

# Barriers and facilitators to health visiting teams delivering oral health promotion to families of young children: a mixed methods study with vignettes

Sally Weston-Price,<sup>1</sup> Julia Csikar,<sup>2</sup> Karen Vinall-Collier,<sup>2</sup> Philippa Bishop,<sup>3</sup> Donatella D'Antoni<sup>1</sup> and Cynthia Pine<sup>1</sup>

<sup>1</sup>Dental Public Health, Queen Mary University of London, United Kingdom; <sup>2</sup>Dental Public Health, University of Leeds, United Kingdom; <sup>3</sup>Institute of Health Visiting, London, United Kingdom

**Objective:** To explore the potential barriers and facilitators to health visiting (HV) teams delivering oral health promotion during the 9-12-month old child mandated visit in Ealing, England. **Background:** HV schemes and their counterparts worldwide share similar priorities to discuss oral health at 6-12 months of age. The HV programme in England stipulates at 9-12 months old, diet and dental health should be discussed. HVs believe dental decay is important however oral health knowledge is varied. Further, little is understood about what drives HVs to deliver oral health advice. An appropriate theoretical model to explore these factors is the Theoretical Domains Framework (TDF). **Methods:** An opportunistic sample of HV team members was drawn from three hubs to allow for maximum variation. First, participants completed a questionnaire to establish baseline knowledge. Secondly, participants were invited to take part in focus groups (FGs) with vignettes. Thirdly, face-to-face interviews were conducted. FGs were subject to thematic analysis and the interviews to framework analysis. **Results:** Thirty-six participants provided written informed consent and completed baseline questionnaires. Three FGs were conducted with an average of seven participants (n=21) followed by 13 interviews. Perceived facilitators: good levels of knowledge and skills, sense of professional role, emotions, belief in capability, organisational structure and resources. Perceived barriers: gaps in knowledge, conflicting advice from other professionals, conflicting issues for parents/ carers, use of interpreters. **Conclusions:** These findings can be harnessed to support oral health promotion delivered by HV teams.

**Keywords:** Dental caries, health visitors, oral health promotion, vignettes, mixed methods

## Background

Worldwide parents and carers are encouraged to establish a “dental home” for their children “no later than 12 months of age” (Djokic *et al.*, 2018). This principle has been adopted with both the UK and Ireland having a national campaign (IDA, 2012; BSPD, 2017) that advises that children should be taken to a dentist as soon as their first teeth come through (approximately 6 months old), and before their first birthday. However, despite dental care being free for children, over a third of all children in England have not having attended in the previous 12 months (NHS Digital, 2018a). Therefore, it is crucial to seek additional opportunities to provide dental preventive advice where parents of young children access other health care, for example through health visitor checks. The health visiting programme in England sets out five visits that all families can expect under the universal level of service (Department of Health, 2009) starting at 28 weeks of pregnancy and continuing until the child reaches the age of 2 and a half years. The programme is delivered by health visitors (registered nurses or midwives who have additional specialist training in community public health nursing) and other key professionals such as community nursery nurses and family support workers. It is mandated

that during the fourth visit at 9-12 months old, diet and dental health should be discussed.

The attitudes among health visitors in the UK toward children’s oral health has been explored in the past (Oge *et al.*, 2018; Lewney *et al.*, 2018). Health visitors saw dental decay in baby teeth as an important issue and oral health advice should be included in their routine contacts with parents and carers (Oge *et al.*, 2018). However, they had variable oral health knowledge (Oge *et al.*, 2018; Lewney *et al.*, 2018; Quinn and Freeman, 1991). Furthermore, little is known about what drives these professionals to deliver oral health promotion advice, and the associated barriers and facilitators which surround these interactions.

A theoretical model that could be used to explore these factors is the Theoretical Domains Framework (TDF). This is a framework developed for implementation research to understand health professional behaviour in relation to implementing evidence-based recommendations. It represents a synthesis of 33 theories of behaviour change and has also been used to understand patients’ behaviours. It originally consisted of 12 domains (Michie *et al.*, 2005), which were subsequently validated and refined to cover 14 domains of potential behavioural determinants (Cane *et al.*, 2012). These are: *knowledge*;

skills; social/professional role and identity; beliefs about capabilities; optimism; beliefs about consequences; reinforcement; intentions; goals; memory, attention and decision processes; environmental context and resources; social influences; emotions; and behavioural regulation. The TDF has been used to explore barriers and enablers to delivering a health assessment (Alexander *et al.*, 2014), and recently in understanding oral health behaviour (Marshman *et al.*, 2016). Our study aimed to explore the barriers and facilitators to health visiting (HV) teams delivering oral health promotion during the 9-12-month old child mandated visit through the following objectives; [i] to determine HV teams' oral health knowledge and to explore barriers and facilitators to health visiting (HV) teams delivering oral health promotion during the 9-12-month old child mandated visit through the use of vignettes [ii] to map these barriers and facilitators onto the TDF domains (Cane *et al.*, 2012).

## Methods

The study was given Health Research Authority (HRA) approval to collect data from National Health Service (NHS) staff (IRAS project ID is 232056). The setting was the London Borough of Ealing, which has one of the poorest levels of child dental health in England (PHE, 2016). Ealing has three HV hubs covering differing populations and a HV team of approximately 60 members made up of HVs and other key professionals such as community nursery nurses (CNNs) and family support workers (FSWs).

A mixed-method approach integrating quantitative and qualitative data was used to provide a comprehensive understanding of the phenomenon under investigation and rich data to identify and triangulate the complex array of TDF domains (Gupta and Keuskamp, 2018). A baseline understanding of the HV team's knowledge of oral health promotion was considered a crucial domain and a standardised method for quantifying knowledge is via questionnaire. Focus groups (FGs) were used to generate participant-led content to elucidate the barriers and facilitators HV teams face when delivering oral health promotion as they often stimulate more topics than interviews alone. The FGs were followed by face-to-face interviews to draw together the findings of the questionnaires and FGs and enable mapping across the breadth of the TDF domains.

The study sample was HV team members across the three hubs in Ealing, with all staff members, in post, invited to participate to allow for maximum variation. Of those participants who provided written informed consent all were invited to complete the baseline questionnaire, with an opportunistic sample making up the focus groups and interviews [Figure 1]. HV team members were able to take part in either or both focus group and interview sections.

### Research tool development

The questionnaire was designed to assess knowledge in line with guidance statements from Delivering Better Oral Health (PHE, 2014b) related to children aged 9-12 months old. It was constructed using available individual

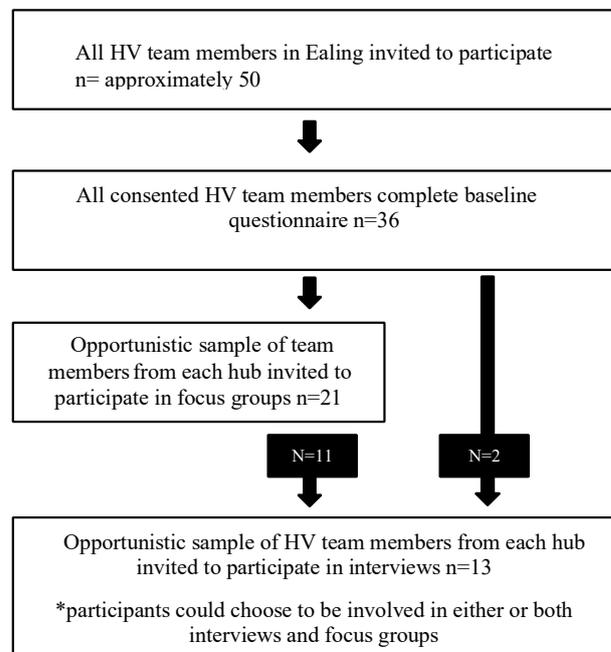


Figure 1. Flow of participants

validated questions and newly devised questions developed through consensus with an expert in this field of research. Interviews were conducted using a modified topic guide previously used to establish barriers and enablers to delivering a health assessment (Alexander *et al.*, 2014).

The FGs were designed to be supported by vignettes "A vignette is a brief, carefully written description of a person or situation designed to simulate key features of a real-world scenario" not intended to re-create a real-world situation rather "designed to approximate, isolate, manipulate, and measure key aspects of the decision-making processes that individuals use in real world situations" (Evans *et al.* 2015). Vignettes have been used in a variety of settings but are particularly useful in examining health professionals' attitudes, perceptions, and beliefs, where their use can overcome the feasibility and ethical implications of the alternative, which is assessing clinical decision making (Hughes and Huby 2002). They also help to avoid social desirability bias through the participant's "psychological distance" from the research question (Evans *et al.* 2015). Vignettes consist of up to three different aspects; experimental, controlled and contextual aspects (Evans *et al.* 2015), whereby the experimental aspects are those altered by the researcher to assess their effect on participants' behaviours, attitudes and beliefs with the controlled aspects remaining constant across vignettes. The context for this study was the 9-12-month mandated health visitor check, which is standard following the set service specification (Department of Health, 2009). Thus, the experimental and controlled aspects were employed for the vignette development. A vignette development group was convened of professionals with experience in psychological research methods, health psychology, health visiting, oral health promotion and public health. The steps utilised in creating the vignettes are set out in Figure 2.

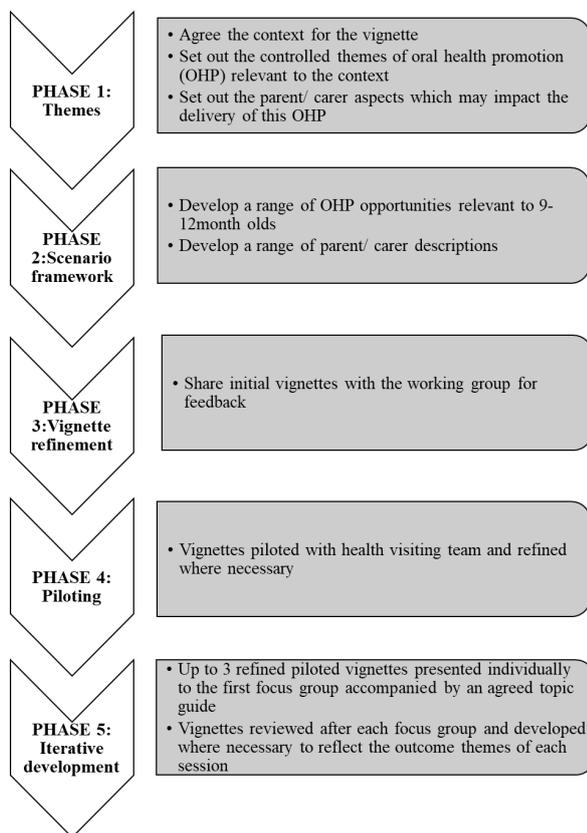


Figure 2. Flowchart for the development of vignettes to explore oral health promotion

In the workshop, the development group brainstormed the experimental and control aspects, to produce a parent/ carer stem for the scenarios complemented by advice specific to the 9-12-month olds [Table 1] leading to a set of six vignettes to be piloted and refined.

Each vignette was given to FG participants to read first, followed by the facilitator reading the text to the group. Participants were reminded the context was the 9-12-month-old child mandated check and they were asked to comment on the advice that they would provide, with facilitators following a semi-structured topic guide [Figure 3]. As these were newly developed tools: the questionnaire, topic guides and vignettes, were piloted with HV team members from the neighbouring London Borough of Harrow checking face validity, layout and ease of completion.

### Analysis

Questionnaire data were inputted into Excel and frequencies of responses described to indicate the HV team's knowledge of oral health. A phenomenological approach underpinned analysis (Lawler, 1998), whereby reviewers sought to understand the subjective experience of HV teams when delivering oral health promotion. The views expressed in the FGs were subject to the six steps of thematic analysis as described by Braun and Clarke: familiarisation, generating initial codes, searching for themes, reviewing themes, naming themes and producing the report (Braun and Clarke, 2006). This was done by one primary coder, who facilitated the sessions (SWP) for all three FG transcripts; and, for one FG transcript

by a second coder (JC) independently. The findings were discussed and the themes that emerged from the transcripts were mapped against the TDF domains. The interview transcripts were subject to framework analysis (Ritchie and Spencer, 1994) against these TDF domains to triangulate the findings. A modification of a process used previously to explore semi-structured interviews guided by the TDF with oral health content (Marshman *et al.*, 2016) was employed. The primary coder (SWP) applied this framework to all the interview transcripts with the second coder (JC) analysing an interview transcript from each HV hub. This process was done independently, and subsequent findings discussed and agreed. When the interviews did not add further themes we concluded that data saturation was reached.

### Results

Data were collected between May and August 2018. All HVs and CNNs working in Ealing, were invited to complete the questionnaires (number in post and available was approximately 50), of whom 36 provided written informed consent to participate in all stages of the study. All were female, most were 41-65 years old and had worked a median of 14 years (range <1 year to 43 years) in the HV team. Seven were nursery nurses and the remaining 29 were health visitors.

All 36 participants completed questionnaires. Three FGs were conducted across the 3 HV hubs with an average of 7 participants (Acton n=5, Greenford n=6, Southall n=10). These were followed by 13 interviews across the 3 hubs [Figure 1].

#### Questionnaire findings

The questionnaire responses were analysed to see if they aligned with guidance from *Delivering Better Oral Health* (PHE, 2014b). This revealed a good level of knowledge in respect to diet; all participants recognised that only milk and water are recommended drinks for children less than 1 year of age and that complementary foods should be introduced at 6 months. Most (n=24) recognised snacks that contained sugar and 35 would encourage parents and carers to give fresh fruit and fresh vegetables to their babies as a preferable snack. All participants knew that a parent/ carer should start cleaning a baby's teeth as soon as the first tooth erupts, and that teeth should be brushed at least twice a day. However, knowledge in relation to fluoride toothpaste was less widespread. There was variation in what age they would recommend fluoride toothpaste to be first used and less than half (n=16) correctly identified 1000ppm as the recommended minimum concentration of fluoride toothpaste children should use from ages 0-3 years. Almost all (n=32) knew that children should be encouraged to spit out toothpaste after brushing.

#### Vignette development findings

Six vignettes were introduced over the first two sessions and refined after focus group debrief sessions with members of the development group. This resulted in three final vignettes, which were presented to the third focus group [Table 2].

**Table 1.** Overview of vignette theme development

<i>Control/ experimental aspects</i>	<i>Workshop feedback</i>	<i>Draft vignette stems</i>
<b>Parent / carer themes</b>		
Age of child	Child age to remain constant at 10 months old across scenarios, providing scope for questions surrounding tooth eruption & weaning	
English as a second language	Presenting feature to be “Spoken English appears poor” rather than “English as a second language”	<i>“A mother attends with her 10-month-old baby, her spoken English seems poor...”</i>
Mother with multiple children		<i>“At a session a mother of 4 attends with her 10-month-old baby...”</i>
First time mum	The age of the mother should not be confused with experience. Therefore “first time mum” and young mother should be separate aspects	<i>“A 19-year-old mother attends for the session with her 10-month-old baby... “A first-time mother attends for the session with her 10-month-old baby...”</i>
Gender	Fathers may attend so infrequently that this may not be an issue so to consider this in piloting.	<i>“A father attends for the session with his 10-month-old baby ...”</i>
<b>Oral health promotion themes</b>		
Diet	Options between the child eating a sugary snack versus juice in a bottle justified because juice in a bottle is more likely to indicate a habit and less likely to be one off, which a sweet snack could be	<i>...as they walk in you notice the baby is drinking juice from a baby bottle” ...when discussing weaning they say their baby still seems very hungry for the bottle in between meals”</i>
Oral hygiene	Parents asking specific oral health related advice (e.g. what are the best snacks for my child, how do I brush their teeth?) not seen as the focus as they are already showing awareness of behaviour choices	<i>...they ask about cleaning their baby’s teeth”</i>
Dental attendance	Felt that specific scenarios focused on dental attendance questions could lead the focus group into oral health and were to be avoided	<i>...they say their baby’s first teeth have come through”</i>

**Please describe what advice you would give in this situation**

**What sources of knowledge do you draw on for this advice?**

**Do you feel confident delivering this advice?**

**When giving this advice what do you take into account?**

**Which aspects do you consider?**

**What do you feel is your role in delivering this advice?**

**Do you feel a responsibility to deliver this advice?**

**In the area that you work are there any aspects that make providing this advice easier or more difficult?**

**Do you feel the advice you provided in this scenario is beneficial to the parent/carer?**

Figure 3. Focus group topic guide

**Table 2.** Iterative development of the vignettes

	<i>Vignettes</i>	<i>Findings</i>
Focus group 1	1. At a session a mother of four attends with her 10-month-old baby they say their baby's first teeth have come through	Participants all felt the scenarios were reflective of clinical situations they had previously experienced
	2. A mother attends with her 10-month-old baby, her spoken English seems poor when discussing weaning they say their baby still seems very hungry for the bottle in between meals	Overall the advice section of the vignettes was the initial subject of discussion for the groups Parent/ carer factors were drawn on by further probing from the facilitator
	3. A first-time mother attends for the session with her 10-month-old baby as they walk in you notice the baby is drinking juice from a baby bottle	Starting with vignette #1 brought an oral health emphasis too early to discussions and it was decided it would be better placed later in a focus group Local procedure requires the teams to ask if the teeth have erupted so a more realistic wording of the vignette was agreed as "when asked if the teeth have come through they say yes"
Focus group 2	4. A 19-year-old mother attends for the session with her 10-month-old baby when discussing weaning they say their baby still seems very hungry for the bottle in between meals	Age of mother appeared "unimportant" in a vignette-as a 19-year-old mother could have multiple children, high educational attainment and therefore age was not viewed as a suitable description to imply experience
	5. A mother attends for the session with her 10-month-old baby and the baby's grandparent as they walk in you notice the baby is drinking juice from a baby bottle	Advice delivered to fathers was the same for mothers and therefore not adding value to the vignettes
	6. A father attends for the session with his 10-month-old baby they say their baby's first teeth have come through (clarified by facilitator – "when asked if the teeth have come through they say yes")	Grandparent presence was raised and discussed even before being explicitly added to the vignette and was supplementary to the core parental factors of experience and language barriers
Focus group 3	7. A first-time mother attends for the session with her 10-month-old baby as they walk in you notice the baby is drinking juice from a baby bottle	
	8. A mother attends with her 10-month-old baby, her spoken English seems poor when discussing weaning they say their baby still seems very hungry for the bottle in between meals	
	9. At a session a mother of four attends with her 10-month-old baby when asked if the teeth have come through they say yes	

### Qualitative findings

The data from the FGs and interviews are combined and mapped against the corresponding TDF domains in Table 3.

#### Knowledge and skills

The qualitative analysis enriched the findings from the baseline questionnaire, indicating the detail of oral health knowledge and subsequent advice delivered to families. The HV team discussed crucial skills involved when providing oral health advice, such as being able to identify the right timing to 'land the advice' and the method of delivery, such as adopting a non-judgmental approach when talking to carers.

#### Social/ professional role

An emergent theme was that providing oral health education is seen as part of everyone's duty, but specifically that of the HV team due to their unique position connecting the clinical and home settings.

#### Belief about capabilities

The professional role appeared to be underpinned by a self-reported personal capability and confidence to deliver oral health advice and what appeared to be an associated satisfaction with the quality of advice they could provide and the ability to answer questions posed by the families.

#### Belief about consequences

Participants highlighted the belief that providing oral health advice does not always result in adherence, recognising the need to use different strategies to support adherence, in particular with families that are less adherent.

#### Environmental context and resources

The fact that oral health advice is part of the 9-12-month visit appeared to facilitate its delivery. Also, written guidance helped to ensure that oral health advice is discussed during the visit.

#### Emotion

Emotions appeared to have a role. For instance, empathising with children's pain due to tooth decay seemed to motivate delivery of oral health advice.

**Table 3.** TDF domains influencing HV team’s delivery of oral health promotion

<i>TDF domain</i>	<i>Supporting quotes (FG= focus group I= interview A, G, S= HV hub)</i>
1. Knowledge	<p>“...remind mum that we would advise to drink from a beaker, a free-flow beaker and that, erm, water is really best, that’s what we would say...” (FG, A)</p> <p>“...cleaning their teeth, as I always say before bed’s the most important time. You can do it any other time during the day fine, but it’s before bed is the crucial time” (FG, A)</p>
2. Skills	<p>“It’s getting the timing right sometimes, and the way you say it. If you approach it in a way that they see it as something that’s going to benefit them...” (FG, G)</p> <p>“I think through years of experience of doing what we’re doing, and even for the new staff coming on board they pick up so quickly the tools that you’re going to need to be effective in delivering what parents need to know” (FG, A)</p>
3. Social/Professional Role and Identity	<p>“It’s as important as everything else; it has no place to be left out” (I, A)</p> <p>“Definitely we have a role because we have lots of contacts, the parents when we do home visits and also in clinics, and when we do the dental checks. So yeah it is one of our vital roles to reduce decay really, to make sure that the parents look after their children’s teeth, yeah.” (I, S)</p>
4. Belief about capabilities	<p>“I just feel ... I feel like because I am quite confident with that part, and I am quite happy with the advice I give. I feel quite happy with it, and I feel like, erm ... there is not much people can throw at me, like I feel like ... yeah I feel quite secure and quite happy actually, yeah.” (I, A)</p>
5. Beliefs about Consequences	<p>“Some parents ... is what we call disguised compliance, they will say, yeah, yeah, yeah, yeah, yeah, yeah. But they won’t do it ...” (I, S)</p>
6. Environmental Context and Resources	<p>“To be honest, the 9 to 12 months is part of it, I just do it. I have got it there written on the form, I am not going to miss it.” (I, A)</p>
7. Emotion	<p>“So, if they have got pain in their teeth, I mean toothache is horrendous isn’t it, they are not going to be able to concentrate at school. They are not going to be able to go to nursery and enjoy and learn through play if they have got, you know pain the background all the time. So, I think it’s really important, just for their wellbeing it’s such a crucial part isn’t it of their health.” (I, A)</p>

### *Additional TDF constructs*

Thematic analysis allowed exploration beyond the confines of the theoretical framework and contributed to the TDF constructs explaining HV team’s delivery of oral health promotion [Table 4].

#### **Conflicting information**

A challenge highlighted by the HV teams was the presence of conflicting oral health advice provided by other health professionals, including dentists. For example, there were reports that HV teams had heard that dentists were refusing to see young children; I’ve heard that the dentists are saying they don’t want to see them (FG, A). Many HV team members discussed how such conflicting advice might impact on whether the family would follow oral health advice (i.e. beliefs about consequences).

#### **Competing challenges**

The HV team also believed that intake of the oral health advice they provided could be influenced by whether families had competing priorities.

#### **Visual aids**

Health visiting teams reflected on tools that assisted delivery of oral health promotion. Resources such as visual aids could help overcoming communication and language barriers.

#### **Tooth brushing packs**

There was also strong agreement that toothbrush &

toothpaste packs are not only well received, but provided the necessary resources to adopt toothbrushing behaviours.

#### **Interpreters**

Language barriers were voiced across all the focus groups and for some the use of interpreters was a potential barrier to establish a direct rapport with the family. Not knowing the interpreters and therefore not being sure of whether they would transmit the correct health message was reported as a potential barrier in delivering oral health advice.

Combining the TDF domains and new sub-themes allowed construction of a theoretical map of the potential barriers and facilitators to HV teams delivering oral health promotion at the 9-12-month-old visit [Figure 4].

### **Discussion**

The delivery of oral health promotion relies, in part, on professionals having the appropriate knowledge and skills. These data demonstrate a solid knowledge base of oral health in HV teams. Yet gaps in knowledge were highlighted, particularly surrounding the detail of recommended fluoride toothpaste concentrations and amounts. This finding supports previous data (Oge *et al.*, 2018) and indicates a training need. Participants reported confidence in delivering the appropriate oral

**Table 4.** Proposed TDF constructs influencing HV team’s delivery of oral health promotion

<i>TDF domain</i>	<i>Sub-construct</i>	<i>Supporting quotes (FG= focus group I= interview A, G, S= HV hub)</i>
8. Beliefs about Consequences	Conflicting information	“It’s kind of in line with what I’ve said before but if they’ve been told something by someone else, thinking about oral health, the dentist has said one thing and we’re saying something else or any kind of situation like that creates an issue I think.” (FG, G)
	Competing challenges	“If I say to them no it should be this, this, and this, they’ll say well somebody else told me it should be, and they’re talking about another health professional, so I just sort of think, right, you don’t want to hear that...” (FG, A)
		“If they’re moving around more, if they’re in hostel accommodation or refuge accommodation, again I think you have to unpick a conversation don’t you, you start a conversation... and see what’s going on.” (FG, A)
9. Environmental Context and Resources	Visual aids	“I think sometimes it’s about where the parent is at, and they’re worried about their housing, they’re a bit low mood. You’re giving them information and it’s just way up there. They have got other worries, other areas that are priority in their lives, so dental is moved right to the back. It’s constantly addressing that.” (FG, S)
	Tooth brushing packs	“And picture aids, this is so easy to cover. I mean there’s very little spoken English but a picture of a tippy cup, you can, you can easily have that, we even have little yellow tippy cups” (FG, A)
		“The bottle, we always had a picture on the wall with a beaker, this is the time to introduce the cup and this plate, its plastic, and they buy it. You don’t need an interpreter for this one...You can just show mums different shapes that they can come in” (FG, S)
	Interpreters	“It definitely helps when you have the oral packs.... it has a little leaflet in it as well” (FG, A)
		“...and then at the end you give them a toothbrush and it’s like I’ve got the tool now, there’s no excuse they’re more likely to put it into practice then” (FG, A)
		“...it’s quite difficult because we don’t know the interpreters and they’re different each time, you can get an interpreter that you know is saying what you said, but you can others who you know are saying something but saying something else as well adding into their cultural helpful advice that they think is helpful, but you don’t know what they’re saying” (FG,G)
		“You don’t feel that rapport because you’re always going through a third person...” (FG, G)

health advice but recognised the need for HV teams to access formal training to develop the skills necessary to promote oral health. Our findings should inform training schemes locally.

There appeared to be a strong professional attachment to delivering oral health promotion to families, linked to the 9-12-month-old visits, and supported by their organisational structure. This indicates that the explicit inclusion of “dental health prevention” in the service specification may have been a driver of oral advice provision. Resources supported teams, with examples of visual aids shared in the focus groups and interviews. The visual aids were thought to reduce confusion, particularly where language and communication barriers existed. Targeted provision of toothbrushes and toothpaste is a recommended oral health improvement intervention (PHE, 2014a). Toothbrush packs were valued as a useful aid to facilitate the conversation between HV teams and families on oral

health and were reported to be welcomed as an additional resource by the families. However, these resources did not appear to be consistently available across the teams. Targeted provision of toothbrushes and toothpaste is recommended (PHE, 2014a), therefore funding to secure this resource consistently could be explored to support the 9-12-month visits.

These findings support the need for training, which would complement national guidance for commissioning oral health locally, which recommends that “the children’s workforce can be supported through training and development to deliver appropriate evidence informed brief advice across the life course” (PHE, 2014a). This can target gaps in workforce knowledge particularly surrounding fluoride and support skill development in identifying effective approaches in changing behaviour (NICE, 2007).

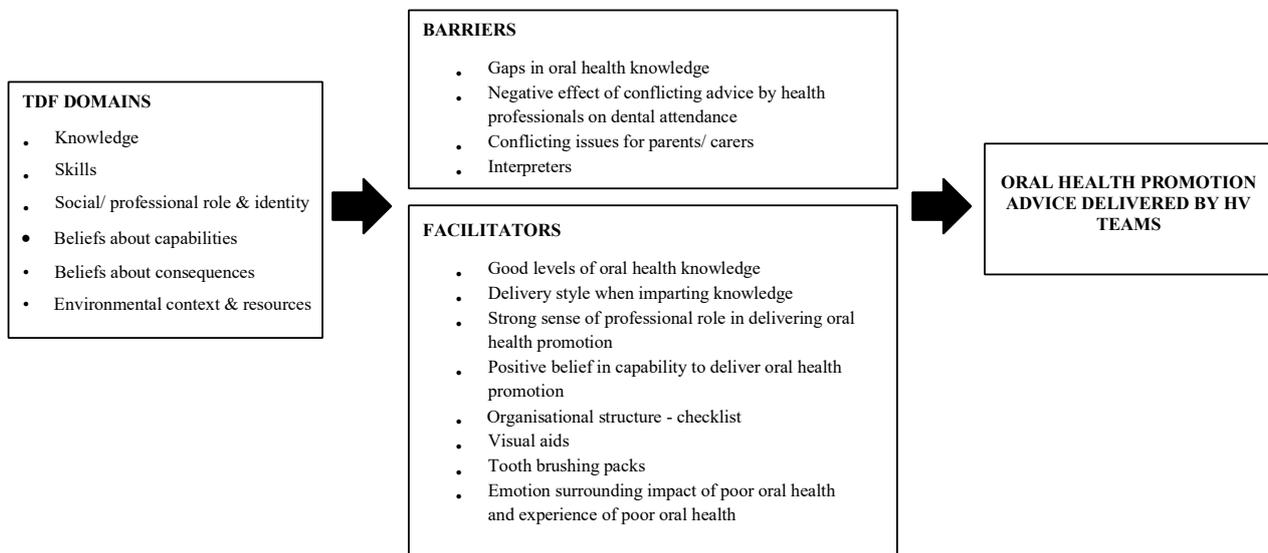


Figure 4. Theme map of the barriers and facilitators to HV teams delivering oral health promotion

Future research is needed on the development of interventions targeted to address the barriers revealed by HV teams in this study.

### Limitations

This study was conducted in a single setting (Ealing), which could influence the transferability of the results, which readers should consider in their own setting. However, the Ealing HV team sample is comparable to England NHS workforce statistics (NHS Digital, 2018b). Nationally, in 2018 99% of HVs and CNNs were female with most (72%) in the 40-64-year-old bracket. In England in 2018, of the combined HV and CNN workforce, 81% were HVs and 19% CNNs (NHS Digital, 2018b). In addition, there are limitations when employing an opportunistic sample, yet these were mitigated by stratifying the focus groups and interviews across the three HV hubs to maximise participant variation.

The themes were aligned to individual domains but in some cases, it was felt they could align with more than one domain, which is a challenge when using the TDF. A further limitation was that only one person coded all the focus groups and interview transcripts, with some peer scrutiny. Further, the coder is a dentist and brings her own professional perspective. A strength is that the research team were from a range of disciplines including health visiting and psychology.

### Conclusions

The mixed-methods design of this study led to an understanding of the theoretical domains involved in HV teams delivering oral health promotion at the 9-12-month-old check. The perceived facilitators to oral health promotion were good levels of oral health knowledge, skills in delivery, sense of professional role, emotional influence, belief in capability, organisational structure and specific resources. With the perceived barriers to oral health

promotion being; gaps in oral health knowledge, conflicting advice, conflicting issues for parents/ carers, use of interpreters. These findings can be harnessed to maximise the impact of oral health promotion by HV teams.

### Acknowledgements

This study was funded by the 2017 Faculty of Dental Surgery, Royal College of Surgeons, England -British Association for the Study of Community Dentistry Small Grants Scheme.

The research team acknowledges the support of the National Institute for Health Research Clinical Research Network (NIHR CRN).

The authors would also like to express their gratitude for the support from health visiting teams involved in providing feedback and to Claire Robertson (Consultant in Dental Public Health) for her support in setting up networks with Ealing Local Authority.

### References

- Alexander, K. E., Brijnath, B. and Mazza, D. (2014): Barriers and enablers to delivery of the Healthy Kids Check: an analysis informed by the Theoretical Domains Framework and COM-B model. *Implementation Science* **9**, 60.
- Bradley, E. H., Curry, L. A. and Devers, K. J. (2007): Qualitative data analysis for health services research: developing taxonomy, themes, and theory. *Health Services Research* **42**, 1758-72.
- Braun, V. and Clarke, V. (2006): Using thematic analysis in psychology. *Qualitative Research in Psychology* **3**, 77-101.
- BSPD (2017): Dental Check by One. From: <https://www.bspd.co.uk/>
- Cane, J., O'Connor, D. and Michie, S. (2012): Validation of the theoretical domains framework for use in behaviour change and implementation research. *Implementation Science* **7**, 37.
- Department of Health (2009): Healthy Child Programme – Pregnancy and the first five years. From <https://www.gov.uk/government/publications/healthy-child-programme-pregnancy-and-the-first-5-years-of-life>

- Djokic, J., Bowen, A., Dooa, J. S., Kahatab, R., Kumagai, T., McKee, K., Tan, C., FitzGerald, K., Duane, B. and Sagheri, D. (2019): Knowledge, attitudes and behaviour regarding the infant oral health visit: are dentists in Ireland aware of the recommendation for a first visit to the dentist by age 1 year? *European Academy of Paediatric Dentistry* **2**, 65-72
- Evans, S. C., Roberts, M. C., Keeley, J. W., Blossom, J. B., Amaro, C. M., Garcia, A. M., Stough, C. O., Canter, K. S., Robles, R. and Reed, G. M. (2015): Vignette methodologies for studying clinicians' decision-making: Validity, utility, and application in ICD-11 field studies. *International Journal of Clinical Health Psychology* **2**, 160-170
- Gould, D. (1996): Using vignettes to collect data for nursing research studies: how valid are the findings? *Journal of Clinical Nursing* **5**, 207-212
- Gupta, A. and Keuskamp, D. (2018): Use and misuse of mixed methods in population oral health research: A scoping review. *Community Dental Health* **35**, 109-118.
- Hughes, R. and Huby, M. (2002): The application of vignettes in social and nursing research. *Journal of Advanced Nursing* **37**, 382-6.
- IDA (2012): Children's oral health, the first dental visit. The Association values: From: [https://www.dentist.ie/\\_fileupload/Position%20Papers/IDA%20Position%20Paper%20Children's%20Oral%20Health.pdf](https://www.dentist.ie/_fileupload/Position%20Papers/IDA%20Position%20Paper%20Children's%20Oral%20Health.pdf)
- Lawler, J. (1998): Phenomenologies as research methodologies for nursing: from philosophy to researching practice. *Nursing inquiry* **2**, 104-111
- Lewney, J., Holmes, R. D., Rankin, J. and Exley, C. (2018): Health visitors' views on promoting oral health and supporting clients with dental health problems: a qualitative study. *Journal of Public Health* fdy107, <https://doi.org/10.1093/pubmed/fdy107>
- Marshman, Z., Ahern, S. M., McEachan, R. R. C., Rogers, H. J., Gray-Burrows, K. A. and Day, P. F. (2016): Parents' Experiences of Toothbrushing with Children: A Qualitative Study. *Journal of Dental Research Clinical & Translational Research* **1**, 122-130.
- Michie, S., Johnston, M., Abraham, C., Lawton, R., Parker, D. and Walker, A. (2005): Making psychological theory useful for implementing evidence-based practice: a consensus approach. *Quality & Safety in Health Care* **14**, 26-33.
- NHS Digital (2018a): NHS Dental Statistics for England - Quarter 3, 2017-18. From <https://digital.nhs.uk/data-and-information/publications/statistical/nhs-dental-statistics/nhs-dental-statistics-for-england---quarter-3-2017-18>
- NHS Digital (2018b): Nurses, Midwives and Support staff by area, level, gender and age, January 2018. From: <https://digital.nhs.uk/data-and-information/find-data-and-publications/supplementary-information/2018-supplementary-information-files/staff-numbers/nurses-midwives-and-support-staff-by-area-level-gender-and-age-january-18>
- NICE (2007): Behaviour change: general approaches. From <https://www.nice.org.uk/Guidance/PH6>
- Oge, O. A., Douglas, G. V. A., Seymour, D., Adams, C. and Csikar, J. (2018): Knowledge, attitude and practice among Health Visitors in the United Kingdom toward children's oral health. *Public Health Nursing* **35**, 70-77.
- PHE (2014a): Local authorities improving oral health: commissioning better oral health for children and young people: An evidence-informed toolkit for local authorities. From <https://www.gov.uk/government/publications/improving-oral-health-an-evidence-informed-toolkit-for-local-authorities>
- PHE (2014b): Delivering better oral health: an evidence-based toolkit for prevention, Third edition. From [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/605266/Delivering\\_better\\_oral\\_health.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/605266/Delivering_better_oral_health.pdf)
- PHE (2016). "2014/15 Survey of 5 year old children, Public Health England." from [http://www.nwph.net/dentalhealth/survey-results%205\(14\\_15\).aspx](http://www.nwph.net/dentalhealth/survey-results%205(14_15).aspx).
- Quinn, G. and Freeman, R. (1991): Health visitors as dental health educators: their knowledge, attitudes and behaviours. *Health Education Journal* **50**, 191-194
- Ritchie, J. and Spencer, L. (1994): Qualitative data analysis for applied policy research by Jane Ritchie and Liz Spencer in A. Bryman and R. G. Burgess [eds.] *Analysing qualitative data* 1