Supervised toothbrushing programmes in England: a national survey and multi-site case study

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Key points

- Describes current provision of supervised toothbrushing programmes (STPs) in England and summarises the changes in their provision compared to 2022 and 2024.
- Narrates four case studies of STP implementation and summarises key barriers and facilitators identified.
- Provides a baseline against which the national STP programme roll-out can be compared with.

Abstract

Aims Supervised toothbrushing programmes (STPs) reduce oral health inequalities and are a cost-effective way of preventing dental caries in children. This study aimed to detail current STP provision across England, compare it with 2022 and 2024 data, and explore barriers and facilitators to implementation.

Methods A national survey of local authorities (LAs) was combined with a longitudinal multi-site case study. Survey data were analysed descriptively, while semi-structured interviews with 14 stakeholders engaged in the commissioning and delivery of STPs across four sites were thematically analysed using implementation science frameworks.

Results Responses were received from 152 of 153 LAs, with 81% reporting a STP in 2025 (up from 48% in 2022 and 59% in 2024). The number of participating children more than doubled from 106,273 in 2022 to 238,636 in 2025. Case study findings highlighted two persistent barriers: uncertain funding and challenges engaging early years settings; and two key facilitators: relationship building and knowledge sharing.

Conclusions STP provision is expanding but remains variable. To achieve government targets of reaching 600,000 children, attention must move beyond one-off funding to ensure recurrent investment, workforce stability, and logistical support. Building local partnerships and facilitating knowledge exchange will be critical to sustaining equitable implementation.

Introduction

Caries prevalence in five year-olds living in England was 22.4% in 2024. However, children in the most deprived areas were twice as likely to experience decay as those in the least deprived.[1] Supervised toothbrushing programmes (STPs) were found to be a clinical and cost-effective[2] means of reducing both the prevalence and inequalities of dental caries when targeted by deprivation.[3] STPs involve children attending early years settings (nurseries, schools and childminders) brushing their teeth daily with fluoride toothpaste (containing 1,350–1,500 ppm) under the supervision of trained staff. STPs are designed to supplement home-based toothbrushing.

England lacks a national child oral health programme similar to those established in Scotland[4,5] and Wales.[6] However, in March 2025, the Department for Education (DfE) and the Department of Health and Social Care (DHSC) announced the allocation of £11 million for 2025/6 to support local authorities (LAs) to run STPs to reach 600,000 children aged 3–5 years in the most deprived areas of England. This announcement included a partnership with Colgate-Palmolive and the donation of 23 million toothbrushes and toothpastes over five years.

Recent surveys of STPs in 2022[7] and 2024,[8] demonstrated notable variation across England in uptake, sustainability and implementation, with delivery often sporadic and inconsistent. In 2022, 48% (68/141) of the respondent LAs had an STP, increasing to 59% (90/152) in 2024. The total number of settings involved was 2,325 in 2022 increasing to 2,978 in 2024, while the total number of children participating was 106,273 in 2022 and 143,200 in 2024.

Previous studies have provided an overview of barriers and facilitators to the implementation of STPs; however, they have mainly explored setting-level implementation such as staff feeling overburdened and competing priorities.[9,10] More recently, studies have considered system-level determinants such as funding, workforce issues and engagement, using implementation science to identify ways to optimise implementation and support expansion of STPs.[11] Therefore, this study aimed to a) describe the provision of STPs in England in 2025 and compare it with data from 2022 and 2024; and b) use an innovative case-study approach to better understand emerging issues to improve implementation.

Methods

This study involved conducting a national survey and a longitudinal multi-site case study. Case study research is a method recommended in implementation science for understanding complex system-level interventions and to generate pragmatic solutions to challenges that arise during implementation.[12] Ethical approval was provided by the University of Leeds Dental Research Ethics Committee for the survey (301121/KGB/338) and case studies (290524/PD/016).

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Data collection

A survey was used (online Supplementary Information 1), similar to the survey employed in 2022[7] and 2024,[8] to allow comparison of data from LAs regarding STP status, duration, number and type of settings, number and age of children, whether (and how) programmes were targeted, and barriers and facilitators to implementation. The survey was provided in various formats to consultants in dental public health, LA oral health leads and public health practitioners who were identified via professional networks. Completion of the survey was considered as consent. Data collection occurred between March and June 2025.

The multi-site case study included four sites. A case site was defined as a locality/localities implementing a STP. A purposive sample of sites was chosen to include sites from different geographic areas across England, with varied commissioning arrangements and programme configurations, at different stages of implementation and with varying levels of uptake. Within these sites, invitation emails were sent to a purposive sample of stakeholders along with an information sheet and consent form. Stakeholders included commissioners (e.g., consultants/specialists in dental public health or public health) and providers of STPs. Semi-structured online interviews were conducted using a topic guide (online Supplementary Information 2) based on the Consolidated Framework for Implementation Research (CFIR) version 2,[13] the Expert Recommendations for Implementing Change (ERIC)[14] and previous research findings. All participants provided written consent. Interviews were audio-recorded, pseudo-anonymised, and transcribed verbatim. A summary of each case site was provided to participants for accuracy checking. Data collection and analysis were iterative. This allowed for insights from early analysis to inform and refine subsequent interviews, leading to a deeper understanding of the data.

Data analysis

The survey data were analysed and compared with previous results from 2022[7] and 2024.[8] Qualitative data were imported into NVivo 14[15] for data management and analysed using framework analysis.[16] An *a priori* thematic coding framework was used to code the transcripts, created from several sources: the domains of the CFIR,[13] the ERIC[14] and familiarisation with interview transcripts. Data for each case site were analysed separately. Subsequently, data for all case sites were then synthesised and summarised to identify similarities and differences. Coding was discussed by members of the research team throughout the process to ensure credibility and rigour.

Results

Survey data

Responses from the national survey were received from 152 of the 153 upper tier LAs in England, with 123 (81%) having an STP, compared to 68 (48%) in 2022 and 90 (59%) in 2024 (Table 1). The majority of LAs implemented a targeted approach (96/123, 78%), most commonly using area-based deprivation. Sixteen LAs provided a universal programme.

STPs were delivered in LA nurseries, private, voluntary and independent nurseries, childminders, mainstream primary schools and special educational needs and/or disabilities (SEND) schools. The number of settings delivering STPs ranged from 1–247, while the number of participating children ranged from 43–11,927. There was a total of 238,636 participating children compared to 106,273 in 2022 and 143,200 in 2024. The STPs covered an age range of 0–19 and had been running between six months and 20+ years. Of the LAs that did not currently have a programme, 14 stated that they were planning to start one in future, mostly due to the recently announced government funding to LAs.

Multi-site case study

Four case study sites (localities, A–D) were identified, with an overview of each STP provided in Box 1. The STPs varied in size, staffing capacity, programme maturity, uptake, commissioning and funding arrangements and model of delivery. Within these localities, a total of 14 stakeholders were recruited from both LAs and the NHS (commissioners n = 10 and providers n = 4); 13 participated in both initial and follow-up interviews while one additional stakeholder took part in an interview after their appointment to the post with questions from baseline and follow-up topic guides included. The interviews (n = 27) took place between September 2024 and June 2025. Most follow-up interviews were conducted within seven months of the initial interview, and all took place after the DfE and DHSC announcement. Interviews lasted an average of 45 minutes (23–59 minutes).

Cross-case findings: what were the key barriers and how were these mitigated?

The main barriers and facilitators identified from the (qualitative data) case study sites, based on the CFIR domains, included two key thematic barriers: (1) infrastructure limitations, including a) uncertainty of funding, b) workforce capacity, c) logistical issues with supplies; and (2) engaging early years settings. The two key thematic facilitators included: 1) building relationships and 2) knowledge sharing.

Infrastructure limitations

Implementation of STP was shaped by three key infrastructure limitations: funding uncertainty, workforce capacity, and logistical constraints. The implementation and scaling of the STP were constrained by the short-term nature of the funding, high rates of staff turnover and/or instability within STP teams along with burdensome logistical arrangements for the distribution of supplies, all of which compromised programme expansion and sustainability. Participants emphasised the challenge of a lack of recurrent funding with stakeholders (including providers and early years settings) reluctant to invest their time and effort into implementing an initiative which lacked sustainable funding:

'*Because it does take a lot of time and effort to set this up. There is got to be that*

Table 1 Provision of supervised toothbrushing programmes across local authorities in England

	2022	2024	2025
Local authorities with supervised toothbrushing programmes	68	90	123
Change in number of local authorities	N/A	+22	+33
Settings	2,325	2,978	4,641
Change in number of settings participating	N/A	+653	+1,663
Children participating	106,273	143,200	238,636
Change in number of children participating	N/A	+36,927	+95,436

Box 1 Overview of case sites

Case site A

Initially, the STP was implemented in two local authorities (LAs) and scaled up to become a regional programme with 1,223 settings. The supervised toothbrushing programme (STP) involves a total of 68,738 children ranging from 3–5 and 3–11 years old from mainstream nurseries/schools and special educational needs and/or disabilities (SEND) schools respectively. The programme has been running since 2023 with a prior pilot scheme that began in 2019. Initially, it targeted children living in areas based on index of multiple deprivation deciles (IMD) 1–6, but now in some areas extends to all settings. Through partnership working and innovative commissioning, funding was originally secured from the National Health Service England (NHSE) but is now managed by the Integrated Care Board (ICB). The regional programme is delivered using a private provider. Plans include using the new funding allocated to LAs following the recent government announcement to expand the existing STP.

Case site B

The STP involves 82 settings which include primary schools, nurseries (school, LA, private, voluntary, independent), children's centres and a SEND school. There are approximately 3500 participating children aged 2–5 (mainstream settings) and 4–11 years (SEND settings). It is a targeted initiative according to dental caries data and commissioned by a LA. The programme has been running since 2022 and is delivered by a private dental practice. Plans include increasing the number of nurseries, engaging with childminders, and expanding into Year 1.

Case site C

An established STP running since 2014 with 107 settings including primary schools, nurseries (school, LA, private, voluntary, independent), childminders, and SEND schools with a total of 10,000 participating children aged 2–7 (mainstream settings) and 4–12 years (SEND settings). The STP employs a targeted approach based mainly on children living in IMD deciles 1–2. It is delivered by the local oral health promotion team and commissioned by a LA. Plans are to provide additional support to nurseries and schools in IMD 1–2 who have previously not participated and to expand to early years settings in IMD 3 and SEND settings.

Case site D

A well-sustained STP since 2008 delivered within 240 settings, including primary schools, nurseries (school, LA, private, voluntary, independent) and SEND schools. Delivered by oral health promotion teams with approximately 20,479 children participating aged 2–6 years. Commissioned by the NHS but with a dual-funding model in which the ICB typically fund the provider (oral health promotion teams) while LAs provide supplies (toothbrushes, toothpaste). Plans include using the newly allocated LA funding to enhance the existing STP, particularly supporting settings which have previously been resistant to adoption.

commitment of having that recurrent funding' – Commissioner 10.

'*We recognise it as a priority for our local area. Potentially other public health teams would not see that as a priority and if they were asked to implement supervised toothbrushing…they would find a capacity issue*' – Commissioner 05

'*One of the bigger factors as you get a bigger scheme is working out the distribution of all the toothbrushes. So that's been a challenge for us as we're so big and learning about the volume and how we're going to store that, how we're going to distribute, and the costs involved*' – Provider 07.

To overcome these infrastructure barriers, examples were given of where dedicated staff were able to compensate for structural gaps with personal effort and resourcefulness:

'*We are a very small team; we cover the whole of [region] so it is a challenge. We want to move mountains; we are all very passionate, so we all want to reduce the dental decay rates in our area*' – Provider 11.

Engaging settings

Engaging staff in early years settings was a prominent challenge. Early years staff were often difficult to reach initially due to factors like gatekeeping by administrative staff and lack of pre-existing connections. Once access had been gained, settings were sometimes hesitant to participate due to their heavy workloads and competing priorities. Moreover, there were ongoing challenges setting up the STPs once agreement was reached including reluctance of setting staff to engage with training all of which delayed and weakened implementation:

'*Sometimes the headteacher might want to take part and then you go along and speak to staff and they do not want. "No, we have not got time, we do enough already*"' –Commissioner 05

'*There are some headteachers that just like "no, absolutely not. This is not what we should be doing as schools. This is not in our remit at all*"'– Commissioner 09.

Participants reflected on a persistent challenge: that the early year settings most in need of the programme often remain the hardest to engage, highlighting a real-world limitation in equitable coverage even with intensive engagement:

'*My only concern would be that the schools that you most want to get on board do not necessarily come on board despite our best efforts. Your programme can only be as effective as the coverage and the appropriate coverage that it achieves*'– Commissioner 10

Despite the barriers described above two key facilitators were identified as implementation strategies employed in the case study sites.

Building relationships

Relationships between stakeholders were the key enabler of effective STP implementation and ultimately improving children's oral health more generally. Relationships built on interpersonal trust, relational continuity, and collaborative ties at all implementation levels were fundamental especially when STP are delivered at scale. STP implementation '*relies on the people*' to provide a supportive and pragmatic approach particularly when it comes to overcoming barriers such as engaging hard to reach settings. Indeed, the advice about engaging settings was 'do not try to do it alone':

'*For those hard-to-reach schools, the relationships with the local authority, the tapping into their connections has been really crucial for us*' – Commissioner 10.

The key stakeholders where relationships were essential included LA staff (in public health, children's services and education teams), those working in the STP provider organisations, early years settings themselves (including multi-academy trust leaders, governors, head teachers and managers) and parents but also with wider partners including health visiting teams, family hubs, school nurses to enable sustained and widespread implementation:

'*You need to involve other partners like the 0–19 teams…the school nursing teams and anyone else who has got links into school because if you have them on side then they can promote that programme for you. They are the ones who are going to school a lot more than we do because they have got that constant contact with them so, I think partnership working is key around that and communication*' – Commissioner 08.

These broader relationships were felt to overcome engagement barriers, and it was important to 'use as many avenues as possible to get in.' Various strategies were suggested: securing letters of support from senior officials (LA directors of education or public health), advocacy from influential stakeholders such as multi-academy trust leads and school governors, presentations at headteacher meetings, attending community events, highlighting neighbouring schools' involvement and engaging parents in workshops to encourage schools to participate. Nevertheless, with time and ongoing relationship-building, case study sites saw gradual improvements in uptake through persistent multi-level engagement tailored to local contexts with the ripple effect of positive peer influences. Furthermore, participants spoke of the importance of a collaborative approach to improving children's oral health more generally with STPs as just one intervention delivered as part of an overall oral health improvement strategy:

'*All of them need to be connected…because it gives that uniformed approach. They don't understand what it is when it's all disjointed, coming from different providers at different angles, people will push back and you won't get the ultimate effect you need*' – Provider 07.

Knowledge sharing

Participants reported accessing knowledge and intelligence within their own areas and from external sources such as national guidance, toolkits and training resources. Easy access to information was seen as an enabler:

'*I think it's certainly been quite challenging from the start growing it…every day we are learning new points about how to perfect it and how to grow and the BRUSH website is amazing for that, as a resource centre. It's something we get asked for, and we do point them in the direction of the website for that*' – Provider 07.

Locally, knowledge was shared about success stories and lessons from pilot projects in relatable formats such as testimonials that helped change perceptions. When setting up a new STP or during times of rapid expansion informal information-sharing had a tangible impact on implementation:

'*The local authorities are coming together to share learning and share ideas around supervised toothbrushing and discuss how resources can be used because people are at different points in terms of their supervised toothbrushing journey…there has been a lot of collaboration in our areas around the extension of the programme*' – Commissioner 02

'*We have got weekly meetings that we were having with the provider as they mobilised each of the sections and we corrected things as we went along, how things were not completely delivered but, we took on board their learning as they were mobilising as well*' – Commissioner 13.

Discussion

This study provides the latest overview of STP implementation in England by combining national survey data with a multi-site case study design. This research provides a baseline against which the national STP programme roll out can be compared. Moreover, the case studies which include interviews before and after the national DfE and DHSC announcement identified key barriers and enablers of the proposed implementation of STPs to 600,000 children aged 3–5 years old participating in the most deprived areas of England. Provision has expanded substantially since 2022[7] and 2024,[8] with more LAs commissioning programmes and participation more than doubling. Despite the progress, variation across LAs persists, with marked inequities in reach. The findings show there are currently 238,636 children participating in STPs, thus STP provision will require significant upscaling. Our case study findings demonstrate that funding is a necessary but on its own an insufficient condition for sustainable delivery. Additionally, the findings show that effective expansion requires stable workforce capacity, robust supply chains, and coordinated multi-sector partnerships, all of which take time to embed. Furthermore, short-term funding cycles undermine stakeholder commitment and limit the ability of LAs and providers to build and retain implementation infrastructure. These findings are consistent with wider implementation and oral health programme literature, suggesting that sustainable national delivery is more likely where multi-year commissioning, coordinated logistics and workforce capacity are in place.[17,18]

Engaging settings was a significant challenge across the case study sites. Notably, the settings most likely to benefit, those in the most deprived areas, were often the hardest to engage. A key contribution of this study is the distinction between structural barriers to engagement (e.g., limited staff capacity, high staff turnover) and those related to beliefs and attitude, which were shown to be responsive to communication and trusted leadership advocacy. For instance, some headteachers viewed STPs as outside their remit; however, case study findings demonstrated that when trusted intermediaries, such as health visitors, family hubs or multi-academy trust leads reframed STPs as aligned with school readiness, child wellbeing, and local health priorities, this led to a shift in perspective and consequently improved uptake. This suggests that while practical barriers require structural solutions, attitudinal barriers may change through targeted communication and support from senior leaders and peers. Accordingly, engagement strategies should be tailored to address both capacity limitations and normative beliefs.

The case studies highlight that relational infrastructure is a central driver of implementation. Relationship-building across LAs, providers, early years staff, health visiting teams and wider partners helped overcome engagement difficulties, opened communication channels and supported consistent delivery. This relational work often compensated for gaps in infrastructure and aligns with emerging evidence that complex public health interventions require distributed leadership and cross-sector collaboration to scale effectively.[18,19] Knowledge sharing whether through national resources, local networks, or peer-to-peer support was another key enabler. As programmes scale, creating formal mechanisms for sharing best practice is essential, this may include national toolkits, training resources, and forums for LAs.

The findings complement and extend earlier work by Broomhead and colleagues (2025), which identified funding, workforce issues and engagement as the main barriers to STP implementation. This study strengthens that evidence and provides explanatory insights into mechanisms of engagement. It distinguishes between structural capacity constraints and modifiable attitudes or norms, highlights the importance of relational capacity and suggests that relationship-building forms a core part of the infrastructure required for successful implementation. It also considers operational barriers and equity implications. These additions strengthen understanding of variations in implementation across England

and demonstrate how local knowledge sharing and peer advocacy can support uptake during programme expansion. Unlike prior national surveys, this study explains how and why implementation succeeds or falters during scale-up, demonstrating that relational and knowledge-sharing capacity function as core implementation infrastructure.

Implications for policy, practice and research

Policy should prioritise recurrent multi-year funding, national logistical support and investment in roles that support engagement, relationship-building and cross-sector coordination. Practice should focus on strategic use of trusted intermediaries, early logistical planning and peer learning; narrative and experiential evidence may be particularly useful for shifting perceptions in hesitant settings. The 2025/26 national expansion provides a useful opportunity to evaluate how funding, governance and local infrastructure shape equitable reach and inform long-term scale-up planning. Future research should explore which barriers are best addressed through structural investment, identify where behavioural change strategies might be most effective, and test relational and knowledge sharing strategies.

Strengths and limitations

A strength of this study was the ability to track trends over time using consistent survey methods. Combining this with implementation science frameworks adds theoretical depth and practical relevance. However, the case study focused on areas with established STPs, meaning perspectives from those areas that are slower to adopt were not captured. Additionally, the relatively short follow-up period limited our ability to assess long-term sustainability.

Conclusion

STP provision across England has steadily grown since 2022 and 2024. To achieve ambitious national targets, national and local action is needed to address infrastructure gaps and strengthen relational and knowledge-sharing systems. Only then can STPs deliver their full potential to reduce oral health inequalities and improve children's dental health.

Ethics declaration

The authors declare no conflicts of interest. Ethical approval was provided by the University of Leeds Dental Research Ethics Committee for the survey (301121/KGB/338) and case study (290524/PD/016). Consent to participate was implied by completion of the survey and consent was provided for interviews.

Data availability

The data that support the findings of this study are available on reasonable request from the corresponding author.

Author contributions

ZM, PD, KGB, SE and KH contributed to the conception and design of the study. ZM, TB, SE, and SW contributed to data collection. SE, TB, KH and KGB contributed to the analysis and interpretation of the study. ZM, SE, TB, drafted the manuscript, which was critically revised by PD, KGB, KH and SW All authors (KG-B, KH, PD, SE, SW, TB, ZM) approved the final manuscript.

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