting forum discuss powered toothbrushes as a potential solution to toothbrushing resistance in young children. ***Design:*** Qualitative content analysis of threads retrieved from the UK parenting forum Mumsnet. ***Results****:* The Mumsnet sub-forums 'Behaviour/Development', 'Parenting' and 'Children's Health' were searched in April 2022. 204 relevant threads on toothbrushing resistance were identified and analysed. A further search of these threads identified posts on powered toothbrushes, yielding a sub-sample of 245 posts from 111 threads (of which 97 focused on resistant behaviour from a child/children aged under three). A coding frame was developed and included six categories: use of powered toothbrushes, descriptions of toothbrushes, positive aspects, reasons for not using, approaches to using, and discussions on Mumsnet. Posters suggested powered toothbrushes as a solution to toothbrushing resistance. Posters use Mumsnet to discuss the appropriateness of powered toothbrushes for young children. ***Conclusions****:* Powered toothbrushes offer a potential solution to toothbrushing resistance. Discussions on parenting forums can normalise the use of powered toothbrushes with under-threes. Further research on how parents and dental professionals use and recommend using powered toothbrushes with under-threes would be useful.

Introduction

Powered toothbrushes (also referred to as electric toothbrushes) are an alternative to manual toothbrushes. In the UK, NHS guidance for adults is that powered and manual toothbrushes are 'equally good', while recognising 'some people find it easier to clean their teeth thoroughly with an electric toothbrush' (NHS, 2022). There is no mention of type of toothbrush in the national NHS guidance regarding children's teeth (NHS, 2018). Research shows oscillating-rotating powered toothbrushes are a more effective option for children than manual toothbrushes, with better outcomes in terms of plaque, gingivitis and caries (Davidovich *et al*., 2020a; Davidovich *et al*., 2020b; Yaacob *et al*., 2014). Powered brushes are also popular with children aged 6 and over, who engage positively with features such as timers (Gill *et al.,* 2011).

Resistance to parental supervised brushing (PSB) is a recognised issue among very young children (Aliakbari *et al*., 2021; Marshman *et al*., 2016; Virgo-Milton *et al*., 2016). Children may demonstrate resistant behaviour, or insist on independent brushing (Aliakbari *et al*., 2021). Parents may use a variety of approaches to address resistance, including powered toothbrushes (Kettle and Marshman, forthcoming).

There is limited research on parents' views on using powered toothbrushes with younger children. One exception is research as part of the Strong Teeth trial, in which powered toothbrushes were provided for children aged three and over (three is the recommended minimum age for powered toothbrushes, according to manufacturers (e.g., Oral B, 2022)). Research with parents as part of the trial found powered toothbrushes were "fun" and motivating for three- to five-year-old children, although the transition from a manual to a powered toothbrush could be initially challenging. However, parents might be less confident using powered toothbrushes when children demonstrate resistance (Bhatti *et al*., 2021a).

Online parenting forums provide a space for parents to discuss their experience of toothbrushing resistance, and potential strategies for addressing this, including powered toothbrushes (Kettle and Marshman, forthcoming). Parenting forums provide a source of information, as well as social support on aspects of children's health (Madge and O'Connor, 2006). Parents can resist official recommendations in online discussions, for example in relation to children's dental caries (Milne *et al*., 2017). Using naturally occurring data from online discussions provides an insight into the way children's oral health care is talked about outside of consultations with dental professionals.

The aim of this paper is to discover how powered toothbrushes are discussed as a potential solution to toothbrushing resistance on an online parenting forum.

Method

This study explored online discussions on toothbrushing resistance. This paper focuses on the research question, how are powered toothbrushes discussed as a potential solution to toothbrushing resistance? A version of qualitative content analysis was used to analyse relevant posts. This descriptive approach is appropriate for summarising what is said about a particular topic (Schreier, 2012).

We focused on one parenting forum to develop a detailed understanding of the dimensions of toothbrushing resistance, as in other studies of parenting forums (Milne *et al*., 2017). The UK online parenting forum Mumsnet, is a popular site, with 8 million unique visitors per month (Mumsnet, 2023). Mumsnet was selected as a public parenting forum, with a range of discussion boards that can easily be searched. Three relevant sub-forums were selected (Behaviour/Development, Children's Health and Parenting). Thread titles were searched for terms relating to toothbrushing, and threads related to toothbrushing resistance were analysed using qualitative content analysis (Schreier, 2012). Further details of this analysis and the coding framework are available elsewhere (Kettle and Marshman, forthcoming).

All threads included in the initial analysis were searched for terms relating to powered toothbrushes, both technical and colloquial. Relevant posts were read again by JK and refined into a coding frame of categories and sub-categories. Both authors discussed the coding frame, and the final version was applied to the sample of relevant posts by JK. One author is a dentist with experience of researching toothbrushing resistance, while the other has sociological expertise on health, illness and family relationships; this combination brought different perspectives to the analytical discussions.

Ethical approval was granted by the University of Sheffield. Mumsnet were contacted to ask for permission to publish findings in peer-reviewed journals, including quotations from posts. Mumsnet granted approval on the basis of anonymity for posters (including no usernames) and acknowledging Mumsnet as the source.

This research has been reported in line with the Standards for Reporting Qualitative Research (O'Brien et al., 2014).

Results

In April 2022, a targeted search was carried out on all threads posted on the selected Mumsnet sub-forums between 1st January 2010 and 31st December 2019. This identified 204 threads on toothbrushing resistance. This sample was then searched for terms relating to rechargeable and battery-operated powered toothbrushes. Excluding duplicated posts, this identified 111 threads and 240 posts that referred to using powered toothbrushes with children.

These threads largely focused on children under the age of three, as determined by the details provided in the original post (97/111 original posts referred to a child aged two or under, while 9/111 referred to a child aged three or over). In the remaining five original posts where age was not given, inclusion was based on the use of terms such as 'baby' or 'toddler' or descriptions of the children's behaviour. Around half the original posts referred to a male

child (59/111); the others referred to a female child (51/111) or male and female twins (1/111). Within these threads, seven posts were designated as irrelevant. Following a rereading of the threads, an additional 12 posts were included (e.g. directly responses that did not include the search terms). In total 245 posts were analysed.

The coding frame includes six categories: use of powered toothbrushes; description of powered toothbrushes; positive aspects; reasons for not using; approach to using; and discussions on Mumsnet. Each category is discussed below, with illustrative anonymised quotations. Clarifications of colloquial terms and initialisms are provided in square brackets.

Use of powered toothbrushes

Posters presented powered toothbrushes as a potential solution, or part of the solution, to toothbrushing resistance. While the focus of this analysis is *what* is said rather than the frequency, of 245 posts, 170 reported currently using powered toothbrushes or suggested using one as a solution to toothbrushing resistance. Posts recommending powered toothbrushes could be very enthusiastic:

> "*ELECTRIC TOOTHBRUSH!*
>
> *Don't know why but DS* [son] *loves it*."

In other cases, posters mentioned using a powered toothbrush without further comment. In addition, 25 posts were considering powered toothbrushes as a solution or asking further questions. Of the other 50 posts, 34 reported powered toothbrushes not working as a solution, or anticipated they would not work, and a further seven reported they had only worked temporarily. The other nine posts were not coded under this category.

Description of powered toothbrushes

Posters varied in terms of how they described the powered brushes they used. Some focused their description on the brand, where they purchased the brush or particular features, such as a character or a description e.g. 'flashing'. Terms used by dental professionals and

manufacturers such as ‘rechargeable’, ‘rotating’ and ‘oscillating’ were not used. Most referred generally to ‘electric’ brushes. There were references to the intended age of the user, including ‘baby’ powered toothbrushes, brushes for children, using smaller heads on an adult brush, and the use of an adult brush.

Positive aspects

Some posts explained why they felt powered brushes worked. There were positive aspects for children and parents. It was reported that children liked the characters, features (such as flashing lights and tunes) and the sensation:

> “*I got an electric baby toothbrush […] which has a light on it and vibrates. My baby loves it*.”

Some of these positive aspects are linked to strategies for addressing resistance, for example letting children choose a toothbrush featuring a favourite character:

> “*A Barbie electric toothbrush did the trick for me! I let her choose, she wanted a Barbie one and she is really good now*.”

Posters reported children liked having a grown-up brush and found these brushes fun and exciting.

Powered toothbrushes were helpful for parents. This was partly because powered toothbrushes were more acceptable to children, and therefore some children stopped resisting. Posters also emphasised the effectiveness of powered brushes and how easy they were to use. Powered toothbrushes worked well when children only tolerated a small amount of brushing or wanted to brush independently:

> “*I use electric toothbrushes on DS2* [second son] *as I don't get in there for long, it's more effective, I don't have to brush as such, just hold it in there*.”

Posters also mentioned the helpfulness of timers, as young children could understand how long to brush for.

Reasons for not using

As most children in the original posts were two or under, some posters were interested in powered toothbrushes, but felt these were not appropriate due to the age limits recommended by manufacturers:

> "*I think an electric toothbrush would be a game changer but the only ones I've found have been for 3+.*"

Posters also discussed reasons children might reject a powered toothbrush, such as being scared of the noise:

> "*I tried an electric toothbrush when he was around 17 months and he was petrified of it and that was before I even had the chance to use it, as he was scared of the sound*!"

Some children were temporarily interested in the powered brush, and then once it was no longer a novelty, returned to resistant behaviour.

Another issue was cost:

> "*I've thought about electric ones but they seem expensive*."

Other posters emphasised that 'cheap' powered brushes were available, and that these were effective. The language of 'cheap' powered toothbrushes may imply that posters view some models as too expensive. These threads did not discuss views on the cost of powered brushes in much detail.

Approaches to using

The discussions outlined how posters approached using a powered toothbrush with their children. This included combining powered toothbrushes with other strategies for addressing resistance:

> "*DD* [daughter] *can chew her brush in the bath. Then mummy has a go with the electric brush where ideally DD [daughter] sits nicely - we sing scales to distract and keep her mouth open."*

Posters also used strategies to address children's reasons for rejection, such as finding the noise scary or losing interest. Other posts simply recommended using a powered toothbrush. It may be that for some posters, other strategies are not necessary to achieve PSB.

Posters addressed concerns about age-appropriateness through research and seeking dental reassurance (in this case, for a one-year-old):

> *"I find an adult electric brush, as they have a small head, is the most effective and the dentist said this is fine"*

Posters sometimes acknowledged they were compromising in terms of recognised brushing standards, for example by using a powered toothbrush with a child under three or by allowing independent brushing:

> "*Things that helped were buying an electric toothbrush (they say for 6yrs+ but we used from 2)."*

However, in other cases, posters suggested powered toothbrushes made independent brushing acceptable:

> "*What I DID though is to buy an electric tootbrush [sic] as they are much more efficient than a manual one (That solves the issue of the children not been able to properly brush their teeth until they are 8yo)"*

Discussions on Mumsnet

These data were drawn from threads on toothbrushing resistance on the online parenting forum Mumsnet. In this context, discussions about powered toothbrushes involved parents seeking reassurance about using powered toothbrushes with very young children, sharing their experiences and commenting on practical considerations.

Compromises regarding age limits and independent brushing were justified to other posters as being better than the alternative (i.e. not achieving any brushing):

> "*I know it's not ideal but to be honest the other alternative is him not letting me get near him so it's been working for the last few weeks!"*

There were some examples of discussions about age-appropriateness. For instance, a poster who reported successfully using a powered brush with a two-year-old was asked about this decision:

> "*Electric toothbrush for a 2yo [two year old]? […] I always assumed electric toothbrushes wouldn't be suitable at such a young age?*"
>
> "*Seems OK – think it might have been for 36 months but honestly it's the less [sic] of all the other evils*."

These discussions demonstrate how posters justify the use of powered toothbrushes with under-threes.

Discussion

This study aids our understanding of how powered toothbrushes are viewed as a potential solution to toothbrushing resistance in young children on an online parenting forum. Posters on Mumsnet highlighted the benefits of powered toothbrushes, both in terms of child acceptability and effectiveness, as has been found previously (Bhatti *et al*., 2021a). Powered toothbrushes are presented as being successful because they make toothbrushing fun; they can work as a reward; they can relate to a child's interests and favourites; and they include useful features such as timers. Using a powered toothbrush reflects the strategy of

using a ‘novel toothbrush’, combined with other strategies for addressing resistance (Kettle and Marshman, forthcoming). Posters were also positive about the effectiveness of powered toothbrushes for short brushing sessions, and for independent use. It may be that some parents believe that independent brushing is acceptable in young children if using a powered toothbrush. Powered toothbrushes are more effective than manual brushes when used by adults (Davidovich *et al.,* 2020b). However, longer periods of independent brushing by children are associated with more decayed, missing and filled teeth (Collett *et al.,* 2016). It would be useful to explore parent’s beliefs about the appropriateness of young children engaging in independent brushing with powered toothbrushes.

Posters shared reasons for not using powered toothbrushes, including cost, the child losing interest and the child being afraid of the noise. Previous research has recognised that cost can be a concern for dental professionals, who may not recommend powered toothbrushes to patients in deprived areas (Bhatti *et al*., 2021a; Bhatti *et al,* 2021b). Some posts referred to ‘cheap’ powered brushes, while may be seen as an alternative option to rechargeable versions.

Another barrier in this sample was age limits; some posters were unwilling to use powered toothbrushes to address resistance with children under three, as per manufacturers’ guidelines (e.g., Oral B, 2022). However, other posters chose to ignore these guidelines. In these cases, posters justified this in terms of the challenge of toothbrushing resistance, and related concerns, such as not achieving any brushing or having to use a strategy of restraining or using physical force (Kettle and Marshman, forthcoming). The challenge of addressing toothbrushing resistance can be stressful and upsetting for parents (Aliakbari *et al.,* 2021), and it is important for parents to find a solution. However, parenting forums can normalise parenting experiences, and help to justify behaviour that goes against public health messages (e.g. Appleton *et al*., 2017). When posters frequently mention powered toothbrushes as a

potential solution to toothbrushing resistance on parenting forums, this may work to normalise using powered toothbrushes with children under three.

Posters on online parenting forums may invoke dental authority to justify a particular strategy regarding oral health care (Kettle and Marshman, forthcoming). In this research, there were examples of posters claiming dentists had said it was acceptable to ignore the age-related guidance from manufacturers of powered toothbrushes. For parents who struggle with toothbrushing resistance in young children, powered toothbrushes offer a potential solution, as a fun and effective option. Reassurance from dentists may encourage parents to try this technique. Parents may view posts on Mumsnet that report dentists promoting the use of powered toothbrushes as an example of this sort of reassurance.

Further research with parents/carers and dental professionals would be useful to demonstrate how powered toothbrushes are perceived as an option for young children, particularly with regard to toothbrushing resistance. This research offers a starting point for future analysis. Another issue for dental professionals is sustainability, which is a key consideration when dentists recommend toothbrushes to patients (and a recognised issue with powered toothbrushes) (Lyne *et al.,* 2020). While sustainability did not emerge as an issue in this data, it may also impact on discussions between dentists and parents regarding powered toothbrushes, and this would be useful to explore.

This paper uses an underused source of data: online discussions on a parenting forum. Posters on a parenting forum recommend powered toothbrushes and discuss their use as a solution to toothbrushing resistance. However, the nature of the data is also a limitation. Researchers are unable to ask follow-up questions or establish details. While focusing on a single forum allowed for detailed analysis of discussions, the nature of discussions may vary on other parenting forums. Mumsnet is recognised as predominantly middle-class (Jensen, 2013), and

it would be useful to purposively explore attitudes to powered toothbrushes in other contexts. Further research could use the coding frame developed here as a starting point.

Conclusion

Posters on the UK online parenting forum Mumsnet present powered toothbrushes as a potential solution, or part of the solution, to toothbrushing resistance in young children. Parents use Mumsnet to discuss whether powered toothbrushes are suitable for under-threes, and these discussions may normalise the use of powered toothbrushes with this age group. Further research with parents and dental professionals would be useful.

Acknowledgements

This research was funded by Procter & Gamble. An initial report based on this analysis was presented to Ian Barton of Procter & Gamble prior to the submission of this paper. The research team would like to thank Ian for his support and feedback on the initial report.

Additional materials

The coding frame is available from the corresponding author on reasonable request.

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