Service evaluation: identification of gaps in choking prevention advice for children in the South Coast of England, UK

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INTRODUCTION
Choking, also known as foreign body airway obstruction, is the blockage of respiration by a foreign body in the airway including the trachea, hypopharynx and pharynx.1 Among young children, choking is one of the leading causes of death among unintentional injuries,2 thus making it a significant public health issue. Children under 5 have the highest risk of choking compared with other children and adults.3 In 2016, of the approximately 1900 choking episodes resulting in emergency calls in London, 40% were for children under 5.4

Common items that children may choke on include food, toys and coins.1 Round objects that can adapt to the shape of a child’s airway are most likely to cause complete obstruction of the airways such as grapes, peanuts and hard sweets.1

To reduce the incidence of these events, choking prevention advice for parents/caregivers is critical.5 One study showed that parents who lacked awareness of food choking hazards were more likely to give foods to their children that increase choking risk.6 Conversely, studies conducted in Israel and Crete showed a decline in choking cases in children after implementing educational choking prevention programmes.7

Healthcare professionals (HCPs) such as general practitioners (GPs), paediatric nurses and health visitors play a significant role in providing choking prevention advice to parents/caregivers. Examples of choking prevention advice recommended by the Child Accident Prevention Trust are shown in box 1.8 During their professional training, these HCPs have typically received choking prevention and management teaching.9 However, in clinical practice, it is unclear how routinely these roles are being carried out.

Aims and objectives
Our service evaluation had a primary objective to identify the type of HCPs providing choking prevention advice and how consistently this advice was delivered. Secondary objectives included assessing the use of choking prevention resources by HCPs and determining where HCPs think choking prevention advice is best placed.

METHODS
A survey was created using Qualtrics (online survey tool) (see online supplemental file 1). The Health Research Authority decision-making tool was used to evaluate our service utilisation study and identified no requirement for full ethical approval as patient data were not collected. Patients and the public were not involved in the research. The survey consisted of an introductory statement followed by 14 multiple-choice questions covering demographics and the provision of choking prevention advice. The survey was electronically distributed to GP doctors, GP nurses, health visitors and paediatric nurses in one location in the South Coast of England. Paper questionnaires were also distributed to various GP practices in two locations in the South Coast of England.

RESULTS
The survey was distributed to 304 HCPs. A total of 131 survey responses were received, for a response rate of 43%. Five were excluded from analysis due to non-paediatric facing work. Partially completed surveys were included in the analysis if at least 50% of the questions were answered. The final cohort analysis consisted of 126 respondents, which included 40 GP doctors, 17 GP nurses, 48
paediatric nurses and 21 health visitors. Of the respondents, 89% were white and 84% were women and 43% reported over 20 years of professional experience (see online supplemental file 2).

Provision of choking prevention advice and methods used
Of all respondents, 40% (49/124) did provide choking prevention advice to families under their care (figure 1). Most health visitors (86%) provided advice to at least some families, but among all the respondents, nearly half (24/49) provided that advice to ‘very few’ families. Of the GP doctors who did provide advice, 73% (8/11) only provide to very few families (figure 1).

Out of the respondents who did provide choking prevention advice, nearly all (48/49) did that through verbal advice. The most common verbal advice (given by 77% of respondents) was cutting up/avoiding certain types of foods (figure 2).

Training, awareness of resources and competency in choking prevention
Sixty per cent of respondents recalled receiving choking prevention for children during their undergraduate training, and 75% of respondents recalled receiving such training in postgraduate training or in their work setting (table 1). One respondent provided incomplete data on awareness of resources. Of the remaining 125 respondents, 41% were unaware of the choking prevention resources suggested in the questionnaire (figure 3). Nearly half of respondents (25/51) who were unaware of these resources were GP doctors. Of the respondents who did provide advice, only 51% reported feeling competent in that activity (table 1).

Perception on where choking prevention is best placed
On a scale of 1–5 (best to least best placed), participants were asked to rank different healthcare settings in where they believed choking prevention advice was best placed. Descriptive statistics were carried out to calculate the rank. We found that, on average, choking prevention advice was deemed to be best placed during health visitor developmental checks (mean rank 2.37), followed by GP doctor’s clinic (mean rank 2.42) (see online supplemental file 2).

Across professional domains, most HCPs indicated that choking prevention was best covered by a HCP category different from their own. For example, the majority of HCPs who felt the antenatal care department was best placed were paediatric nurses, and the majority of HCPs who indicated that health visitor visits were best placed were GP doctors (figure 3). While many health visitors

Box 1  Examples of choking prevention advice recommended for children by the Child Accident Prevention Trust.6

Examples of choking prevention advice.
⇒ Avoid eating small food items such as nuts and large seeds.
⇒ Special preparation of food such as cutting up foods into small pieces.
⇒ Supervision of children eating in the home.
⇒ Advise parents on toy safety.
⇒ Supervision of children while playing.
placed the responsibility for choking prevention counselling within their domain, still approximately half of the health visitors indicated that this service was best delivered by another HCP type.

**DISCUSSION**

Our study is the first to evaluate the provision of choking prevention advice across different healthcare settings and to survey the consistency of that service. Our results showed that out of the respondents who do provide choking prevention advice, most are only providing to very few families. Even among health visitors, who have the highest rate of providing advice, this advice is inconsistently provided. Yet, one of the 15 key impact areas for health visitors is the prevention of unintentional injuries such as choking.8 Compared with health visitors, GP nurses and GP doctors provide less choking prevention advice to families/caregivers. These rate differences may be due to variation in health roles. UK Health visitors lead the 5-year Healthy Child Programme which involves

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**Table 1** Recall of training, awareness of resources and perceived competency in providing choking prevention advice among healthcare providers

| **Do you recall receiving training on choking prevention in children?** | **Number of responses (n=126*)** |
|---|---|---|
| During postgraduate training/work setting | 94 (75%) | 32 (25%) | 0 |
| During undergraduate healthcare education/training? | 76 (60%) | 39 (31%) | 11 (9%) |

**Which choking prevention resources are you aware of?†**

<table>
<thead>
<tr>
<th><em><em>Number of responses (n=125</em>)</em>*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Child Accident Prevention Trust</td>
</tr>
<tr>
<td>Local leaflets</td>
</tr>
<tr>
<td>NHS Child Health App</td>
</tr>
<tr>
<td>Other</td>
</tr>
<tr>
<td>None of the above</td>
</tr>
</tbody>
</table>

**If you answered YES to providing choking prevention advice, how competent do you feel in providing choking prevention advice to parents/caregivers?**

<table>
<thead>
<tr>
<th><em><em>Number of responses (n=49</em>)</em>*</th>
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</thead>
<tbody>
<tr>
<td>Not competent</td>
</tr>
<tr>
<td>Slightly competent</td>
</tr>
<tr>
<td>Competent</td>
</tr>
<tr>
<td>Very competent</td>
</tr>
</tbody>
</table>

*Only the respondents with complete date for these questions groupings were included in our analysis.
†Multiple options can be selected.
working closely with families to deliver services on prevention, health promotion and early intervention.8

Verbal advice was the most common method of providing choking prevention advice, followed by signposting to online resources/apps and leaflets. The relatively low signposting rate of online resources/apps and leaflets may be explained by the fact that many respondents were unaware of common choking prevention resources. Although most HCPs recalled receiving training on choking prevention advice, some respondents did not recall receiving such training or were not sure, particularly in their undergraduate training. Most HCPs in our study also lacked awareness of common choking prevention resources, suggesting gaps in choking prevention knowledge that can be addressed by training updates. Most respondents felt competent in providing choking prevention advice. However, a substantial proportion felt only ‘slightly competent’. This further highlights a need to improve the knowledge and skills of HCPs in providing choking prevention advice. According to the five core competencies for HCPs, using informatics such as health-related online platforms or online health research can help communicate information more effectively.9 Hence, increasing training in online choking prevention resources may improve competency in HCPs providing choking prevention advice.

Most HCPs surveyed thought choking prevention advice was best placed within the health visitor developmental checks. However, across the surveyed professions, most HCPs indicated that responsibility for choking prevention advice provision should lie with a different healthcare profession. Given these findings, the delivery of choking prevention advice may require a multidisciplinary approach and possible clarification of duties. Since young children/families are commonly seen in all the health settings included in this study, increased consistency in the delivery of advice is needed. We recognised that time constraints for all HCPs may be a barrier to the provision of choking prevention advice10 and systemic reform to accommodate this counselling may be a lifesaving improvement.

We recognise several limitations of this study, including the relatively small cohort sample size which may affect the generalisability of our results to all HCPs. Despite our study’s focus on the community setting, some paediatric nurses work exclusively in in-patient settings, with less involvement in the provision of choking prevention advice which may be perceived as an outpatient service delivery. Additionally, the self-assessment of competency in providing choking prevention advice is subjective and may vary based on intrinsic levels of confidence.

CONCLUSION

In summary, as choking prevention advice is critical to reduce choking episodes in children, the inconsistent provision of choking prevention advice represents a critical gap in healthcare delivery. Increasing training on choking prevention for HCPs, encouraging HCPs to provide choking prevention advice and signposting parents/caregivers to choking prevention resources are all potentially important tools to improve delivery of this healthcare service and to help save lives.

Contributors All authors conceptualised the study, interpreted the results and critically reviewed the manuscript. SK drafted the manuscript and carried out statistical analyses. SK, KP and KF had full access to all the data in the study and take responsibility for the integrity of the data and accuracy of the data analyses. KP and KF supervised the study. KP and KF are the guarantors. The corresponding author attests that all listed authors meet authorship criteria and that no others meeting the criteria have been omitted.

Figure 3 Assessment of the best placement of choking prevention advice.
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