A national survey of Supervised Toothbrushing Programmes in England

Kara Gray-Burrows (K.Gray-Burrows@leeds.ac.uk)
University of Leeds https://orcid.org/0000-0002-1550-5066
Peter Day
Associate Professor and Consultant https://orcid.org/0000-0001-9711-9638
Sarab Elyousfi
The University of Sheffield
Ellen Lloyd
Kristian Hudson
Zoe Marshman
School of Clinical Dentistry, University of Sheffield https://orcid.org/0000-0003-0943-9637

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Abstract

Introduction: Supervised toothbrushing programmes (STP) are a cost-effective public health intervention reducing tooth decay and health inequalities in children. However, the uptake of STP in England is unknown. This study aimed to establish the current provision of STP across England and summarise the barriers and facilitators to their implementation.

Methods: An online survey was sent to dental public health consultants, local authority (LA) oral health leads, and public health practitioners across England. Quantitative data was analysed using descriptive statistics. Barriers and facilitators were analysed using the Consolidated Framework for Implementation Research (CFIR).

Results: Information was received for 141 LAs across England. Approximately half implemented a STP (N=68/141). Most STPs were commissioned by LAs (N=44/68) and adopted a targeted approach (N=54/68). Barriers to implementation were: (1) Funding; (2) Communication & Engagement; (3) Relative priority; (4) Logistics; (5) Capacity. Facilitators were: (1) Integrated & mandated public health approach; (2) Collaboration & Ongoing Support; (3) Clarity; (4) Flexibility; (5) Available resources; (6) Ownership & Empowerment.

Conclusion: The current provision of STPs is varied, and although there are challenges to their implementation, there are also areas of good practice where these challenges have been overcome.

In Brief

- Identifies the variation in the current provision of supervised toothbrushing programmes across England.
- Summarises the barriers and facilitators to the implementation of supervised toothbrushing programmes.
- Provides evidence to support the need for further exploration on the implementation of supervised toothbrushing programmes and the development of efforts to improve their uptake and sustainability.

Introduction

Supervised toothbrushing programmes (STP) have demonstrated improvements in children's oral health, are cost-effective, and reduce health inequalities(1, 2). A STP involves children brushing their teeth supervised by nursery/teaching staff at a convenient timepoint during the day. Programmes in nurseries and schools, have been rolled out as part of national oral health promotion programmes in Scotland (ChildSmile)(3, 4) and Wales (Designed to Smile)(5). Evidence from Scotland has shown that STPs cost approximately £15–17 per child per annum and pay for themselves within three years through improvements in children's oral health and reduced need for dental treatment or the need for dental care

under general anaesthetic(1). Moreover, for children living in the 20% most deprived areas, there was a significant reduction in dental caries within one year of being enrolled within the programme, while all children showed significant improvements after three years of enrollment(2).

In England, health improvement, including oral health improvement is a statutory responsibility of local authorities (LAs) rather than the National Health Service (NHS)(6). In 2017, Public Health England conducted a 'stocktake' of LA oral health improvement programmes and found 74 LAs reported having a STP with most taking place in early years settings such as nurseries or pre-schools with children under 5 years old. However, little information was available about the numbers of children involved in each LA(7). Prior to the pandemic, the Department of Health and Social Care proposed STPs should reach 3-5-year-olds living in the 30% most deprived areas across England by 2022(8). Integrated care systems (ICSs) were established in July 2022; these systems involve partnerships of organisations to deliver integrated health and care services across local areas. STPs have been suggested as an intervention ICSs should consider as part of a targeted oral health prevention programme for children living in the 20% most deprived areas. Moreover, oral health promotion activities are now mandatory in early years settings(9), and there are ongoing efforts to see oral health inequalities addressed and STPs implemented nationally with support from the Office of Health Improvement and Disparities (OHID) and NHS England(10, 11).

Therefore, at present, responsibility for delivering oral health improvement, including toothbrushing programmes remains with LAs, but uptake and maintenance of these programmes is fragmented and anecdotally STPs are also delivered and/or funded by other organisations, including charities and NHS organisations. The pandemic has had a significant impact on these programmes(11), with not only the closure of schools and nurseries in the first lock down and then revised guidance issued with amended infection control procedures, but also pressure in these settings owing to staffing issues. So while there is support to expand STPs across England and potentially opportunities to do so (following changes to the way health and care services are integrated locally) there are also barriers to implementation.

The aim of this survey was to establish the current provision of STPs across England and to summarise the barriers and facilitators to their implementation from the perspective of those involved in commissioning the programmes.

Methods

Ethical approval

was provided by the University of Leeds Dental Research Ethics Committee (301121/KGB/338). A survey was developed consisting of 14 closed and open-ended questions and was reviewed by experts in dental public health and oral health promotion and was based on methods used by Public Health England in their earlier publication(7). The survey included questions about: commissioning organisation of the STP; number of nurseries/schools/childminders and children involved; how the STPs are supported and funded; their longevity; the impact of COVID-19; barriers and facilitators to implementation; and where STPs are targeted to specific areas/groups, the methods used to inform these decisions.

The survey was distributed within an email accompanied by an information sheet. Upon clicking the link, participants completed the survey on the Online Surveys webpage (https://www.onlinesurveys.ac.uk/). The survey was sent to consultants in dental public health, LA oral health leads, and public health practitioners identified through professional networks.

The survey was opened in January 2022, with three email reminders sent out and all surveys completed by June 2022.

Data analysis

The quantitative component of the survey was analysed using descriptive statistics. The analysis of the open questions was guided by the Consolidated Framework for Implementation Research (CFIR)(12), which is one of the most cited implementation frameworks. This allowed the most prevalent barriers and facilitators to implementation to be identified.

Results

Descriptive statistics

Information was received for 141 LAs across England, with approximately half implementing a STP (N = 68/141, 48%) in their locality (Table 1). The quality and completeness of data was limited. Most of these programmes were commissioned by LAs (N = 44/68) and adopted a targeted approach (N = 54/68). Toothbrushing programmes were primarily targeted by deprivation level, namely the 20–30% most deprived areas, with deprivation level being determined by measures including the Index of Multiple Deprivation (IMD), Income Deprivation Affecting Children Index (IDACI), eligibility for free school meals, free early learning child spaces, and pupil premium targets. Another key factor determining a targeted approach was the prevalence and severity of dental caries (e.g., number of decayed, missing or filled teeth (dmft) and number of hospital admissions for tooth extractions). Other factors influencing targeting of these programmes included specific age groups, special schools, and obesity rates. However, several participants reported the preference to provide a universal offer.

Table 1
Current provision of toothbrushing programmes across local authorities in England

Current provision of toothbrushing programmes	
Total response	**141 (a + b)**
LAs with STP programmes (a)	68
LAs without STP programmes (b)	73
LAs with commissioned STP programmes	44*
LAs with non-commissioned STP programmes	8*
LAs with both commissioned and non-commissioned STP programmes	7*
STP programmes adopting a targeted approach	54*
STP programmes adopting a universal approach (inclusive of those who were once targeted)	7*
STP programmes adopting both approaches - targeted for some settings (e.g., special education schools and universal for others e.g., nurseries)	2*
Setting characteristics (per LA)	
Total number of settings delivering STP	11–201
Total number of children participating in a STP	254–8689
Total age range of children participating in STP**	0–19 years old
Total years STP active	1 month – 20 years
Number of LA nurseries delivering STP	1–72
Number of children in LA nurseries participating in STP	30–1450
Age range of children participating in STP**	0–5 years old
Number of PVI nurseries delivering STP	1–55
Number of children in PVI nurseries participating in STP	19–3425
Age range of children participating in STP**	0–5 years old
Number of childminders delivering STP	1–17
Number of children at childminders participating in STP	4–60
Age range of children participating in STP**	0–13 years old

Current provision of toothbrushing programmes	
Number of mainstream primary schools delivering STP	2–60
Number of children in primary schools participating in STP	79–4145
Age range of children in primary schools participating in STP**	2–11 years old
Number of special schools delivering STP	1–11
Number of children participating in STP in special schools	9–1200
Age range of children participating in STP**	3–19 years old

Note: LAs = Local Authorities; STP = Supervised Toothbrushing Programme, PVI = Private/Voluntary/Independent

*Some participants did not provide this level of detail and therefore numbers do not add up to 68

** Age ranges based on those reported in survey

Table 2
Barriers and facilitators to implementing supervised toothbrushing programmes

Barriers	**Example quotes**
Funding	*"The costs for delivery of resources are huge"* *"Storage cost increases due to Brexit"* *"Cost if no external funding available"*
Communication & Engagement	*"Lack of capacity and understanding of how to engage with settings in terms of building relationships to break down barriers to participation"* *"Initial onboarding of sites is the main barrier – getting agreement from schools to partake"* *"Consent process is the other barrier – parents not returning consent forms."*
Priority	*"Ofsted requires improvement – toothbrushing often stopped to focus on improvements…Curriculum – OH not a priority"* *"de-motivated schools"* *"Concerns from teachers that is not part of their role, this should being done at home"*
Logistics	*"Parental consent and some settings think it's too complicated and time consuming if they haven't done it before"* *"Settings not fully equipped to deliver programme in line with following protocol"* *"Layouts of the setting can make it hard, have to work with setting on what will work"*
Capacity	*"Staffing levels within the schools, demand on the schools to deliver an already packed schedule of lessons, hesitancy to start programme due to lack of time"* *"Lack of storage"* *"Having all staff trained is time consuming as practitioners do not have much spare time out of nursery."*
Impact of COVID-19	*"Due to pressure in the system relating to COVID-19, some settings are still not operational for STP or have to pause for a time due to staffing changes/outbreaks and staff illness related to COVID-19."* *"Difficulties getting into settings. Settings confidence with working post-COVID. Training updates been difficult as staff been cancelling at short notice with COVID."* *"Worry of cross infection and COVID spreading"*
Facilitators	
Integrated & mandated public health approach	*"Mandated as part of the curriculum"* *"Linking into other public health programmes…to promote its value. Linking in with childminder networks etc. Early years team in council links in with early years providers and can help make contacts."*

	"The benefit of the integrated team in the council is connections to other public health initiatives and cross promotion"
Collaboration & Ongoing Support	*"Local knowledge of settings, partnership working between provider, LA and NHSEI (including Dental Public Health)."* *"Good relationships and communication between the provider and the schools and support from Local Authority colleagues in the schools teams to promote engagement."* *"Keeping in touch and offering as much support as the school needs."*
Clarity	*"Making the process easy for settings with simple, easy to read guidance."* *"Straightforward documents and quality assurance system"* *"Organised before you start the scheme, eg. Training, resources, talk to the children, maybe do planning session of oral health leading up to the start of the clubs."*
Flexibility	*"Flexible approach to fit their setting."* *"Be flexible in when you can deliver staff training and parent engagement sessions."* *"Providing training that is easy to understand and help the school to run the programme the way they would like to whilst following all protocol."*
Available resources	*"To ensure its long term success it must be funded continuously and not abandoned due to lack of funds! Good habits take time to take effect!"* *"Sufficient staff to deliver the program"* *"Good package of OH resources/links from start through to the end"*
Ownership & Empowerment	*"All staff on board who are highly motivated and supportive."* *"Using the local information on dmft to explain why this is an issue for this community…"* *"Having a local OHP lead to supervise delivery, empowering the staff to take on the responsibility to take on the programme"*

STPs were reported to be delivered in a range of settings including LA nurseries, private/voluntary/independent nurseries, childminders, mainstream primary schools, and special schools. Uptake of STPs across LAs was variable with the total number of settings delivering supervised toothbrushing per LA ranging between 11–201, covering an age range of 0–19 years old, and have been active from 1 month to 20 years (Table 1). Many participants reported how COVID-19 had impacted on the delivery of STPs, with programmes having to be stopped during the pandemic. As such, at the time of the survey, several areas had not yet re-started implementation of their toothbrushing programmes or were not yet operating at pre-COVID levels. In addition, several participants reported that they had just started to implement a STP with the aspiration to expand or implement in the near future.

Barriers and facilitators to implementation

From the responses to the open questions, data were collected on barriers and facilitators to the implementation of STPs. Guided by the CFIR, these were categorised into overarching themes, which are described below.

1. Barriers

Five key barriers to implementation were identified: (1) Funding; (2) Communication & Engagement; (3) Relative priority; (4) Logistics; (5) Capacity. Financial issues were a key barrier with the delivery and storage costs of resources as well as the difficulty of estimating costs depending on the longevity of the programme, with many expressing the need for external funding. It was reported that there was a lack of engagement from settings, with schools being seen as more difficult to engage with than nurseries. Schools were reported to struggle to prioritise oral health among the multiple demands on them. This was further compounded by the perception of some settings that oral health was not the responsibility of schools. Furthermore, there are logistical issues in relation to the initial set-up and maintenance of the programme, including gaining parental consent. Many settings were said to face physical barriers, such that the layout and facilities were not always able to deliver the programme according to the protocol. Finally, capacity of both the oral health promotion and setting teams to deliver the programme was said to be challenging given the time required for organisation and training when settings are already stretched.

In addition, almost all the responding LAs reported on how the COVID-19 pandemic had been a significant barrier, with many still not yet operating at pre-COVID levels. There were several reasons reported for the delay, particularly relating to child and staff absences due to illness, a lack of confidence regarding the handling of toothbrushes and assisting the children in a safe way to reduce infection transmission, and difficulties visiting settings to undertake training and quality assurance due to restrictions.

2. Facilitators

Six key facilitators to implementation were identified: (1) Integrated & mandated public health approach; (2) Collaboration & Ongoing Support; (3) Clarity; (4) Flexibility; (5) Available resources; (6) Ownership & Empowerment. The integration of oral health with other health promotion programmes (e.g., healthy schools/healthy eating) was felt to be beneficial to the programme's promotion. In addition, many participants felt STPs should be included in the mandated school curriculum and pointed to the recent Ofsted recommendations that settings must ensure the good health of children, including oral health. A key facilitator to the successful implementation of a STP was working in collaboration by adopting a partnership approach between settings, providers, LAs and NHS England. It was stated as important to build collaborations by fostering good communication and relationships, with providers maintaining ongoing support with settings to ensure the long-term continuation of the programme, including providing regular monitoring and feedback. In terms of knowing how to implement the programme, the need for clarity was emphasised, with any protocols being simple, easy to understand and providing a clear plan

to follow. Nevertheless, another facilitator was adopting a flexible approach to accommodate the local needs of the setting, including providing robust, yet flexible training that fit with the settings schedule and preferences. In terms of resources, there needs to be the availability of consistent financial, human, and physical resources to deliver the programme successfully. It was also posited that a high-quality package of oral health resources for the setting and to send home with the children, as well as the possibility of free resources would benefit the programmes' implementation and impact. Finally, empowering staff to take ownership of the programme and having a key lead in each setting for the overall scheme to drive implementation was seen as key to success. It was reported that it was important that staff were motivated and informed, which could be achieved by emphasizing the benefit and ease of the programme.

In addition, many participants were willing to share good practice and their STP resources, including training materials, protocols, quality assurance checklists and local evaluations for the benefit of implementation of STP in other areas.

Discussion

This study was conducted to investigate the current provision of STPs across England. Information was received for 141 LAs, with approximately half of these implementing a STP. Barriers and facilitators to their implementation were summarized from the perspective of those commissioning the programmes.

Compared to the 'stocktake' undertaken by PHE in 2017, the number of LAs with STPs has remained broadly similar (68 LAs in 2022, 74 LAs in 2017) although the responses to the survey suggest the pandemic has had a significant impact in the intervening period. The current survey provides further details for individual LAs of the number of settings and children taking part in the STPs with wide variation between LAs. For example, the number of settings involved per LA ranged from 11 to 201 and the number of children involved ranged from 254 to 8689 children. Similar variation was also seen in provision in special schools. This suggests room for expansion although the potential for expansion needs to be considered within the remit of government recommendations for STPs to be targeted to children living in the most deprived areas across England. Currently, most of the STPs adopted a targeted approach (N = 54/68), targeting mainly by deprivation level, namely the 20–30% most deprived areas. However, several participants reported the preference to provide a universal offer particularly in deprived areas of the North of England.

From the responses to the open questions, it was possible to summarise the barriers and facilitators. Some of the themes identified may have been predicted, for example the importance of funding, engagement from settings, and staff capacity. However, other themes such as priority placed on oral health and the need for resources to facilitate implementing a STP within a LA (or indeed within an individual setting) require further discussion. For example, oral health promotion activities are now mandatory in early years settings(9), which should lend priority to activities such as supervised toothbrushing, although it would appear that some settings are not aware of this standard or choose to

achieve it in a different way. In terms of resources, it appears that different LAs have developed their own resources and are willing to share these to facilitate other LAs establishing STPs and that such resources would be welcomed to overcome barriers around staff training, gaining parental consent and availability of appropriate quality assurance and infection control protocols. These resources go beyond what is currently available in the toolkit published by PHE in 2016(13). Further research is needed to explore further the barriers and facilitators, not just those experienced by commissioners of STPs, but also those experienced by settings, parents, and children and where possible to consider solutions to overcome the barriers.

The main limitation of the study was the quality of the data. Issues were noted in terms of the age of children reported to be involved. STPs mainly involved children 3 years and older although some LAs reported data using broader age categories for example 0 to 5 years. It was also noted by participants that the data provided was an estimate and that numbers of settings and children involved varied with many noting expressions of interest in expanding STPs back to pre-COVID levels or had plans for further expansion. This suggests the need for a mechanism to allow data to be updated regularly to monitor the size and reach of STPs and whether any plans for expansion are realised.

Conclusion

In summary, just under half of the LA that responded currently implement a STP, with the majority being LA commissioned and targeted by deprivation level. STPs were provided through a variety of delivery models and the number of settings and children participating in STPs ranged from very small scale to in the thousands. Several barriers to implementation were reported and the COVID-19 pandemic has undoubtedly had a substantial impact on STP. However, several facilitators to implementation were also reported, with LA's keen to share good practice and resources. Work is currently being undertaken to explore the implementation of STPs further with the intention of developing efforts to improve their uptake and sustainability.

Declarations

Declaration of interests

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Author contribution statements

KG-B, ZM, and PD contributed to the conception and design of the study. All authors contributed to data acquisition. KG-B, EL, KH, & SE contributed to the analysis and interpretation of the study. KG-B, SE, PD, ZM, & KH drafted and the manuscript; which was critically revised by KG-B, ZM, & PD. All authors gave final approval and agree to be accountable for all aspects of the work.

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