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Oral health promotion in acute hospital setting: a quality improvement programme

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ABSTRACT

Tooth extraction is the most common hospital procedure for children aged 6–10 years in England. Tooth decay is almost entirely preventable and is inequitably distributed across the population: it can cause pain, infection, school absences and undermine overall health status.

An oral health programme (OHP) was delivered in a hospital setting, comprising: (1) health promotion activities; (2) targeted supervised toothbrushing (STB) and (3) staff training. Outcomes were measured using three key performance indicators (KPI1: percentage of children/families seeing promotional material; KPI2: number of children receiving STB; KPI3: number of staff trained) and relevant qualitative indicators. Data were collected between November 2019 and August 2021 using surveys and data from the online booking platform.

OHP delivery was impacted by COVID-19, with interventions interrupted, reduced, eliminated or delivered differently (eg, in-person training moved online). Despite these challenges, progress against all KPIs was made. 93 posters were deployed across the hospital site, along with animated video 41% (233/565) of families recalled seeing OHP materials across the hospital site (KPI1). 737 children received STB (KPI2), averaging 35 children/month during the active project. Following STB, 96% participants stated they learnt something, and 94% committed to behaviour change. Finally, 73 staff members (KPI3) received oral health training. All people providing feedback (32/32) reported learning something new from the training session, with 84% (27/32) reporting that they would do things differently in the future.

Results highlight the importance of flexibility and resilience when delivering QI projects under challenging conditions or unforeseen circumstances. While results suggest that hospital-based OHP is potentially an effective and equitable way to improve patient, family and staff knowledge of good oral health practices, future work is needed to understand if and how patients and staff put into practice the desired behaviour change and what impact this may have on oral health outcomes.

WHAT IS ALREADY KNOWN ON THIS TOPIC

⇒ Tooth extraction is the most common hospital procedure for children aged 6–10 years in England.
⇒ Tooth decay is almost entirely preventable and is inequitably distributed across the population.
⇒ Oral health education and promotion can be effective in improving oral health literacy and stimulating positive behaviour change, particularly when based on the Health Belief Model and when involving both parents/carers and children.

WHAT THIS STUDY ADDS

⇒ The implementation of an Oral Health Programme (OHP) in a 'non-traditional' health promotion and prevention setting, is potentially an effective and equitable way to improve knowledge of good oral health practices and encourage positive behaviour change.
⇒ The use of patient demographic data throughout the intervention allowed for enhanced services and supported the monitoring of health inequalities.

HOW THIS STUDY MIGHT AFFECT RESEARCH, PRACTICE OR POLICY

⇒ Health promotion programmes deploying a targeted universalism approach in a hospital setting could potentially be an effective approach to equitable population health improvement.
⇒ Key OHP components and overall learning could be applied to other National Health Service hospitals.
⇒ Future work should include rigorous 'down steam' evaluations to demonstrate long-term impact, for example, future dental decay rates in those receiving supervised toothbrushing.

PROBLEM

Dental decay remains a significant, global public health issue, affecting up to 90% of particularly young children, with disadvantaged populations at particular risk.[1–7] Paediatric dental disease affects children's ability to eat, speak and socialise, impairing school readiness and creating high levels of health system demand.[8–10] In 2019, tooth extraction for dental decay was the most common hospital procedure for children aged 6–10 years old in England,[11] though the distribution of paediatric dental disease is inequitable.[9–11] Dental decay prevalence is almost double among Asian or Asian British children (36.9%) compared with those of white British ethnicity (20.6%), the group with the lowest prevalence.[8] Dental disease is also more common in more deprived areas: in

2016–2017, over one-third (36.3%) of 5 years old from the most deprived areas in England suffered from active tooth decay, compared with 12.5% in the least deprived areas.[8]

Although oral health is improving in England,[9 10] dental care provision remains a significant challenge. Nine in 10 National Health Service (NHS) dental practices are not accepting new adult patients, and eight in 10 are not taking on children.[12] Even in London where access was best, three-quarters of practices are not open to new (adult) patients.[12]

In London over a quarter of 5 years old (27%) have experienced tooth decay.[10] The hospital setting has been identified as a potential setting to complement current OH promotion activities traditionally delivered in community settings (eg, schools), as it provides a unique opportunity to share learning with children and their families simultaneously.

To respond to this local health need, a 2-year (September 2019–September 2021) oral health improvement and disease prevention programme (Oral Health Programme, OHP) was jointly developed and funded by the Public Health Department for the Royal Borough of Kensington and Chelsea (RBKC), the City of Westminster, Public Health England (PHE) (London), and Chelsea and Westminster Hospital NHS Foundation Trust (CWFT).

In 2014/2015, one-third (33.4%) of children aged 5 years old living in RBKC had visible dental decay, significantly higher than the national average (24.8%).[13] Chelsea and Westminster Hospital (CWH) is located in RBKC. It is one of two constituent hospitals that comprise CWFT and offers a paediatric dental extraction surgery service. CWFT serves an ethnically diverse local population, with 40% identifying as being of a non-white British background and in 2019 cared for more than 80 000 children.[14 15] In 2016–2017, 1555 children underwent dental extractions at CWH of which 85% had multiple extractions.[16] This site was chosen for programme delivery on the basis that it has a significant paediatric service offering, including the paediatric dental extraction centre for NW London, and that it is located in RBKC.[17 18]

The aim of the programme was to equitably improve the oral health improvement messaging of paediatric patients admitted to CWH through three intervention components (figure 1):

i. Health promotion activities (HPA): display of videos and posters and distribution of bedside information packs across paediatric settings (objective: 75% of children/families reporting seeing oral health messaging at the Trust).
ii. 'Supervised toothbrushing' (STB): one-to-one sessions delivered to paediatric inpatients and their carers (objective: increase of the number of children receiving STB, 75% of children/families identifying something they had learnt; 75% of children/families committing to an oral health behaviour change; signposting 100% children who were not regularly seeing a dentist).
iii. Staff training: 30 min session on paediatric oral health delivered to maternity and paediatric staff (objective: increase of the number of staff trained; 75% of attending staff claiming to have learnt something; 75% of attending staff committing to positive change).

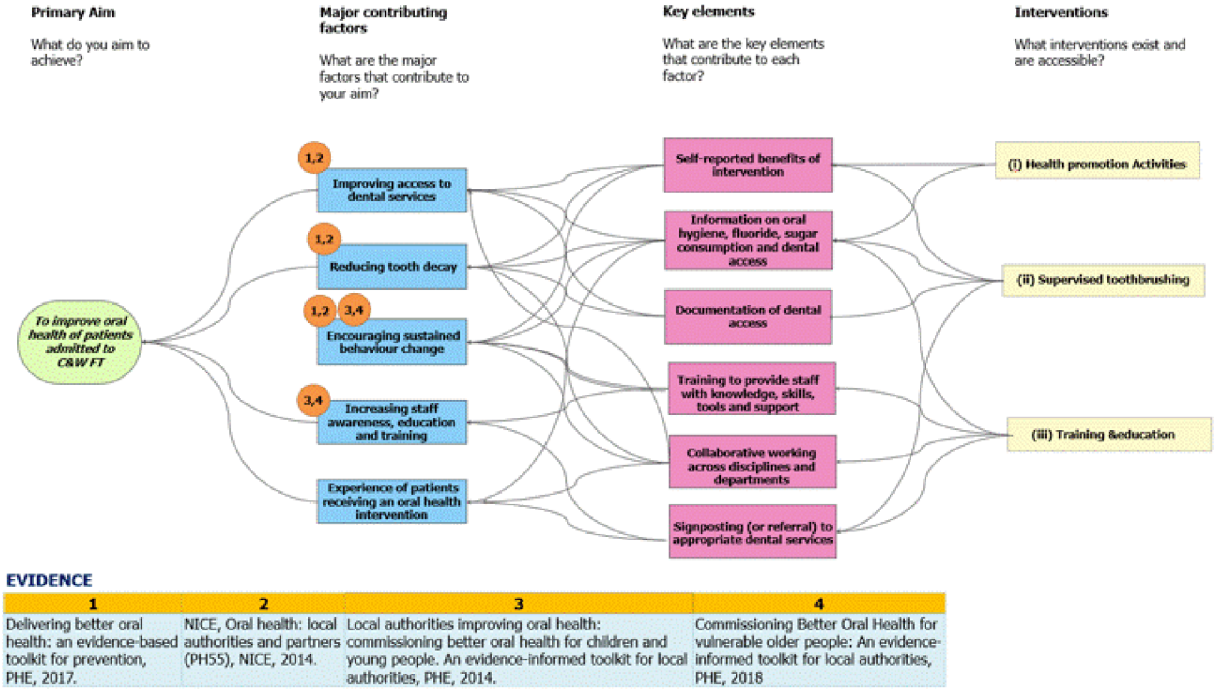

Figure 1 Action effect diagram for the oral health programme. CWFT, Chelsea and Westminster Hospital NHS Foundation Trust; PHE, Public Health England. NICE, National Institute for Health and Care Excellence.

BACKGROUND

Tooth decay is largely preventable, particularly if two key risk factors are addressed: high volumes/frequency of sugar consumption and low frequency/quality of oral hygiene practice.[19 20] At the time of programme development PHE recommended multisectoral working, including health and education services, to support preventive activity and 'provide the best start in life and the foundations of good health into adulthood'.[21] PHE's ambition was to see children growing up free from tooth decay, by supporting families to 'make the healthy choice the easy choice to improve diets and reduce rates of childhood obesity', with 'less sugar, calories and salt in the food eaten every day'.[22–24] To deliver on these ambitions, PHE advocated the use of the Making Every Contact Count (MECC) approach,[25] a method to facilitate behaviour change that seeks to use the millions of interactions healthcare staff have with patients and their families to encourage positive behaviour change. The MECC approach uses 'brief' and 'very brief' (range: under a minute to a couple of minutes) discussions that arise in interactions to address health improvement.

Common methods to reduce oral health risk factors, which can be delivered within an MECC approach, include education and promotion activities.[26] A systematic review[27] found oral health education and promotion can be effective in improving oral health literacy and stimulating positive behaviour change, particularly when based on the Health Belief Model[28 29] and when involving both parents/carers and children.

Successful examples include an OHP (comprising STB, opportunistic oral health promotion, fluoride toothpaste, toothbrush provision), targeting children aged under 5 years old in deprived areas of Glasgow which demonstrated a consistent pattern of improvement in the dental health indices within the intervention areas.[30] However, evidence also supports a cautionary approach as these interventions can, in certain forms, also exacerbate dental health inequalities.[31]

MEASUREMENT

A baseline questionnaire was conducted between 16 November 2019 and 26 November 2019 involving 101 children and their parents/carers attending CWH. Baseline results showed 61% of children were from ethnic minority groups and 52% lived in the most deprived areas (Indices of Multiple Deprivation—IMD quintiles 1 and 2).[32] The majority of respondents reported not seeing any health messaging information in the hospital relating to brushing teeth, healthier eating or physical activity (55% not seeing posters, videos or leaflets and 66% not getting advice or information). Moreover, 22% of children reported eating sugary foods, 9% drinking sugary drinks and 18% having both every day.

OHP project interventions started at different dates. STB started on 18th November 2019, promotional material displays began on 16 December 2019 and staff training on 22 December 2019. While measurement outcomes were considered, given the available time, resources and feasibility, process measures were used (figure 1). Where mechanisms of action of the intervention are well established, process measures allow the success of QI project to be understood by reflecting the way systems and processes work to deliver the desired outcomes.[33 34] Intervention performance was, therefore, evaluated using process metrics. For each of the three intervention components, one quantitative key performance indicator (KPI), alongside other quantitative and qualitative indicators needed to monitor diverse aspects of the intervention were identified (figure 2).

Data were collected between November 2019 and August 2021. HPA and STB data were collected through a 'bedside survey' (online supplemental file) delivered by an oral health coordinator (OHC) to all patients/families after the delivery of STB. Questions related to HPA were added to the survey from September 2020. Training data were collected through on online booking platform and an online staff feedback survey (online supplemental file). Participant numbers alongside role, grade and departments were collected as well as feedback on learning.

Where appropriate, statistical process control (SPC) charts were used to explore the

data and potential impacts of the change interventions (figure 3).[35] NHS Excel template for XmR charts and P-charts were used.[36] Other data have been analysed using summary statistics and qualitative analysis. A balancing metric (BM) was used take into account the time dedicated by the OHP staff to programme delivery.

DESIGN

The intervention was developed and overseen by an OHP team involving representatives from the RBKC public health department, PHE and CWFT, who provided quality assurance of the programme through quarterly governance and review meetings. During these meetings, CWFT staff presented OHP monitoring data, which served as a basis to discuss progress and issues. OHP delivery and monitoring was delivered by CWFT staff, which included an OHC, a Public Health Consultant (CPH), and a Public Health or clinical Fellow. The CPH had overall programme oversight. This team forged a relationship with the dental team to ensure that the information provided to patients was streamlined. Programme evaluation was supported by the National Institute for Health Research Applied Research Collaboration for North-West London. During the intervention design stage, the team developed an Action Effect Diagram to illustrate the underpinning programme theory (figure 1).[37] The design of the intervention was informed by the available evidence, existing PHE guidelines, and structured around the Health Belief and COM-B models (suggesting that capability -C, opportunity -O and motivation -M are

Interventions	Indicators and other data monitored		Data source	Objective	Results summary
(i) Health promotional material	**KPI 1**	Proportion of children/ families that reported seeing promotional material at the Trust	Bedside survey	>= 75%	**KPI 1 Mean: 41%; KPI 1 Mean increased from 33% to 63% over the last 12 months**; KPI 1 Median: 44 %; Total People surveyed: 565; Total People reporting seeing promotional material: 233.
(ii) Supervised toothbrushing	**KPI 2**	Number of children receiving supervised toothbrushing (STB)	Bedside survey	Increase (*)	**KPI 2 Mean: 11.5/week**, **KPI 1 improved** after the start of **PDSA 7a** and after **PDSA 7b**. KPI 2 Median: 12; Total Children receiving STB: 737.
		Proportion of children/families who identified something they had learned during the STB session	Bedside survey	>= 75%	**96%** (708/737)
		Proportion of children/families committing to an oral health behaviour change	Bedside survey	>= 75%	**91%** (674/737)
		Number of children who were not regularly seeing a dentist that have been signposted	Bedside survey	100%	**100%** (173/173)
		Frequency of toothbrushing	Bedside survey	Improvement compared to baseline data	**76%** of the children reporting they **brushed their teeth less than 2 times** per day (174/229) said that they would **start brushing twice daily.**
		Frequency of sugar intake	Bedside survey	Improvement compared to baseline data	**54%** of the children reporting they were **drinking sugary drinks >3 times/week** (140/257) said that they **would reduce sugar** in their diet. **69%** of the children reporting they were having **sugary foods >3 times/weeks** (218/317) said that they would reduce sugar in their diet.
		Demographic data of children seen for supervised toothbrushing (ethnicity and socio-economic status)	Bedside survey	N/A	**43% of children lived in postcodes with the highest deprivation** (IDACI Quintiles 1&2). Ethnicity; Asian/Asian British: 18%, Black/Black British:14%, Mixed:12%, Any other: 13%, White British/Irish: 25%, White other; 17%, Prefer not to say; 1%. **57% belonging to a minority ethnic group vs 39% of CWFT** catchment.
		Themes of learning and commitment to change	Bedside survey	N/A	**Learning: Brushing:34%, Sugar:29%, Fluoride:20%**, Dentist: 11%, Other:5%, Nothing:1%. **Commitment to change: Brushing: 46%, Sugar:30%**, Dentist:12%, Fluoride:7%, Other:4%, Nothing:1%.
		Number of childre that were given fluoride containing	Bedside survey	N/A	**280**
(iii) Staff training	**KPI 3**	Number of people attending the training session.	Online booking platform	Increase (**)	Total number of people trained: 73. **KPI 3- spike in the week following the start of PDSA6** and then suspended during the Covid 2nd wave.
		Proportion of attending staff claiming to have learned something	Online staff feedback survey	>= 75%	**100%** of respondents (32/32).
		Proportion of attending staff committing to positive change in professional and personal practice	Online staff feedback survey	>= 75%	**84%** of respondents (27/32).
		Themes of learning and commitment to change	Online staff feedback survey	N/A	**Themes of learning. For their patients-** Brushing: 23%, Sugar:23%, Dentist:18%, General oral care:18%, Toothpaste/fluoride:10%, Offering special OH advice for specific groups of patients:10%, Other:10%. **For themselves/their family**- Sugar:35%, Brushing:29%, Dentist:12%, Toothpaste/fluoride:9%, General oral care:9%, Other:6%. **Committment to change. For their patients-** Offering special OH advice for specific groups of patients:26%, Signposting:23%, Brushing:19%, Dentist:16%, Sugar:6%, Other:6%, Nothing:3%. **For themselves/their family**- Brushing: 38%, Sugar:31%, Dentist:10%, Other:10%, General oral care:7%, Toothpaste/Fluoride:4%.
		Role, grade and department of attendants	Online booking platform	N/A	Nurse (29%), Doctor/ Consultant (22%), Maternity nurse (19%), Student nurse (16%), Dietetics (10%), Other (4%).

(*) It was not possible to set out a proportional target as it was not feasible to calculate the denominator given the need to account for specific patient eligibility criteria
(**) It was not possible to set a specific target as it was not feasible to calculate the denominator of all staff due to high staff turnover

Figure 2 Indicators and other data monitored, and summary of results. KPI, key performance indicators; OH, oral health; PDSA, Plan–Do–Study–Act. IDACI, Income deprivation affecting children index.

essential for any behaviour -B to change), with consideration of MECC principles.[18 25 28 29 38 39]

The three components of the programme are described below.

Health promotion activities

Evidence-based health promotion materials, in the form of videos, posters and bedside information packs, were strategically distributed across paediatric and maternity settings in the hospital. Based on the PHE's 'Change for Life' resources,[40] materials contained information on dental decay epidemiology (to influence perceived susceptibility), information on how to reduce risk of dental decay (to increase the perception of benefits of positive oral health behaviours), and cues for behaviour change, such as recommendations (to reduce consumption of sugary food and drinks).

Supervised toothbrushing

STB is a brief intervention informed by motivational interviewing (MI) techniques,[41–43] where motivation is a state of preparedness for change rather than an individual personality trait.[44] The primary goal is to facilitate behaviour change by assisting patients to explore and resolve their ambivalence regarding the behaviour change.[45] The purpose of STB was to explore opportunities with children and parents that could self-direct behaviour change, rather than telling them what to do. STB involved: discussing current oral health practices; providing evidence-based information and advice on oral health and safe fluoride use; inviting commitment to positive behaviour change; overcoming access barriers to behaviour change through provision of oral hygiene materials (eg, toothpaste, toothbrush) to those in need. In addition, patients/carers were signposted to community dental services, where appropriate. STB was delivered by the OHC, who underwent training to be able to accurately deliver the intervention, including signposting to STB framework[46] and e-learning module, for the purpose of quality assurance.

Only where clinically appropriate, STB was opportunistically offered on an individual paediatric in-patient basis. For example, children with eating disorders, gastro issues or an unsafe swallow were not given sugar advice. Face-to-face interaction at the bedside enabled personalised advice, message provision, signposting and facilitated access to paediatric inpatients (<18 years) regardless of the admission reason. The intervention was adapted according to the children's age and health status. For example, school-aged children were given advice on brushing frequency, regular dentist visits, using fluoridated toothpaste and sugar consumption, while parents of children under 1 year were additionally given advice about weaning and the appropriate use of milk bottles. An effort was made to involve children of all ages as much as possible in the STB, however, for children under 7 years old discussion and feedback was always supported by parents. Prior to the COVID-19 pandemic, STB was supplemented by the supervision of patients' toothbrushing on the wards. However, given the risk of aerosol generation, this was switched to a demonstration of good toothbrushing technique on a plastic model mouth.

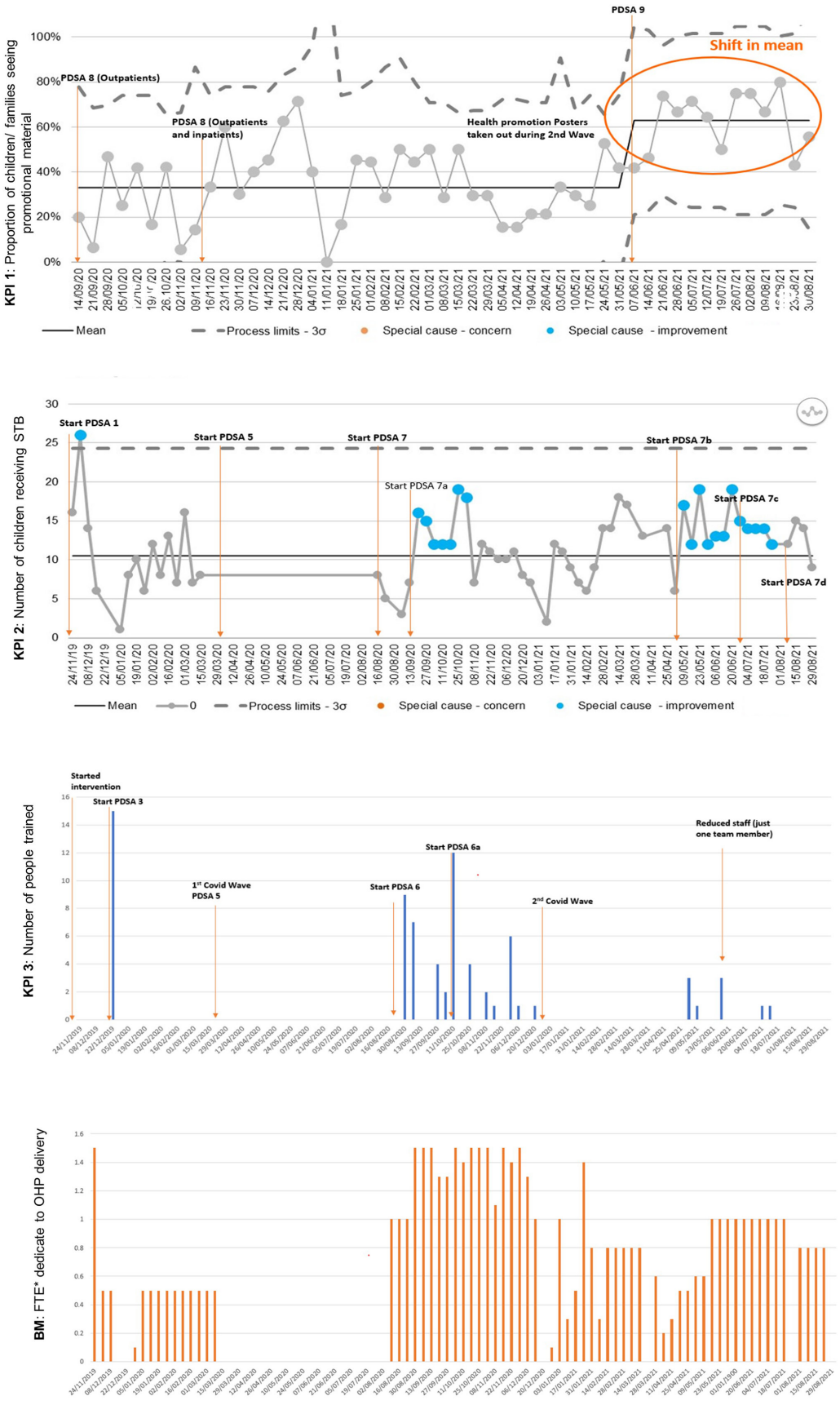

Figure 3 KPIs and balancing metric (BM) over time. SPC charts have been used for KPI1 (P-Chart) and KPI2 (XmR chart). KPIs, key performance indicators; PDSA, Plan–Do–Study–Act; SPC, statistical process control; STB, supervised toothbrushing. FTE, Full time equivalent.

Staff training

Following PHE recommendations,[18] staff in a variety of roles across maternity and paediatric departments at CWFT were invited to attend a 30 min oral health teaching session. Training was designed to promote staff awareness of oral health to improve patient care. Underpinned by the Health Belief Model,[28 29] the teaching aimed to increase staff: understanding of dental disease vulnerability among their patients'; perception of the value of reducing dental disease risk factors; self-efficacy related to caring for patients' dental health.[28] Initial training was delivered by qualified dentist and Public Health Clinical Fellow, along with the OHP coordinator and was based on PHE 'Change for Life' messaging.[40] On account of COVID-19, training moved virtual, live sessions and covered: the burden of disease attributable to dental decay; an overview of the risk factors for dental decay; recommendations for reducing risk of dental decay; positive actions front-line healthcare staff can take to promote positive oral health messages. During the session, staff were shown how to refer patients to dental services and where to find freely available resources to distribute to patients and their families.

STRATEGY

To improve oral health understanding among paediatric patients and their families, a targeted universalism approach encompassing three interventions was implemented. These were tested and refined by completing a number of formal and informal Plan–Do–Study–Act (PDSA) cycles throughout the programme (online supplemental file).

PDSA cycles 1–4 outline the introduction of the three interventions within the Trust. During this process, learning was collected on intervention refinement (PDSA 1, 3, 6), data issues (PDSA cycle 2/2a and 4), delivery challenges (PDSA 6, 7a–d), and stakeholder preferences (PDSAs 5–7b, c).

The first wave of COVID-19 saw the programme suspended for 5 months (March–August 2020), during which: there was no STB; posters and visual messaging, etc were removed from the wards and public areas due to mandated infection prevention and control measures; no discharge packs were distributed. Staff training was necessarily suspended. KPIs were not collected during this time; however, some staff feedback was gathered (PDSA 5). PDSA cycles 6–9 detail the reintroduction of interventions and capture the changes made to accommodate new restrictions and ongoing learning. For example, the adaptation from in-person staff training to online training (PDSA 6) and the reduced delivery of STB from four intended children's' wards to a single 'Covid Safe' children's ward (PDSA 7).

Throughout the project, PDSA cycles and KPI measures were monitored concurrently to investigate changes in the measures and introduce actions and improvements as needed (see the Results section). While many changes were successful, others were not retained. For example, a new system for identifying eligible patients for STB was trialled but subsequently abandoned as it resulted in fewer patients being identified (PDSA 7c).

RESULTS

More details about the Results section are presented in online supplemental file and summarised in figure 2.

Health promotion activities

During the project period, 93 posters were deployed across the hospital site (emergency department (ED), paediatric, maternity), along with animated videos (ED, outpatients). Overall, 41% (233/565) of families recalled seeing OHP materials across the hospital site (KPI1), though those identifying as Asian or Asian British ethnicity were least likely to report this (29.3%) compared with those of white or white British ethnicity (46.0%). The target of 75% for KPI1 was not met. However, the analysis of data over time shows an improvement in KPI1, which increased up to an average of 63% over the last 12 weeks of the programme period.

SPC chart (figure 3) shows how KPI1 increased after posters were displayed in inpatient wards (PDSA 8), but numbers dropped again on account of COVID-19 wave II when many posters were removed from wards again. Then from the start of June 2021, a shift of the KPI1 mean from 33% to 63% is observed along with reduction in process variability. This shift in the process mean corresponds to the start of PDSA 9, when 40 new posters were added to the wards.

Supervised toothbrushing

737 children (0–5 years: 50%; 6–10: years 21%, 11–15 years: 25%; 16–18 years: 3%) received STB (KPI2), averaging 11.5 children/week. When considering the diffusion of messaging to siblings (n=946) OHP an estimated 1683 children were reached.

The delivery of STB was heavily influenced by access to wards due to the pandemic and staff time dedicated to the OHP delivery (BM). From September 2020, there was an improvement in the process due to the increase of FTE staff available from 1 to 1.5. In September, KPI2 increased when the bedside proforma was updated to include information prompts for children under 12 months (PDSA 7a) to facilitate the routine delivery of STB to this age group. KPI2 then dropped further between 20 December 2020 and end of February due to holidays, reduction in ward activity and staff sickness. The process improved again in May 2021 when a new schedule for STB was devised (PDSA 7b). KPI2 slightly decreased when a 'dot system' to identify patients suitable for STB was introduced in the ward (PDSA 7c) and then raised again as they went back to manual identification of patients (PDSA 7d).

After the onset of the pandemic, supervision of patients demonstrating brushing their own teeth was suspended to minimise COVID-19 infection risk. A total of 280 children were provided with toothpaste containing fluoride.

Targets concerning the impact of STB on patient and parent/carer knowledge of dental health were met. Ninety-six per cent of children/families (708/737) stated that they learnt something during bedside sessions. The most common theme of learning reported by children/families was around toothbrushing frequency/technique (34%), followed by diet and nutrition (29%). 91% (674/737) of children/families committed to a positive oral health behaviour change, in particular regarding toothbrushing (46%) and diet (30%).

Relating to dental care access, all (100%) of children reporting not regularly seeing a dentist (n=173) were signposted to dental services.

Of the 229/737 children reporting they brushed their teeth less than 2 times per day, 76% (174/229) said that they would start brushing twice daily. Of the 257/737 children stating that they were drinking sugary drinks more than 3 times per week, 54% (140/257) said that they would reduce sugar in their diet. Of 317/737 children stating that they were having sugary foods more than 3 times per week, 69% (218/317) said that they would reduce sugar in their diet.

Of the children receiving STB, 43% lived in postcodes associated with the highest deprivation (quintiles 1 and 2) and 57% identified as belonging to a minority ethnic group, compared with 40% seen in the CWFT catchment population.[47] Those identifying as 'black or mixed ethnicity' were more likely to receive oral hygiene products, compared with those of white ethnicity (57% vs 42%).

Staff training

From November 2019 to August 2021, 73 staff members (KPI3), including foundation doctors to consultants, nurses, midwives, Allied Health Professionals, received training. Figure 3 shows that before the COVID-19 second wave, only one training session was offered. The number of training sessions increased after the COVID-19 first wave as training resumed with online courses offered every day (PDSA 6). In October 2020, there was an increase in the number of attendees due to the fact that the training booking system process was refined, and training sessions were CPD accredited and advertised within the Trust newsletter (PDSA 6a). Attendance data show that after this change the sessions were attended by a more targeted group of clinicians. Staff training was suspended again during the COVID-19 second wave and lower numbers were registered due to reduced staff availability (1 WTE, rather than 1.5) in the period 31 August 2020–3 January 2021 (BM). Targets about learning and commitment to positive change were fully reached. All respondents (32/32) reported learning something new, particularly in terms of their own personal/family's care. The main reported areas of learning for their patient versus their own care were around: diet (23% vs 35%) and toothbrushing practice (23% vs 29%). 84% (27/32) of staff reported that they would do things differently, predominantly regarding offering targeted OH advice for specific patient groups, such as for children with additional needs (eg, unsafe swallow, autism) (26%), signposting (23%) and brushing (19%), while for themselves and their family around brushing (38%) and sugar intake (31%).

Data completeness

It was not possible to achieve 100% data completeness. Missing data included: postcode data (to assign small area deprivation measure in form of IMD) for 4% (33/737) patients; OH behaviour data for 23% (168/737) of patients; lessons learnt or behaviour commitments for 4% (26/737) and 8% (56/737) of patients respectively.

For KPIs (figure 3), data gaps were mainly observed during periods of staff absence or enhanced infection control limits. KPI1 data absence, noted in early programme phases, was attributable to late addition of questions to the bedside survey (on 7 September 2020).

Conscious of potential bias due to data completeness, all analyses have been performed with omission of missing data as in this study measurement was used to monitor progress and not to provide definitive statements on the intervention effectiveness.

LESSONS AND LIMITATIONS

The OHP delivery was significantly impacted by the COVID-19 pandemic. Some interventions were interrupted, reduced or eliminated, while others were delivered differently. This revealed the flexibility of programme delivery in order to adapt to unforeseen and uncontrollable circumstances.

The application of three different interventions to OH prevention and promotion increased programme resilience. Strengths of the programme included its foundation in evidence and behavioural theory and its delivery in an acute hospital setting where access to groups at higher risk of poor oral health outcomes was facilitated. Moreover, the use of MI techniques allowed health practitioners to customise their intervention to the patient's level of readiness for change. This technique also has the potential to increase patient and practitioner satisfaction while promoting health behaviour change.[48] With MI, patients are more likely to feel heard and understood by their health practitioner.[48] Finally, collecting data on the patient demographic characteristics helped paint a holistic picture of the population reached by this programme, which was used to enhance services and identify inequalities which can directly be addressed by the hospital staff.

A number of programme weaknesses need to be considered. First, the dependence on primarily a single member of staff for frontline service delivery: even with increased resource, opportunities for children to receive OHP were missed due to staff unavailability, including but not limited to weekends. In May 2022, oral health assessment become part of the mandatory admission pack completed for each admission to CWH. This reinforces

the rationale for OHP and supports its ongoing delivery and sustainability. Increasing staff receiving training is also a key step towards sustaining knowledge and scaling the programme in the future. Having a wide and diverse staff base to deliver messaging would decrease the risk of having single members of staff delivering the intervention. Future work is needed to explore the potential for programme sustainability including potential improvements and adaptions to ensure long-term benefits from this initiative.

Second, is the use of proxy measurement to assess patient/family and clinician behaviour change. Although all respondents to the post-training survey indicated that they learnt something new for their patients and most clinicians (84%) and patients (91%) committed to a positive behavioural change, the actual change in behaviour could not be measured. Instead, self-reported behavioural intention was used as a proxy for realised behaviour change. This is, however, considered a valid proxy measure, with studies in different clinical settings reporting a statistically significant correlation between intended and actual behaviour change among both clinicians and patients.[49–51] Further, using self-reported point-in-time measures is relatively quick, cost-effective and easy compared with observing actual behaviour over time and is shown to be particularly suitable when the design of the change intervention is evidence based.[52 53]

Third is the inability to assess longer-term outcome measures. This was due to challenges associated with patient follow-up after discharge, resource scarcity and delays associated with ethical approval. As a consequence, it was not possible to examine whether staff, children and their families put in practice the desired behaviour change or whether signposted children ultimately attended a dentist appointment, or what the outcome of this visit was. This also prevented the determination of which programme components were most/least effective in producing the long-term desired behaviour change.

Finally, no suitable, validated surveys were readily available, and resource constraints did not allow to conduct the validation process. The questionnaire used within this study may serve as a helpful baseline for future validation efforts as the programme scales up.

Despite these limitations, the approach enabled an evaluation of the three strands of an evidenced targeted-universalism approach by monitoring process and BM. These were used to assess and modify the interventions to continually improve design and delivery to maximise potential patient outcomes. Other limitations are related to missing data as described above and to the difficulty to monitor some data which would have helped to build more robust indicators.

If this programme was to be enhanced or rolled out further, actions to enable measurement of impact should be taken, for example, by securing funding for a longer-term cohort study. Future evaluation could be strengthened by obtaining necessary ethical approval to enable data collection of specific outcome measures and to explore the experience of the OHP patients following discharge, including actions taken by participants following the intervention. This would enable a better understanding of the long-term effectiveness of the OHP and support service adaptation to improve the experience. Specific measures related to the uptake of dental services could also provide further insight into the broad impact of this work. In terms of resourcing, the mechanisms that allow for more flexibility in service delivery could also be anticipated. For example, the intervention could be designed to promptly switch from face-to-face to online delivery or to allow for flexible staffing. Moreover, activity on emergency admission wards could be prioritised to improve service equity, given higher emergency service use by those living in more deprived areas and in ethnic minority groups.[54] Finally, more attention would be paid to the design and distribution of health promotion material to increase accessibility to ethnic minority groups.

Challenges with poor paediatric oral health and inequity of access to dental services are not limited to the CWFT catchment area, but are seen across the country and internationally.[1–7 13] Key programme components and learning from this improvement project can be applied and adapted to other NHS hospitals and worldwide as the evidence base underpinning the programme has relevance in many settings. For example, while most hospitals in the UK are not paediatric and maternity specialist centres, many hospitals do function within acute trusts and the vast majority will have some form of paediatric ward/service where oral health promotion can be delivered.

CONCLUSION

Implementation of just the STB component of the OHP programme from September 2019 to August 2021 in a 'non-traditional' health promotion and prevention setting directly reached 737 children (1683 if taking siblings into account) and their families, 43% of which lived in areas associated with high deprivation. Moreover, the programme allowed to reach children that wouldn't be reached by school programmes (50% of children seen for STB were under 5 years old). Results suggest that a hospital-based opportunistic OHP is potentially an effective and equitable way to improve patient, family and staff knowledge of good oral health practices and encourage participants to consider positive behaviour change. This approach allowed for proactive messaging to be offered to all children and carers attending the hospital, including those who are there for health conditions other than tooth decay.

However, the programme has also demonstrated the constraints posed by the hospital environment on disease prevention or HPA, including competing service pressures, staffing issues and external shocks (eg, COVID-19). Another challenge is related to limited mechanisms to allow for follow-up of individual patients to assess

down-stream impact. Future programmes should consider the need for flexible and resilient health systems along with rigorous evaluations to support more robust in-hospital oral health promotion services, for example, impact of the OHP on dental decay rates.

This programme has initially demonstrated that how a paediatric hospital-based OHP can be accessed in a broadly equitably way, suggesting its value as a form of targeted universalism. In turn, this could help reduce pressure on the NHS and other health systems worldwide through targeted and evidenced prevention approaches, though would require the resources for longitudinal follow-up study to confirm findings. A third year of funding was awarded in 2021 to continue OHP delivery at CWH for a further year, and data from this programme continue to be collected for future evaluation. There are also plans to rollout OHP to other hospital sites in the region, as well as services including maternity and older adults.

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SURVEY

Bedside Survey

Column Heading	Description
Event_ID	Records the number of encounters. Add new encounters.
Date	Date (format 01/01/2021)
Ward	Name of the ward where data were collected
Supervisor Job Title	The person who collected the data (Oral health coordinator
Age (in Years)	Shows impact as to age groups. If a few months old please use this formula: = 6/12 (6 months). If less than a month use
Gender (M/F)	Used as part of demographic data M/F = Male/Female
Number of Siblings	Used to show impact outside of the intervention setting. If
Ethnicity	Used for demographic data and inequalities data
Ethnicity_expanded - AUTOFILL	This column is not to be filled in, it will auto fill the correct
Postcode	Used for demographic data and inequalities data - this is to be filled out in full e.g. SW10 9NH
Regularly Visits Dentist? Y/N	Does the child visit a dentist? Y/N = Yes/No
Signposted to dentist? Y/N/NHS/CD	Was the child signposted to a dentist? Y/N? If the child sees a dentist and you signposted to the following: from private to NHS or NHS to specialist NHS practice, write Y - NHS (private to NHS) or Y - CD (community dentist). If the child
Toothbrush / Toothpaste Given? Full set/ Timer/ Toothbrush/ Toothpaste	Please specify exactly what consumables were given, this helps with budgeting for future funding.
Have they seen any info/posters Y/N	This helps with sustainability of the programme - this only counts for information within the hospital
what did they see info/posters on? (free text)	Please specify what information they saw on the posters
were they given info during admission? Y/N	This helps with sustainability of the programme - this only
what were they given info on? (free text)	Please specify the type of information they were given i.e.
child brushes LESS than daily	The child does not brush everyday, only brushes a few times
child brushes 1 time per day	The child predominantly brush only once per day morning or
child brushes 1-2 times per day	The child brush between one to two times a day as apposed
child brushes 2 times per day	The child brushes twice a day, everyday. Write 1 if
child brushes more than twice daily	The child brushes more than twice a day, everyday. Write 1
sugary drinks less than 3 times per week	This includes homemade smoothies/fruit juice less than 3
sugary drinks more than three times per week	Sugary drinks more than 3 times a week including once per
sugary drinks more than 1 per day	Sugary drinks at least twice per day. Write 1 if applicable. 1=
sugary foods less than 3 times per week	This includes yoghurts, sugary cereals, spreads, sauces, soups, biscuits, candy etc between 1-3 times per week.

Column Heading	Description
sugary foods more than three times per week	Sugary foods more than 3 times per week including once per
sugary foods more than 1 per day	Sugary foods at least twice per day. Write 1 if applicable. 1=
Does current toothpaste have correct fluoride concentration? Y/N/Cant check	Did you check their current toothpaste if they had it? Y = checked N= they had it but you did not check the fluoride
Did you discuss fluoride advice? Yes /No/NA	Did you discuss fluroide concentration? Y or N
One thing you have learnt (Free text)	Reviewing what they learnt from the session - write this exactly the way the patient speaks their answer. Revewing
Learned - Toothpaste/ Fluoride 1 = Y	i.e. correct amount of toothpaste, fluoride concentration of toothpaste, fluoride varnish etc. Put a 1 in the box if this
Learned - Brushing	i.e. brushing twice a day, for two minutes, spit don't rinse etc. Put a 1 in the box if this applies
Learned - Sugar intake	i.e. to have savoury snacks, eat and drink sweet things with a main meal, eat less sugar, sugar intake, label read etc
Learned - Dentist	i.e. community dentist, visit the dentist, book an
Learned - Nothing	i.e. I did not learn anything new, I knew this already
Learned - Other	i.e. not to dip dummies, take away the bottle by 1, change
One thing you might do differently (free text)	Reviewing what they will do differently fromwhat they have learnt - write this exactly the way the patient speaks their
Different -Toothpaste/ Fluoride	i.e. correct amount of toothpaste, fluoride concentration of toothpaste, fluoride varnish etc. Put a 1 in the box if this
Different -Brushing	i.e. brushing twice a day, for two minutes, spit don't rinse
Different -Sugar intake	i.e. to have savoury snacks, eat and drink sweet things with a main meal, eat less sugar, sugar intake, label read etc
Different -Dentist	i.e. community dentist, visit the dentist, book an
Different - Nothing	i.e. I did not learn anything new, I knew this already
Different - Other	i.e. not to dip dummies, take away the bottle by 1, change
Notes	You could write some signifcant info i.e. USS, ED or NBM
LSOA code	Go onto the IMD website and put in the postcode, download the excel spreadsheet and paste LSOA code into
Borough	Go onto the IMD website and put in the postcode, download the excel spreadsheet and paste borough into the
Index of Multiple Deprivation Decile	Go onto the IMD website and put in the postcode, download the excel spreadsheet and paste IOMDD code
IDACI Decile	Go onto the IMD website and put in the postcode, download the excel spreadsheet and paste IDACI decile into
Disability	Record if the patient has a disability here - no need to be
How likely are you to make this change? Scale 1-10	If the patient chooses anything less than 10, record this and

Training Survey

Column Heading	Description
Event_ID	Records the number of encounters. Add new encounters.
Date	Date (format 01/01/2021)
Role	Job role (e.g. dental nurse, doctor)
Department	Name of the Department (e.g. Neptune, NICU)
Site - CW/WM	Chelesea and Wenstiinister hospital (CW) or West Middlesex hospital (WM)
One thing you have learnt	Description of one thing you learned during the training (free text)
For me - Toothpaste/Fluoride	Y/N
For me - Brushing	Y/N
For me - Sugar	Y/N
For me - Dentist	Y/N
For me - General oral care	Y/N
For me - Nothing	Y/N
For me - Other	Y/N
Others - Toothpaste/Fluroide	Y/N
Others - Brushing	Y/N
Others - Sugar	Y/N
Others - Dentist	Y/N
Other - General	Y/N
Others - Special OH	Y/N
Others - Other	Y/N
One thing you might do differently	Description of one thing you might do differently following the training (free text)
For me - Toothpaste/Fluoride	Y/N
For me - Brushing	Y/N
For me - Sugar	Y/N
For me - Dentist	Y/N
For me - General oral care	Y/N
For me - Nothing	Y/N
For me - Other	Y/N
Others - Toothpaste/Fluroide	Y/N
Others - Brushing	Y/N
Others - Sugar	Y/N
Others - Dentist	Y/N
Other - General	Y/N
Others - Special OH	Y/N
Others - Nothing	Y/N
Others - Signposting	Y/N
Others - Other	Y/N

Plan-Do-Study-Act (PDSA) CYCLES

	Plan	Do	Study	Act	Time
Baseline PDSA	Baseline data collection to understand current state of oral health activities (prediction- we will gain key information about oral health metrics at the hospital to inform future measurement).	A baseline survey was conducted between the 16th of November 2019 involving 101 children at the hospital (inpatient and outpatient) and their parents.	Key findings: 61% of children were from ethnic minority groups and 72% live in the most deprived areas. Most parents reported that they didn't see any health messaging information in the hospital relating to brushing teeth, healthier eating or physical activity (55% not seeing posters, videos or leaflets and 66% not getting advice or information) and 1 in 2 of children reported either eating sugary foods (22%), drinking sugary drinks (9%) or having both (18%) every day.	Results highlighted the opportunity for the programme to impact positive health behaviours among certain marginalised and minority groups (e.g., BAME groups; pre-schoolers; children living in areas of high child poverty; siblings). It also identified an opportunity for improving the quality of health messaging within the hospital.	2 weeks
PDSA 1	Introduce the supervised toothbrushing (STB) to assess design and feasibility of delivery.	Implemented STB in 4 children's wards (Live on 18/11/19).	KPI 2 - increased in the first 2 weeks (19/11/2019 - 1/12/2019) and then dropped due to a reduction in the paediatric ward activity, staff holidays (missing data). The reduction over the following weeks compared to the start of the intervention due to only by a part-time OHC, while before there was a public health fellow.	Refinement: consider support and resources for holiday periods to support the OHC to support the implementation of the OHP and achieve the overall aims.	6 weeks
PDSA 2	Use demographic data from bedside survey to assess the potential impact on inequalities (prediction - improve picture of needs and potential impact on inequalities).	(ii) start collecting demographic data of patients seen for STB (Live on 18/11/19).	It was noticed that postcode data of children seen for STB and data on consumables distributed during STB were only being partially collected by staff, hindering the analysis of needs and potential impact on inequalities.	Refinement: improve postcode data collection for children seen for STB, and collect consumable data.	6 weeks
PDSA 2a	(i) Collect complete postcode data, (ii) collect consumable data to see where patients who had consumables were residing and to know if we were giving them to the children who needed them the most (prediction - availability of postcode and consumable data; have a picture of needs and potential impact on inequalities).	(i) Debriefed staff on the need to collect full postcodes and the rationale for this; (ii) Add information on postcodes and consumables in the pro forma (paper sheet filled at the bedside with the patient) (30/12/2019).	Postcode data showing the deprivation level of children receiving STB and consumable data available. Use of this information to understand service users' needs better and as evidence of the programme's potential to address inequalities.	Worthwhile improvement: retained as a permanent change.	ongoing

PDSA 3	Begin staff training on oral health to assess training suitability and improvement needs (prediction- increase KPI 3).	Staff in-person training conducted on 22/12/2019.	15 staff members attend the training (increase of KPI 3 from baseline of 0 staff trained) Feedback indicated that session could be made more specific professional groups (e.g. maternity). Emailed evaluation form did not receive many responses.	Refinement: Training materials updated to specific professional groups (e.g. maternity staff). Decision to change evaluation form to be delivery within sessions instead of email post session.	8 weeks
PDSA 4	Begin Health promotion activities HPA including distribution of health promotion materials (prediction- increase KPI 1).	Posters put up on wards, videos go live, and leaflets given to wards and patients (live from 16/12/2019).	Materials anecdotally well received by staff and patients. Number of materials distributed not monitored at this time. No formal mechanism in place to monitor KPI1.	Consider how best to collect KPI 1 data. Decision made to add a question regarding HPA to the bedside survey.	10 weeks
PDSA 4a	Data on HPAs needed to assess KPI 1 (prediction increase of KPI1).	Questions regarding proportion of patients and carers seeing health promotion materials at the Trust added to bedside survey (live 6/09/2020).	Question works well within the survey and is a simple addition for OHC to administer. KPI 1 now monitored for progress overtime.	Worthwhile change: continue to monitor.	ongoing
PDSA 5	(i) Stop the delivery of STB and staff training to cope with the Covid 19 pandemic. (ii) deliver alternative forms of health promotion activities compatible with the limited access to wards (prediction – reduction in all KPIs).	(i) Supervised tooth-brushing and staff training sessions were suspended from April 2020. (ii) (ii) Health promotion material was removed from the ward but continued to be delivered in discharge packs but with limited ability of the team to monitor or assess this distribution. (Live on: 16th March 2020).	(i) No data was collected for all KPIs. (ii) Staff feedback on the need to give ward managers responsibility for oral health resources (discharge packs). This would support the continuation of this intervention without the oral health coordinator (OHC) and embed intervention within each ward.	Start the three interventions again when the Covid risk is minimised. Develop a process for ward staff to access discharge information and packs independently.	21 weeks
PDSA 6	Resume staff training (prediction – increase in KPI 3).	Staff training resumed online only. Courses offered everyday (Resumed on 26/08/20).	KPI 3- was improved substantially compared to the pre-pandemic. System flaws were identified in booking system (e.g., system not available to all staff, not able to reach the appropriate clinical staff). Feedback from staff identified that the best way to advertise to clinical staff was through the staff bulletin and they would like a formal recognition for course attendance.	Refinement: adapt process in booking training sessions, advertisement and accreditation.	ongoing

PDSA 6a	Refine booking system for training, CPD accreditation and advertisement (prediction- greater attendance and targeted clinicians will attend the training session, KPI 3 sustained).	Refined the process for booking via Eventbright. The training session was CPD accredited, and the sessions were advertised within the trust bulletin. (01/10/2020).	Attendance data show that the sessions have been attended by a more targeted group of clinicians. KPI 3- increase in the week following the introduction of the intervention.	Changes were successful with plans to continue to use the booking system and bulletin as needed. Worthwhile improvement. Retain as permanent change	ongoing
PDSA 7	Resume STB in Covid free areas (only 1 ward) (Prediction-KPI 2 equal or less than before the pandemic).	Supervised toothbrushing resumed on a single Covid free children's ward (live on 10/08/2020).	KPI 2 - activities during the first 4 weeks was less than before the pandemic because now STB in only in one ward. Staff reported that the schedule of STB didn't fit well with the ward activity. Parents were very receptive to the intervention and communicated that the service was much needed due to the lack of availability of NHS dentists during the pandemic. Parents also reported that there was a lot of information given throughout the STB, and they would like a summary of the key points.	Refinement: adapt the STB schedule, design, and provide summary documents to parents in future STB sessions.	ongoing
PDSA 7a	Update health promotion material and bedside proforma to include information for children aged less than 12 months (prediction – improve the information available for parents with children< 12 months, increase KPI 2).	A prompt was added to the proforma to highlight the importance in telling parents that from 6 months, brushing twice a day was required. Weening leaflets were provided to support parents in understanding the impact of sugar in diets (live from 11/09/20).	Parent feedback stated *"I learnt a lot, there was so much stuff I didn't know. I recently moved from Doha, I didn't know my son needs to see a dentist/ when he should start brushing his teeth. I also did not know about the hidden sugars in yogurts."* - mother of a 10 month old baby. KPI 2 was increased compared to the previous week	Worthwhile improvement: retained as a permanent change.	ongoing
PDSA 7b	Consolidate a new schedule for STB (prediction – increase in KPI 2, this would be more effective and satisfactory for staff).	New schedule introduced (supervised toothbrushing at 10 am after ward rounds) has been implemented (Live on 03/05/2021).	KPI 2 - increased. Staff reported this was more conducive to their work schedules and were more likely to support visits. The OHC reported that every day they were wasting time waiting for the nurse in charge to find some time to go through the patient list and identify patients eligible for STBs.	Worthwhile improvement: new schedule retained as a permanent change. Refinement: introduce a system to streamline the identification process of patients eligible for STB.	ongoing
PDSA 7c	Introduce a 'dot system' on the inpatient board to alert the OHC of patients suitable for STB. This involved the NIC putting a dot on the bed board next to the patient's	Introduction of the new system to identify patients suitable for STB (live on: 19th July 2021).	KPI- 2 – not increased. OHC reported that the 'dot system' system did not work due to the lack of complete medical history information for patients on the board. The	Change not worthwhile. Revert to manual identification of patients and improve staff awareness of eligibility criteria.	3 weeks

	name. (Prediction: increase KPI 3, minimise disruption).		need to clarify eligibility criteria for staff was identified.		
PDSA 7d	(i) Go back to manual identification of patients with clear eligibility criteria; (ii) increase staff awareness of eligibility criteria for STB (Prediction: increase KPI 2).	(i) Eligible patients identified manually; (ii) staff encouraged to consider the oral health of each patient upon admission and report their concerns to the OHC. (live on: 9th August 2021).	KPI 2 - began to increase in the following weeks.	Worthwhile improvement: retained as a permanent change.	ongoing
PDSA 8	Reintroduce health promotion materials to wards (prediction – increase in KPI 1).	(ii) promotional material displayed in the outpatient ward (live on: 7/9/2020) and then in the inpatient area (live on: 5/11/2020)	KPI 1 - increased during the introduction of promotional material in the inpatient area.	Worthwhile improvement: retained as a permanent change.	ongoing
PDSA 9	Put new posters into bed spaces as many removed during the Covid 19-second wave (prediction - improve KPI 1).	40 new posters (4 per bedspace) were put onto the ward (live from 8/6/2021)	KPI 1 increased and a shift in mean was recording from this period.	Worthwhile improvement: retained as a permanent change.	ongoing

RESULTS

(i) HEALTH PROMOTION ACTIVITIES

KPI 1: Proportion of children/ families that reported seeing promotional material at the Trust

Time	Number of people surveyed	Number of people stating that they have seen promotional material	% people that have seen promotional material
13/09/2020	10	2	20%
20/09/2020	16	1	6%
27/09/2020	15	7	47%
04/10/2020	12	3	25%
11/10/2020	12	5	42%
18/10/2020	12	2	17%
25/10/2020	19	8	42%
01/11/2020	18	1	6%
08/11/2020	7	1	14%
15/11/2020	12	4	33%
22/11/2020	10	6	60%
29/11/2020	10	3	30%
06/12/2020	10	4	40%
13/12/2020	11	5	45%
20/12/2020	8	5	63%
27/12/2020	7	5	71%
03/01/2020			
10/01/2021	2		0%
17/01/2021	12	2	17%
24/01/2021	11	5	45%
31/01/2021	9	4	44%
07/02/2021	7	2	29%
14/02/2021	6	3	50%
21/02/2021	9	4	44%
28/02/2021	14	7	50%
07/03/2021	14	4	29%
14/03/2021	18	9	50%
21/03/2021	17	5	29%
28/03/2021			
04/04/2021	13	2	15%
11/04/2021			
18/04/2021			
25/04/2021	14	3	21%
02/05/2021	6	2	33%
09/05/2021	17	5	29%
16/05/2021	12	3	25%
23/05/2021	19	10	53%
30/05/2021	12	5	42%
06/06/2021	13		0%
13/06/2021	13	6	46%
20/06/2021	19	14	74%
27/06/2021	15	10	67%
04/07/2021	14	10	71%
11/07/2021	14	9	64%
18/07/2021	14	7	50%
25/07/2021	12	9	75%
01/08/2021			
08/08/2021	12	8	67%
15/08/2021	15	12	80%
22/08/2021	14	6	43%
29/08/2021	9	5	56%

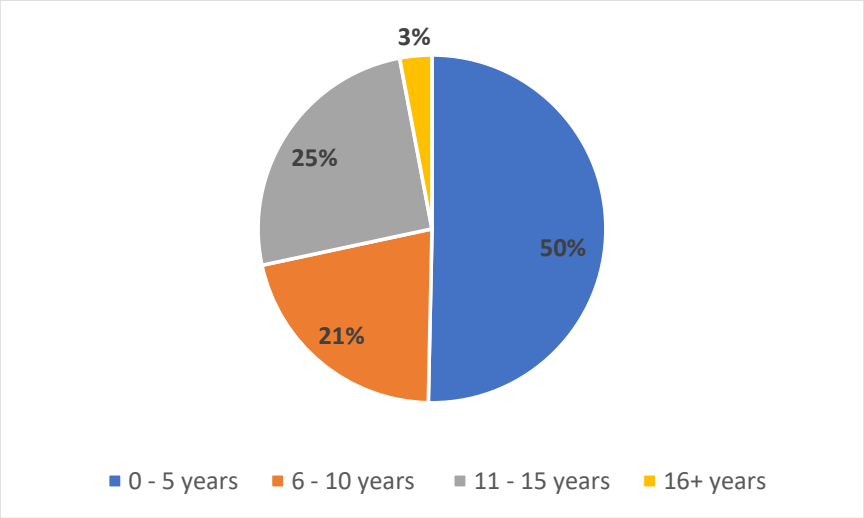
(ii) SUPERVISED THOOTHBRUSHING (STB)

KPI 2: Number of children receiving supervised toothbrushing (STB)

Time	Number of people receiving STB
24/11/2019	16
01/12/2019	26
08/12/2019	14
15/12/2019	6
22/12/2019	
29/12/2019	
05/01/2020	1
12/01/2020	8
19/01/2020	10
26/01/2020	6
02/02/2020	12
09/02/2020	8
16/02/2020	13
23/02/2020	7
01/03/2020	16
08/03/2020	7
15/03/2020	8
22/03/2020	
29/03/2020	
05/04/2020	
12/04/2020	
19/04/2020	
26/04/2020	
03/05/2020	
10/05/2020	
17/05/2020	
24/05/2020	
31/05/2020	
07/06/2020	
14/06/2020	
21/06/2020	
28/06/2020	
05/07/2020	
12/07/2020	
19/07/2020	
26/07/2020	
02/08/2020	
09/08/2020	
16/08/2020	8
23/08/2020	5
30/08/2020	
06/09/2020	3
13/09/2020	7
20/09/2020	16
27/09/2020	15
04/10/2020	12
11/10/2020	12
18/10/2020	12
25/10/2020	19
01/11/2020	18
08/11/2020	7

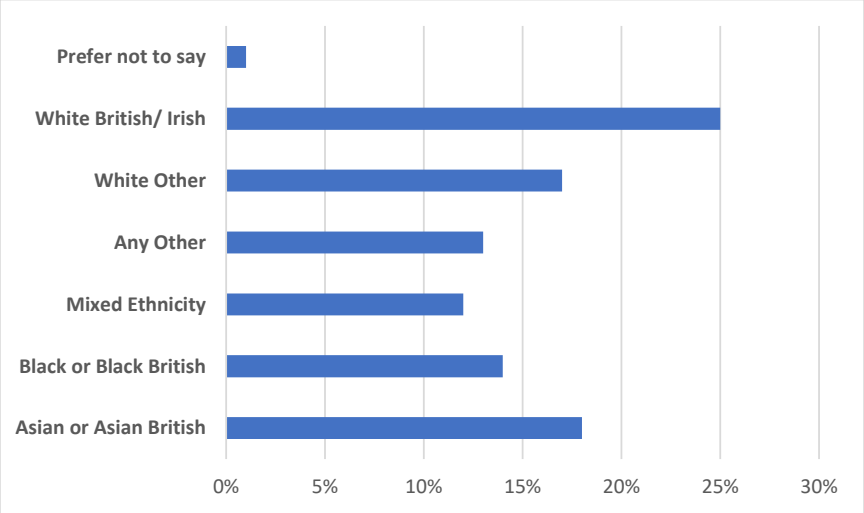
Time	Number of people receiving STB
15/11/2020	12
22/11/2020	11
29/11/2020	10
06/12/2020	10
13/12/2020	11
20/12/2020	8
27/12/2020	7
03/01/2020	
10/01/2021	2
17/01/2021	12
24/01/2021	11
31/01/2021	9
07/02/2021	7
14/02/2021	6
21/02/2021	9
28/02/2021	14
07/03/2021	14
14/03/2021	18
21/03/2021	17
28/03/2021	
04/04/2021	13
11/04/2021	
18/04/2021	
25/04/2021	14
02/05/2021	6
09/05/2021	17
16/05/2021	12
23/05/2021	19
30/05/2021	12
06/06/2021	13
13/06/2021	13
20/06/2021	19
27/06/2021	15
04/07/2021	14
11/07/2021	14
18/07/2021	14
25/07/2021	12
01/08/2021	
08/08/2021	12
15/08/2021	15
22/08/2021	14
29/08/2021	9

Age of children participating in STB



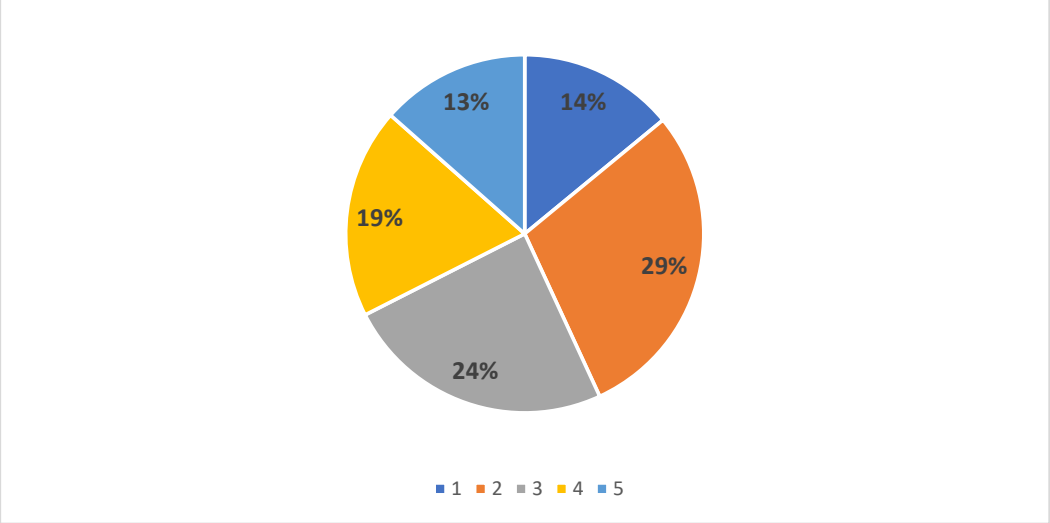
0 - 5 years	6 - 10 years	11 - 15 years	16+ years
50%	21%	25%	3%
371	157	187	22

Ethnicity of children participating in STB



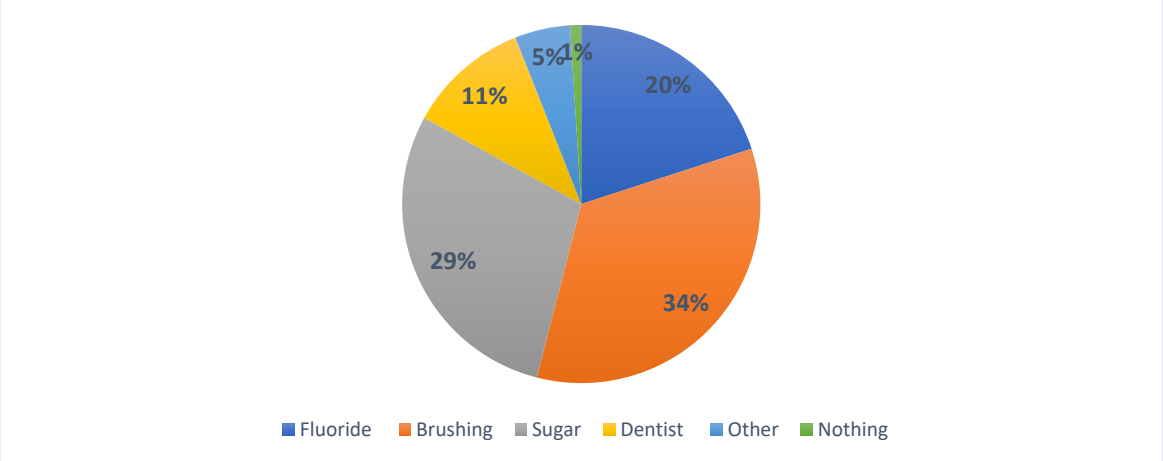
Asian or Asian British	Black or Black British	Mixed Ethnicity	Any Other	White Other	White British/ Irish	Prefer not to say
18%	14%	12%	13%	17%	25%	1%
134	103	88	94	127	183	8

IDACI Quintiles



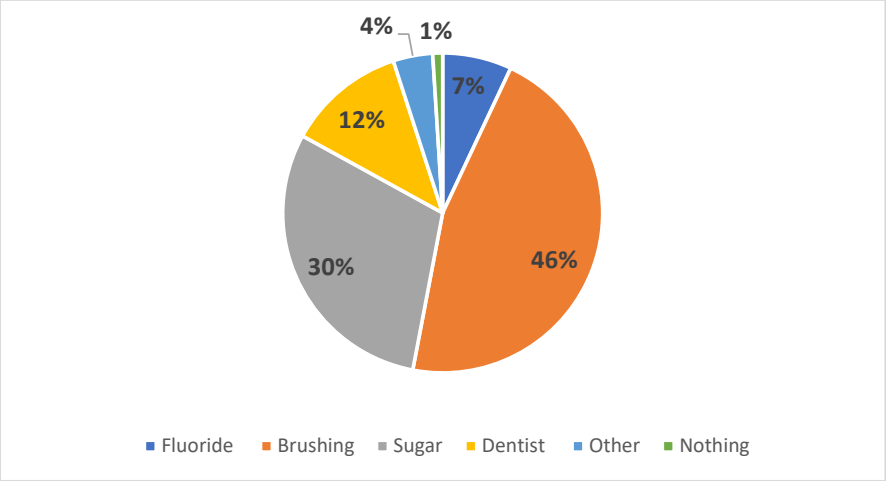
1	2	3	4	5
14%	29%	24%	19%	13%
99	205	172	134	95

Themes of learning reported by patients/ families



Fluoride	Brushing	Sugar	Dentist	Other	Nothing
20%	34%	29%	11%	5%	1%
168	280	236	91	45	4

Themes of commitment to change reported by patients/ families



Fluoride	Brushing	Sugar	Dentist	Other	Nothing
7%	46%	30%	12%	4%	1%
58	374	243	100	36	6

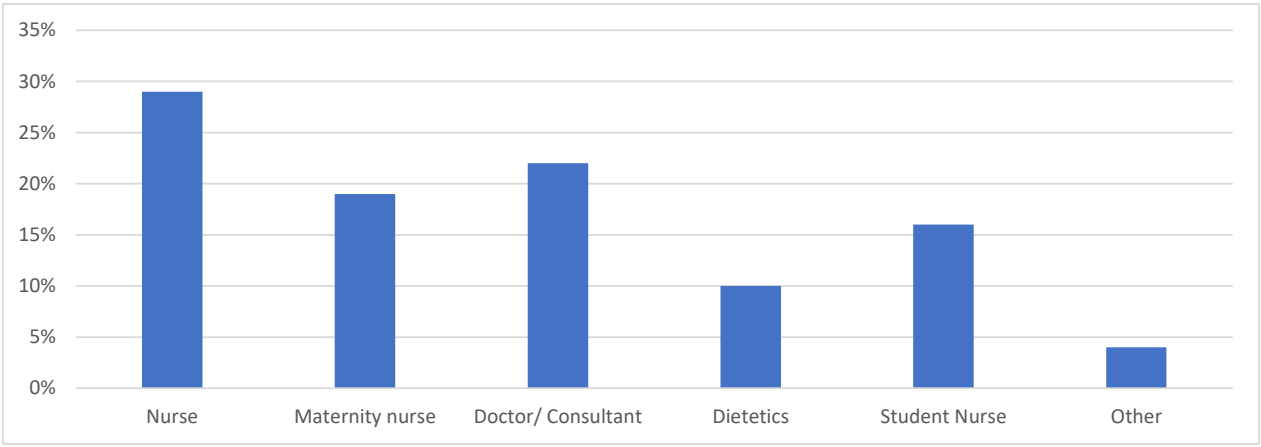
(iii) TRAINING

KPI 3: Number of people attending the training session

Time	Number of people trained
24/11/2019	
01/12/2019	
08/12/2019	
15/12/2019	
22/12/2019	15
29/12/2019	
05/01/2020	
12/01/2020	
19/01/2020	
26/01/2020	
02/02/2020	
09/02/2020	
16/02/2020	
23/02/2020	
01/03/2020	
08/03/2020	
15/03/2020	
22/03/2020	
29/03/2020	
05/04/2020	
12/04/2020	
19/04/2020	
26/04/2020	
03/05/2020	
10/05/2020	
17/05/2020	
24/05/2020	
31/05/2020	
07/06/2020	
14/06/2020	
21/06/2020	
28/06/2020	
05/07/2020	
12/07/2020	
19/07/2020	
26/07/2020	
02/08/2020	
09/06/2020	
16/08/2020	
23/08/2020	
30/08/2020	9
06/09/2020	7
13/09/2020	
20/09/2020	
27/09/2020	4
04/10/2020	2
11/10/2020	12
18/10/2020	
25/10/2020	4
01/11/2020	
08/11/2020	2

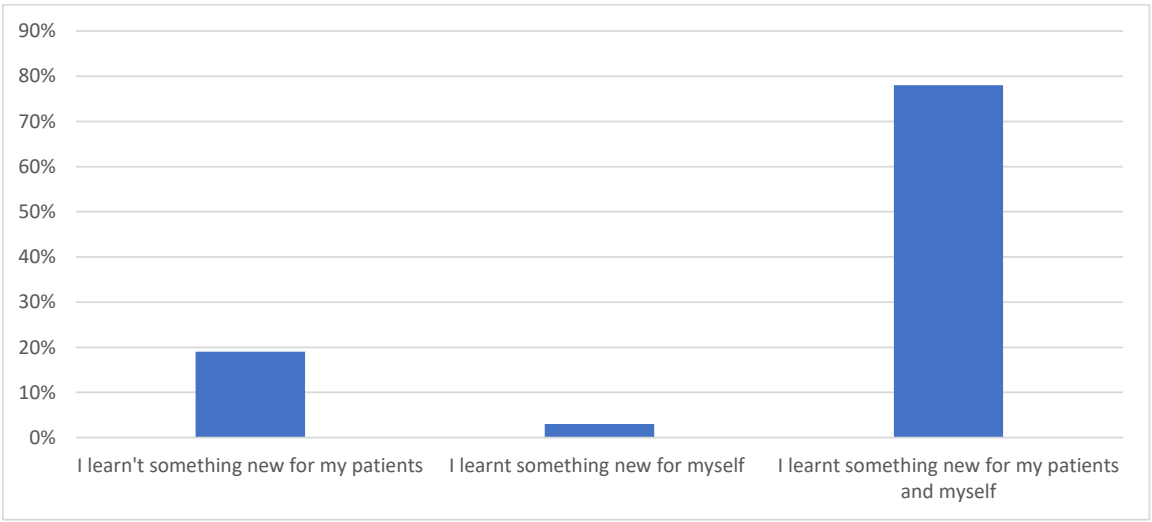
Time	Number of people trained
15/11/2020	1
22/11/2020	
29/11/2020	6
06/12/2020	1
13/12/2020	
20/12/2020	1
27/12/2020	
03/01/2020	
10/01/2021	
17/01/2021	
24/01/2021	
31/01/2021	
07/02/2021	
14/02/2021	
21/02/2021	
28/02/2021	
07/03/2021	
14/03/2021	
21/03/2021	
28/03/2021	
04/04/2021	
11/04/2021	
18/04/2021	
25/04/2021	
02/05/2021	3
09/05/2021	1
16/05/2021	
23/05/2021	
30/05/2021	3
06/06/2021	
13/06/2021	
20/06/2021	
27/06/2021	
04/07/2021	1
11/07/2021	1
18/07/2021	
25/07/2021	
01/08/2021	
08/08/2021	
15/08/2021	
22/08/2021	
29/08/2021	

Role of Staff attending training



Nurse	Maternity nurse	Doctor/ Consultant	Dietetics	Student Nurse	Other
29%	19%	22%	10%	16%	4%
21	14	16	7	12	3

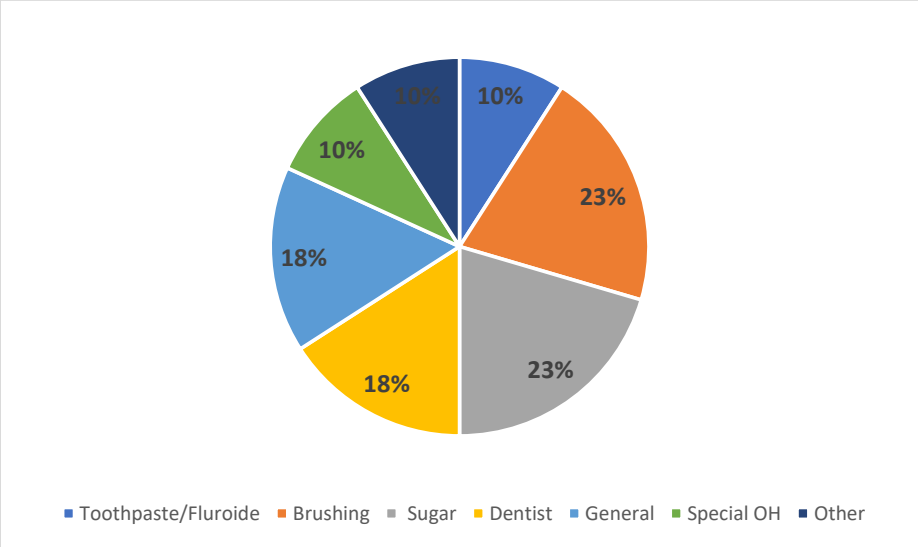
Staff Learning



I learn't something new for my patients	I learnt something new for myself	I learnt something new for my patients and myself
19%	3%	78%
6	1	25

Themes of learning reported by staff

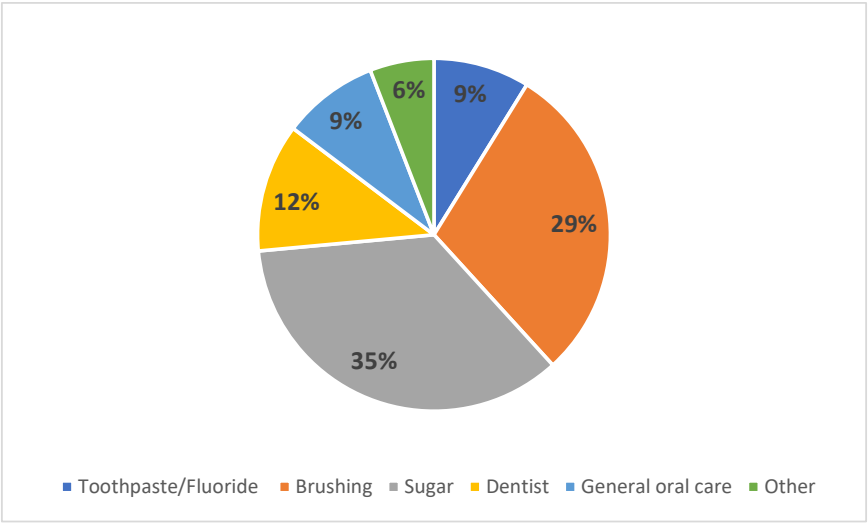
Learning for their patients



Toothpaste /Fluroide	Brushing	Sugar	Dentist	General	Special OH*	Other
10%	23%	23%	18%	18%	10%	10%
4	9	9	7	7	4	4

(*) Offering special oral health advice for specific groups of patients (e.g., for children with additional needs, such as unsafe swallow or autism)

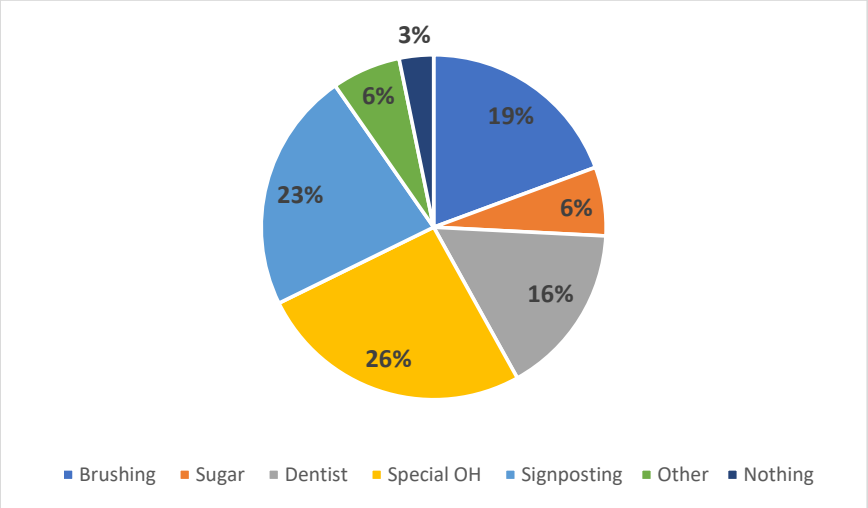
Learning for themselves and/or their family



Toothpaste/Fluoride	Brushing	Sugar	Dentist	General oral care	Other
9%	29%	35%	12%	9%	6%
3	10	12	4	3	2

Themes of commitment to change reported by staff

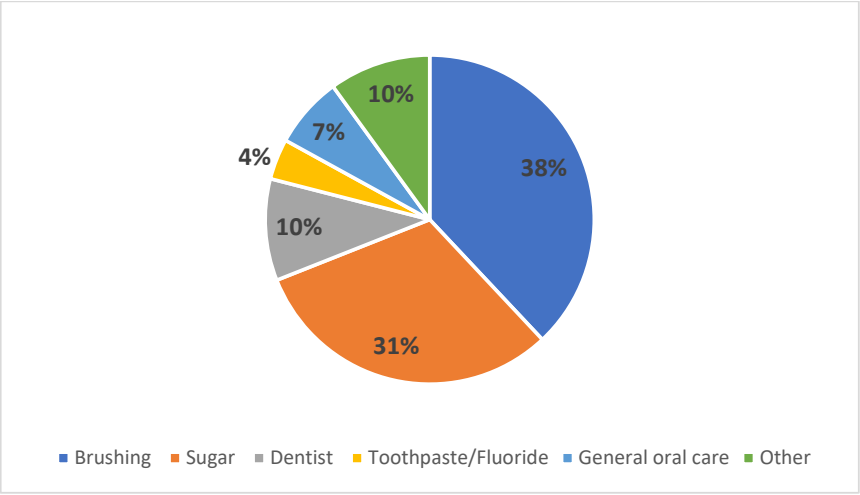
Commitment to change for their patients



Brushing	Sugar	Dentist	Special OH*	Signposting	Other	Nothing
19%	6%	16%	26%	23%	6%	3%
6	2	5	8	7	2	1

(*) Offering special oral health advice for specific groups of patients (e.g., for children with additional needs, such as unsafe swallow or autism)

Commitment to change for themselves and/or their family



Brushing	Sugar	Dentist	Toothpaste /Fluoride	General oral care	Other
38%	31%	10%	4%	7%	10%
12	9	3	1	2	3