Toothbrush pack distribution and oral health education using 'PASTE' for 5-11 year olds in North Somerset schools: A Pilot Scheme

Final Evaluation Report July 2025

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Key points

- 4 schools participated in 18 month pilot
- Target population: children in years 1-6 (ages 5-11)
- The intervention involved oral health champion training for staff, quarterly education via lessons and assemblies of the importance and technique of toothbrushing and distribution of toothbrush and toothpaste packs.
- As a tool for learning, the message each time was to “Brush using PASTE”.
- PASTE is an acronym designed to teach children to use a **Pea-size blob** of fluoride toothpaste, brush **Around all surfaces** of the teeth and tongue, **Spit don’t rinse** the toothpaste out at the end, brush for **Two minutes**, **Everyday twice**.
- 36 educational sessions delivered
- 4,840 packs provided to 1,360 children
- 4 staff trained as oral health champions
- Increased oral health literacy (64% could list some or all elements of PASTE, a previously unfamiliar acronym)
- Improved toothbrushing habits (56% children who were brushing irregularly now do so twice a day
- 77% parents report improved brushing
- Overall the pilot was positive showing strong potential for interventions like this in the future.

Executive Summary

Rationale

Good oral health is essential for good physical and mental health. When oral health is poor, it can negatively impact everyday activities such as eating, speaking and smiling, as well as a person's confidence and ability to socialise. Brushing teeth twice daily for two minutes and reducing sugar intake from a young age is proven to prevent tooth decay for years to come. Despite this, 120 children (aged 0-14 years old) from North Somerset had teeth extracted due to tooth decay in the year ending March 2023.

There are several oral health promotion initiatives targeting 0-5-year-olds in North Somerset but a gap in support for older primary-age children. This scheme specifically targets 5-11-year-olds living in some of the most deprived areas where the need for improved oral health is greatest.

Methods

Four schools in the most deprived areas - those in IMD (indices of multiple deprivation) 1 and 2 - were invited to participate in the 18-month pilot. The intervention involved oral health champion training for staff, quarterly education via lessons and assemblies of the importance and technique of toothbrushing, coupled with the distribution of packs containing a toothbrush and toothpaste for children in years 1-6 (ages 5-11). As a tool for learning, the message each time was to "Brush using PASTE". PASTE is an acronym designed to teach children to use a **Pea-size blob** of fluoride toothpaste, brush **Around all surfaces** of the teeth and tongue, **Spit don't rinse** the toothpaste out at the end, brush for **Two minutes**, **Everyday twice**. Surveys were conducted with children, parents and staff at the start, mid-point and upon completion. In addition, focus groups were held to gather more in-depth insights.

Results

The outcomes were achieved as follows:

- Oral Health Education in schools has increased
  - 1 school engaged in staff oral health champion training (n= 4 staff)
  - All 4 schools welcomed at least 2 sets of educational sessions (n= 36 sessions)
  - All 4 schools opted in to the regional supervised toothbrushing programme
- Brushing habits have improved
  - 56% children who were brushing irregularly now do so twice a day
  - 59% children say PASTE helped them brush better
  - 77% parents report improved brushing
- Oral Health Literacy has improved
  - 64% could list some or all the elements of PASTE, a brand-new acronym they previously didn't know
- The perceived need for the packs was variable according to child and staff surveys
- The scheme was acceptable to school staff on all counts

Conclusion

Results indicate that memorable oral health education may improve capability, motivation and social opportunity for toothbrushing, and that regular pack distribution may improve the physical opportunity. Limitations of the pilot include data variance due to survey response and recall. Staff found the intervention easy to implement and impactful for children. Parents demonstrated improvement in children's brushing habits. Children vocalised enthusiasm for the sessions, the packs and the improvement to their brushing at home. Overall, the feedback was positive showing strong potential for interventions like this in the future.

Introduction

Rationale

Good oral health is crucial for overall physical and mental well-being. Poor oral health can negatively impact eating, nutrition, speaking, smiling, self-confidence, and social interactions. Regular toothbrushing and reduced sugar intake from a young age are proven to prevent tooth decay. Despite this, 120 children aged 0-14 in North Somerset had teeth extracted due to tooth decay in the year ending March 2023.

Background

More 5-10-year-olds are admitted to hospitals for tooth decay than any other reason, leading to an estimated 60,000 missed school days annually in England.

Children in deprived areas are twice as likely to experience tooth decay and three times more likely to need tooth extractions.

In North Somerset, 52% of 5-11-year-olds were not seen by a dentist in the 12 months preceding June 2022. The percentage of 5-year-olds with tooth decay increased from 14% in 2019 to 22% in 2022, with higher rates in deprived areas.

Amongst North Somerset young people (0-19 year olds) 120 had teeth removed under general anaesthetic for the primary diagnosis of caries (tooth decay), in the year 2022-2023. This is a rate of 253.9 (compared to England's rate of 236) per 100,000 young people.

Intervention

Scheme Design

Targeted toothbrush pack distribution is an evidence-based intervention for children at high risk of poor oral health. Typically, this is achieved through postal deliveries or health visitors, with health visitors providing guidance alongside the packs for better outcomes. In North Somerset, health visitors distribute packs at a child's one-year health check through the regional First Dental Steps programme, but no such scheme exists for older children. This pilot aimed to address this gap by reaching families with both guidance and packs through schools.

The Toothbrush Pack Distribution Scheme was designed for 5-11-year-olds in the most deprived areas of North Somerset. The scheme involved distributing toothbrush packs and providing oral health education sessions quarterly over 18 months.

Objectives

The programme aimed to:

- Increase access to oral health education and resources.
- Engage more children in oral health interventions.
- Improve daily toothbrushing habits.
- Reduce hospital admissions for tooth extractions.

Methodology

Four schools in the most deprived areas of Weston-super-Mare were selected based on the 2019 Indices of Multiple Deprivation (IMD) and classified as IMD 1 and 2. The intervention included:

- **Oral Health Champion Training**: Staff from participating schools received training to become oral health champions.
- **Quarterly Education Sessions**: Lessons and assemblies were conducted to teach children the importance and technique of toothbrushing.
- **Distribution of Toothbrush Packs**: Packs containing a toothbrush, toothpaste, and educational materials were distributed to children in years 1-6.
- **PASTE Acronym**: The acronym PASTE (Pea-size blob of toothpaste, Around all surfaces, Spit don't rinse, Two minutes, Everyday twice) was used to teach children effective toothbrushing techniques.
- **Surveys and Focus Groups**: Surveys were conducted among children, parents, and staff at the beginning, mid-way, and end of the pilot, along with focus groups to gather qualitative feedback.

Using surveys to schools, parents and children, we measured:

- self-reported increase of toothbrushing habits
- increase in oral health knowledge
- access to education about oral health
- the number of children engaged in an oral health intervention

We drew a benchmark in prevalence of tooth decay and hospital admissions for tooth extraction, using national epidemiology data, PHE fingertips data and to a lesser extent, self-reported survey data. Whilst this won't measure short term changes, the data can be used to track trends over several years, should the pilot be extended.

Results

Table 1: Summary of participants and their uptake of interventions

School number	School Name	IMD	No of children	No of packs distributed	No of staff trained	No of educational sessions delivered	Took up offer of supervised toothbrushing
1	Bournville	1	420	1800	4	9	Yes
2	Windwhistle	1	310	1240	0	7	Yes
3	Oldmixon	2	210	1080	0	6	Yes
4	Haywood	2	420	720	0	2	Yes

Execution

- **Engagement**: All schools (Bournville Primary, Windwhistle Primary, Oldmixon Primary, and Haywood Village Academy) initially agreed to participate, reaching children in years 1-6 within the first term. Haywood Village Academy later declined further participation, citing the frequency of assemblies as excessive.
- **Staff Training**: Bournville Primary trained four staff members, while other schools did not put forward any staff for training.
- **Survey Distribution**: Surveys were distributed at baseline, mid-point, and end of the scheme, with varying levels of response. Table 2 displays the response rate for each of these.
- **Session Delivery**: Sessions were conducted every three months, tailored to each school's preferences. Some schools opted for assemblies, while others chose classroom sessions.
- **Content of Sessions**: The PASTE acronym was taught in all sessions, with variations based on children's questions and interactions. An unexpected partnership with a local theatre company led to creative inputs, including drama workshops and a song about PASTE.

Table 2: Response rate to surveys from children, parents and teachers

Group	Approx total	Baseline	Mid-Point	End
Children	1,210	132 (10.9%)	129 (10.7%)	27 (2.2%)
Parents	605	51 (8.4%)	21 (3.5%)	0 (0%)
Teachers	45	18 (40%)	7 (14.3%)	0 (0%)

The Toothbrush Pack Distribution Scheme demonstrated several positive outcomes, indicating its strong potential as an effective public health intervention. A summary can be found in Table 3 with more details in the discussion that follows.

Table 3: Summary of outcomes, objectives and results of intervention

Outcomes and Objectives	End Results
Increase oral health education	
Train at least one school based oral health champion in each school involved	1 school engaged in this training, with 4 staff trained
Implement a series of school-based oral health education programmes	36 sessions delivered
Implement a whole school approach to better oral health	All 4 schools opted into supervised toothbrushing for preschool and reception, and 2 extended the offer to year one pupils as well.
Measure number of **schools** engaged, educational **sessions** delivered, **children** reached and toothbrush packs distributed	4 schools engaged 36 sessions delivered 1480 children reached
Improve toothbrushing habits and embed these practices in daily routines	
Increase from baseline in children brushing their teeth twice a day for two minutes	56% of children who brushed irregularly at baseline brush at least twice a day now 77% of parents report improved brushing frequency, duration or co-operation. 59% of participants reported that PASTE helped improve their brushing habits, with 19% brushing for 2 minutes more effectively and another19% brushing twice a day more consistently.
Improvement from baseline of children's oral health literacy	64% could list some or all of the tips associated with the PASTE acronym.
Distribute toothbrush packs and establish perceived need for packs	
Assess the perceived need for toothbrush packs	Mixed opinion on the perceived need and acceptance of the toothbrush packs. 25% of children felt the packs filled a financial gap or provided resources they lacked at home.
Distribute toothbrush packs to children	4,840 toothbrush packs distributed
Assess acceptability to school staff	
The scheme was acceptable to school staff	All responding teachers felt the assemblies were well-integrated into the school day and appropriate for the children. Teachers noted children's excitement and positive reception of the packs.

Discussion

Oral Health Education in schools has increased

At baseline, 28% of teachers said that they provide oral health/hygiene education in their teaching each term; 50% gave it once a year and 22% never gave oral health education. In this intervention the usual oral health education was enhanced by reaching all children in years 1-6 every term for 18 months (in two schools), termly for one year (in one school) and twice in 18 months (in one school).

All four schools have opted into the regional supervised toothbrushing programme, undertaking daily toothbrushing with at least one year-group of their children. This is accompanied by oral health training for those who are carrying out the supervision. In no small part, this Toothbrush Pack Distribution programme has brought oral health to the forefront of these teachers mind and may have contributed to the decision to be part of the regional scheme and for two of these schools to extend the supervised toothbrushing programme into older classes.

One of the schools trained four members of staff as oral health champions however, the remaining three did not take up this offer despite earlier enthusiasm for this element of the intervention. It was not clear why this enthusiasm waned, but could be due to staff turnover where the initial contact for the intervention was enthusiastic but the person who took over after the staff changes, didn't feel able to commit others to the training due to a felt lack of time, capacity or resource, or perhaps even priority for oral health improvement.

Brushing habits have improved

At baseline, children's surveys suggested that 38% didn't brush their teeth twice every day, whilst 58% of under 7s weren't ever supervised (70% of all children weren't ever supervised) by an adult.

Of those who were not brushing their teeth twice a day at the start of the programme (n=34) 56% (n=19) had started to do so after three packs distributions/assemblies.

59% of children felt that their brushing had improved with introduction of the PASTE assemblies.

19% of the children felt they are better at brushing for two minutes and 19% felt they are better at brushing twice a day.

"When coupled with the talk, it helped give children independence and know-how to look after their teeth confidently"

The parent's baseline survey told us that 39% of children brushed their teeth less than twice a day. At baseline, 45% of parents said they had difficulties brushing their children's teeth, this was mostly put down to children resisting it whether because it was boring, time consuming or due to sensory needs.

After 3 distributions, 81% of parents thought that the gift of the packs inspired better brushing mostly because of excitement for using the new kit, but some cited the coupling of the packs with the assemblies where they had learnt new information.

Oral Health Literacy has improved

64% of children could list all five tips related to PASTE – a totally new acronym to them at the start of the programme. Teachers felt that the messages were going in and believed that awareness of what good toothbrushing looks like and why it's important had improved.

The perceived need for the packs was variable

25% of the children said that the packs served a purpose – filled a financial gap or provided resources they didn't have at home. There was dispute amongst the children over whether the toothpaste was an acceptable flavour. Whilst two of the twenty-one parents volunteered that they didn't need the pack as they already had what they needed at home, one said it was nice to have it for free. Some suggested that other items be included in future interventions such as timers or plaque reveal tablets.

12% of parents said that their child had tooth decay, and they knew this either because they could see it or because a dentist had told them so.

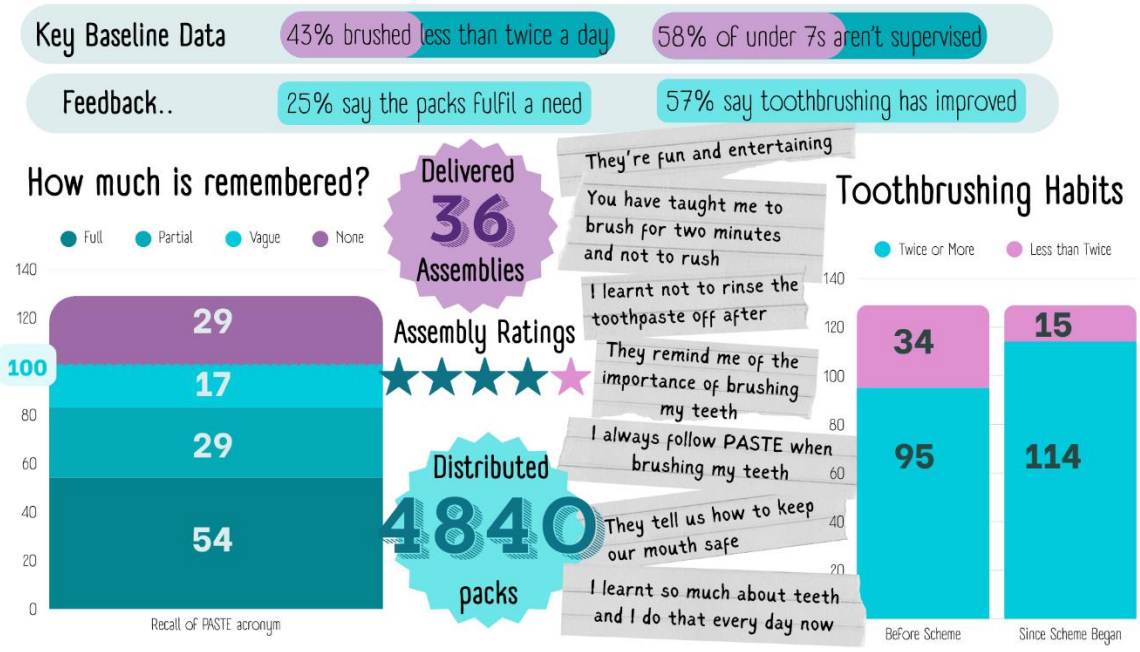
The scheme was acceptable to school staff

All responding teachers felt that the assemblies fitted in well with their school day, were of the right length, not too frequent and the right level for the children. Six of the seven respondents felt like the educational input was making a difference to their class children, with one who couldn't be sure but added that the "children remember the rules of PASTE" and were "excited and happy" to receive the packs. In fact, all the teachers mentioned excitement (or words to that effect) in relation to the children getting their packs.

Where bringing in oral health education and distributing the packs was acceptable to both teaching and senior leadership staff, there was no obvious shift in whole school approaches such as a healthy food and drink policy. How to go about inspiring this, is a consideration for future work.

Survey Feedback

To explore the outcomes further, the following paragraphs take each set of surveys and their accompanying data at a time, highlighting key indicators, general feedback and direct quotes.



Children

At the mid-point survey, 64% of children could remember some or all of the elements of PASTE, with 42% recalling all 5 elements correctly. This was assessed by asking children to complete the sentence "PASTE helps me to remember…". A further 17 children (13%) answered in ways such "… how to clean my teeth", indicating that they know what the acronym is and possibly find it helpful, but didn't use the space to identify which if any, elements they can recall. 22% (n=29) said they couldn't remember what it meant.

There was an indication that children's toothbrushing habits were improving already, with 56% of children who weren't brushing their teeth enough before the intervention brushing their teeth at least two times a day by the time they completed the mid-point survey. That equated to a 22% increase in children brushing their teeth at least twice a day between September 2023 and May 2024.

On the whole, children enjoyed the assemblies with 73% awarding a 4- or 5-star rating.

At the end far fewer children responded and overall insight was less indicative of outcomes, but the following data was gathered.

A focus group heard that between them, children have learnt lessons from all the elements of PASTE:

P: "you taught me I only need a pea size blob [of toothpaste] and that has helped me brush my teeth better and for longer because I'm not getting toothpaste everywhere"
A: "I used to only brush these teeth [points to incisors], your assemblies have taught me to brush all around me mouth…"
S: "I follow PASTE now but my parents still do not – they always gargle!"
T: "you have taught me to brush my teeth for two minutes and not try to rush"
"PASTE is easy to remember and has helped me brush for two minutes…"
"Sometimes I rush and I remember you saying "it should take two minutes" and I go back and do it more!"
E: "I used to sometimes miss brushing my teeth before school and I would think it didn't matter that much, but now I make sure I always brush my teeth twice every day"

Of the 25 children who responded to the survey, ten children volunteered that they are better at brushing their teeth now than before. Children were asked what, if any, elements of PASTE they felt they'd improved in. 25 of them responded: with 10 (37%) saying P, and 19% (n=5) for both T and E,

indicating the main difference has been to the amount of toothpaste used and the length / frequency of brushing.

There was a clear divide with regards to how children felt about the packs, though all seemed to appreciate getting them, some liked the toothpaste while others didn't, and some liked the toothbrushes while others didn't. One commented on liking the toothbrushing chart to keep track of whether they'd brushed. Anecdotally, when delivering oral health education, children would talk to the oral public health specialist delivering the session. Some mentioned that they had an electric toothbrush at home, while others mentioned that they had never had a toothbrush at all – so while the need is varied it is clear that, packs have been of benefit to some.

The writing, performing and watching of the song was popular with 4 free-text comments mentioning it as something they enjoyed. The song was put on a video streaming platform in February 2025, after it was shared with children in their final sessions, and it reached circa 80 views a day for a week.

Parents

Those who responded (n=21) to the parents' mid-point survey (collected in January) said their children enjoyed receiving the packs and appeared to be brushing with a new enthusiasm, requiring less nagging and brushing for longer.

"When coupled with the talk, it helped give children independence and know-how to look after their teeth confidently"
"The pack encouraged excitement around teeth cleaning and the talk definitely increased her knowledge and confidence in how to brush her teeth herself. She was very keen to share what she's learned."
"She was very excited about a new toothbrush and toothpaste from school where she received the pack. Focused more on completing the whole two minutes of brushing properly."
"He is definitely more likely to go first in the morning to brush his teeth so don't have to nag so much now."
"Wanting to use the new toothbrush and paste. Also knowing what happens if don't clean teeth"
"They think about how they're brushing"
"They were excited to use it"
"Better brushing"
"They brush more"

They liked the packs and found them good quality, though again, there were mixed opinions about the toothpaste.

Staff

Staff feedback about assemblies was positive.

"Assemblies are great, always catchy and engaging with something to remember like a song or a rhyme or a mnemonic to remember. The visuals and props always really help too. I like the big teeth model!"
"Assemblies were very informative and made interactive and fun for the children."
"The training we received was really good. Children enjoyed the recent assembly with the different toothbrush characters."
"I think they [the assemblies] have worked really well and been really effective"
"They [the assemblies] have been informative and the children have been enthused and enjoyed them"

All respondents felt that the educational input was aimed at the right level, engaging and relevant for all the children present and easy to accommodate in their school timetable. They felt they were of the right frequency and length.

Of the packs staff found it easy to hand out to children as part of their end of day routine and felt that they would make a positive difference for families with a couple less items to buy. Two teachers were

unsure of how well the packs were being utilised once home, and that perhaps more engagement was needed around the parents. All reported how children loved or were excited to receive the packs, some wanting to use them immediately together in the classroom and others excited to get home to use them.

"The children love the toothpaste and toothbrush packs. I think they must make such a difference to our families but I don't know how they utilise them at home."
"Children were excited to get their packs again and wanted to brush their teeth in class!"

Two teachers admitted that they couldn't be sure of the impact of the programme as a whole but the remaining 5 were sure it was having a positive impact on the children.

"Children remember rules of PASTE."
"I think the scheme works well"
"Children are more aware of how to brush their teeth."
"We follow up in class going over the 'paste' words to remember."

Limitations

Several limitations were identified during the evaluation:

Survey Response Rates: The decline in survey responses over time, particularly from parents and teachers, limited the data available for final analysis. This suggests a need for improved engagement strategies to maintain participation throughout the intervention.

Retention of School Engagement: The disengagement of Haywood Village Academy and the challenges faced by Windwhistle due to staff changes highlight the importance of consistent engagement and support for participating schools.

Longevity of messaging: The low uptake for oral health champion training indicates that more could be done to emphasise the importance of embedding health promotion within existing services. The enthusiasm for the creative elements like the creation of the PASTE song perhaps highlights the rarity of this style of education and perhaps an opportunity for future intervention design.

Recommendations

The positive outcomes of the Toothbrush Pack Distribution Scheme suggest several implications for future public health interventions. These are described in Table 4.

Table 4: Recommendations for future oral health interventions with children and young people

	Rationale	Recommendation
Sustain engagement	Retention was lost from two out of the four schools who originally embarked on the scheme effecting the consistency of oral health education delivery, pack distribution and survey response.	Strategies to maintain engagement from schools, parents, and children throughout the intervention are crucial. This could include regular communication, incentives for survey participation, and ongoing support for schools; as well as improved offers for staff champion training.
Be creative	Whilst feedback about the assemblies was altogether positive and work was put into these being fun and engaging, feedback specifically regarding the sessions	Offering participatory and creative educational input, may enhance the experience and make the messages more memorable as well as holding a legacy such as being able to share the children's

	with theatre makers was unanimously positive due to the participatory nature.	learning on online platforms for them to revisit.
Integrate into service	The core aim of the staff oral health champion training was to establish in house experts capable of sustaining oral health education and advocating for policy change. This wasn't achieved in three of the four schools as uptake was low.	Future interventions should aim to have oral health embedded into policy and practice as a central objective, not treat it as an add-on.

Conclusion

The Toothbrush Pack Distribution Scheme has shown potential in enhancing oral health education, toothbrushing habits, and oral health literacy among children in North Somerset. Despite some limitations, the positive feedback and outcomes suggest similar interventions could be effective in the future and elsewhere. Future schemes should focus on sustained engagement, creative inputs, and integration with other health promotion initiatives to maximize their impact.

Results indicate that toothbrushing habits, a key preventative measure in managing tooth decay, are improved with regular education and pack distribution. Raising awareness among children and school staff, combined with practical guidance, likely contributed to this success. Providing packs ensured all children have the resources to brush their teeth at home, support some may not have had otherwise.

Measuring clinical outcomes was challenging due to the sampling nature of the epidemiology data and the time lag between oral disease progression and prevention efforts.

Economically, the intervention required a significant investment – both in pack provision and staff time for education and coordination. Whilst there have been positive outcomes, the embedding of oral health champions to continue the work didn't go as planned, raising questions about long-term sustainability.

The partnership working with the School Nurses who took on some of the delivery could be worked up to improve the acceptability of this scheme and enable an expansion either in terms of time scale or geographical reach.

The unexpected collaboration with a theatre company resulted in engaging drama workshops and a music video creation, which older children particularly enjoyed. This highlights the value of creative approaches and supports recommendations to include similar educational elements in future programmes.