Oral health status and experiences of children with learning disabilities in special schools in Sheffield

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Acknowledgements

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Introduction

It has been well documented that people with learning disabilities are less likely to have their health needs fully met when compared to the general population and that the healthcare system is not orientated towards meeting their needs (Power, 2009). While caries rates for individuals with learning disabilities are broadly in line with the general population, treatment is more likely to entail an extraction, rather than restorative activity (Anders, 2010). Periodontal disease (Anders, 2010), poor oral hygiene (Cumella et al, 2000) and dental access are more likely to affect individuals with learning disabilities (Gallagher and Fiske, 2007; Mencap, 2004; Robertson et al, 2010). Reliance on carers as gatekeepers can act as a barrier to good oral health as they may lack the knowledge, support and training required to facilitate this (Taylor-Dillon et al, 2003). Recent policy has sought to address the healthcare needs of adults and children with learning disabilities, and an important focus of the national strategy ‘Valuing People’ (DOH, 2001) concerned person-centred planning (PCP), or putting the person at the centre of the process of planning support services, with planning starting with the person, not the services, and taking into account their wishes, needs and aspirations (Sanderson et al. 2002).

Research has indicated that children with disabilities have more significant oral health needs compared with the wider population. Various studies have examined oral disease in children with a disability (O’Leary et al, 2007). Higher levels of caries experience have been reported (Gizani et al, 1997, Jokic et al 2007, Desai 2001), as have low levels of restorative care and the presence of caries in the first permanent molars (Gizani et al, 1997). One fifth of children with a disability were found not to brush daily and 91% did not receive assistance with tooth brushing (Gizani et al, 1997).

Whelton and colleagues (2009) carried out a survey of the oral health and dental treatment needs among children and adolescents with special needs in Ireland in 2003. They examined 537 children, aged 4-16, with predominantly mild and moderate disabilities although a small number had severe impairments. Parents completed a questionnaire on oral health behaviour and the perceived accessibility and acceptability of oral health services to children and adolescents with special needs. Findings revealed that 6% of parents reported that their children’s teeth were not usually brushed. Furthermore, it was more common for decayed teeth to be extracted rather than filled among children with special needs compared with children in the general population. Thirty-five percent of children in the five-year-old age
group had never been to a dentist, while just over half had their first visit to a dentist before reaching the age of 5 years. Explanations included: the child had never complained of toothache, that the child had no problems or need for treatment or that the child had not yet been called by the health board (school) dentist.

However, there is a paucity of research from the perspective of children. Hallberg and colleagues (2007) carried out one of the few qualitative studies to explore the perspectives of people with a range of learning and physical disabilities. ‘Being afraid of losing control’ and ‘having difficulty complying with instructions’ were particular concerns in relation to dental examination and treatment. Continuity of care was considered important, as was a wish to be equal to others. Participants expressed awareness of physical appearance and that they were conscious of being ‘looked or stared’ at by others. For some, oral health was given a low priority and a limited awareness of the importance of oral health and well-being was reported. It was concluded that underlying medical conditions assumed priority and that attendance at so many appointments could be a source of fatigue. One issue with the research is that only people who were articulate were chosen to take part in this study and the range of methods employed was limited.

There has been a lack of research with children with learning disabilities in relation to oral health (Hennequin et al, 2008, Department of Health, 2007), particularly informed by children’s voices.

In 2009, NHS Sheffield commissioned an oral health needs assessment of children and adults with learning disabilities in Sheffield. One of the strands of the project consisted of a clinical assessment of children attending special schools in Sheffield to ascertain their oral health and a qualitative study with children to directly seek their own perspectives. This report discusses findings from the children’s strand of this assessment.

Qualitative study
The aim of this aspect of the project was to explore children’s perspectives of their oral health. The objectives which apply to this strand were:

- To carry out focus groups and interviews to capture a wide range of information from children and adults about their oral health and experiences of dental health services; and
- To identify areas for improvements in oral health services and oral health promotion initiatives for these groups.

**Method**

The methodology was informed by ethnographic principles and narrative methods, which are methodologies often used in disabilities studies and children’s studies. Both these areas have suggested that participatory research is an inclusive approach and best used to garner the thoughts, experiences, and gain insight, into the lifeworld of both adults and children with learning disabilities. Therefore this study used ethnography with the aim of exploring the perspectives of children with learning disabilities. This is in accordance with guidance which states that: “Engagement of disabled children and young people in shaping services at a local level results in the provision of more appropriate services, and can help services work more efficiently and effectively, allowing for more flexible and tailored provision.” (DfES, 2007).

This section considers the methodological approach to the research.

Participatory techniques mean that children are not confined to answering researcher’s questions, but have the opportunity to participate in a way that could be considered more natural, such as drawing or completing activities (Edwards et al., 2004). The importance of these techniques is that they aim to reduce the power imbalance in research relationships and enable children to direct the discussions, rather than being researcher led. One additional benefit is that it is possible to adapt activities for children with different ages and abilities, making them more inclusive. Another benefit is that the visual or written nature of some techniques may be familiar to children and young people, for example, drawings and timelines, whereas one to one interactions with adults may be less so. This strive towards inclusion meant that participatory techniques were incorporated into the research framework at its conception.
Focus groups were favoured as they place participants at the centre of the research. Research has indicated that many people with learning disabilities experience delays in communication performance (Abudarham and Hurd 2002, Booth and Booth 1994, 1996). For example, some people may have hearing impairments; others may experience difficulties processing, understanding or verbalising speech. It is for this reason that people who know individuals with learning disabilities the best were asked to assist where necessary in the interviewing encounter, with the researchers adapting their research tools to enable individuals to express themselves. The range of abilities possessed by people with learning disabilities indicates the use of pluralistic methods, which might mean using picture cards (Norah Fry Research Centre 2004), narrative methods (Booth and Booth 1996, Swain and Cameron 1999, Owens 2006), simple vocabulary (Flynn and Hirst 1992, Cameron and Murphy 2006), intensive interaction (Caldwell 2006), or using closed questions to facilitate conversation (Plummer 2001). The focus groups allowed children with learning disabilities to communicate in a way that was most conducive to their abilities and interact with one another.

The topics covered in the focus groups can be found in the topic guide. The topic guide was designed to provide an aide memoire throughout the process (Kvale 1996). The topics were derived from reviewing existing literature, informal discussion with children with learning disabilities, their carers and dental clinicians. Not all topics on the guide were used, and there was the potential to include further areas introduced by children as the focus groups progressed. The first focus group gave a general direction of indicators and a rolling interview technique was used in the subsequent focus groups which was based on the outcomes of the previous groups’ discussions and revised for the subsequent groups. Focus groups are both dynamic and idiosyncratic and a great deal of flexibility was necessary when pursuing questions. There are usually two types of data; emic and etic (Krippendorf 2004). Emic data occurs naturally without any imposed structure, whereas etic data occurs through the researcher’s rigidly imposed view of the issue and a structure is placed around the situation, which constrains the emergent data. The emergent data from the focus groups lies at the emic end and this is largely related to the moderators allowing the conversation to flow with little or no interruptions, in addition some children draw or wrote, whilst others preferred to talk.

The focus groups were audio-taped with the permission of the children and transcribed verbatim with some difficulty because of the polyphony of voices. The transcription was carried out as quickly as possible after the research allowing the data to be analysed as collected. Using ethnographic techniques such as taking detailed notes helped at this stage to
provide context and to take the researcher back to the sessions. Where the voice recorder could not be used, journalistic methods were employed so a story was built throughout the focus group encounter (Denzin 2001). Field notes were kept by the moderators of their observations, thoughts and feelings during the process. To establish the trustworthiness of the data the moderators triangulated their interpretations by clarifying meaning with the children and staff, and through the use of the field notes.

Permission and liaison

Permission to carry out the research was sought from special school head teachers, Sheffield City Council and the Clinical Director of Sheffield Salaried Primary Dental Care Service. The project was also subjected to research governance and NHS research ethics approval.

In August 2010, research information and letters were sent to seven special schools in Sheffield. This was followed up with a telephone call to discuss potential involvement in the research. Two schools agreed to participate in the study. Research information packs were sent for schools to issue to parents and children and included consent forms. A purposive sample of children with learning disabilities was recruited for the study.

Data collection was carried out between October and December 2010. Focus groups were conducted in schools. Where practical and agreed, these were taped and transcribed. The research approach incorporates activities with the purpose of facilitating story telling and these will be utilised to construct a narrative.

The inclusion criteria for the qualitative study were individuals who volunteered and whose parents/carers were able to give consent for participation. Participants were made aware that involvement in the research was voluntary and that they could withdraw at any time without giving reason.

Informed consent was gained from participants and their parents. Where written consent was not possible, verbal consent was provided.

Sample

Five focus groups were held with 18 (9 boys, 9 girls) children with mild, moderate and severe learning disabilities aged 8-11 years in two special schools in Sheffield. Four focus groups were audio-taped and transcribed verbatim. One focus group with children who were pre-
verbal used sign language and was documented using journalistic and narrative methods. The schools have been given pseudonyms.

‘Brightways’ School
‘Brightways’ School is a primary school attended by children aged 2-11 years with severe and complex learning disabilities, many of whom have complex medical needs or physical impairments. More than half have learning difficulties that are described as ‘profound’ and ‘multiple’ while the remainder have severe learning disabilities. A minority are diagnosed with autistic spectrum disorder or challenging behaviour. The school is attended by an above-average proportion of children from minority ethnic groups; a quarter are from Pakistani backgrounds and English is an additional language for 1 in 6 pupils.

‘Brightways’ school is based in the North of the city and attended by children across the region. There is a mobile dental clinic on the premises which is now only used for storage of equipment.

‘Southfield’ School
‘Southfield’ School is a special school attended by children aged 4-11 years with autism or severe learning disabilities. Pupils are from a variety of socio-economic backgrounds, and according to its most recent Ofsted report, around one third are from minority ethnic backgrounds, though all speak English as their first language. The school is based in the Southern edge of the city. There is a residential unit available for children for overnight stays once a week. There is not a dental surgery on the premises.

Analysis
As qualitative techniques were chosen to capture participants’ own accounts, the data were analysed within a framework that situates children with learning disabilities as key social actors. An immersion approach to analysis was utilised by experienced researchers with knowledge of the research around people with learning disabilities and child research, coupled with more general social science knowledge, which helped locate the study within a broader context. The identified themes were then arranged into meaningful categories and where possible all the data were analysed in the original language used by the children to preserve their original meanings. The emergent themes are discussed in the results section.
Results

The findings from the interviews and focus groups revealed insights into children’s perceptions of their oral health and its care. The key themes were as follows:

- Children’s experiences of dental care
- Oral health practices

The following section describes the findings from the study in relation to these themes and sub-themes.

Children’s experiences of dental care

Children were able to recognise the role of the dentist, the dental environment including the equipment and demonstrate understanding of a range of procedures.

The role of the dentist was typically described in terms of checking or counting teeth:

‘She comes here to check on people’s teeth. Well, she comes to show you how to brush your teeth. And the best bit of all is, she actually gives you a new toothbrush and some toothpaste!’ (Suzy, 9)

Children described what happened to them at the dentist and drew pictures to illustrate the equipment used in the surgery (appendix 1).

‘She mends teeth. I sit in a chair. A special chair’. (Carly, 9).

Many children reported that their mothers accompanied them to the dentist, though in some cases, fathers or older siblings did so. The majority of children indicated that they did receive dental care and stated that this occurred twice yearly.

‘You have to go at six months. It’s October. I’ll go again in February’ (Simon, 8).

However, several children indicated that they did not remember going to a dentist, which may have been because they did not associate going to the dentist when they are seen on school premises in the dental unit.
Some children stated that their care took place at a dental practice and others described the dentist coming to their school:

‘Yes, at Hillsborough. That’s near my house. I go to that place. I like it when I’m in the patient’s room because there are toys there’ (Isla, 11).

‘They watch us brush our teeth and check we are actually doing it right’ (Kelly, 9).

Children described a range of procedures including radiographs, restorations, extractions and general anaesthetics:

‘Bitwings [bitewings] and x-rays. When I go with my mum for the x-rays, why do we always have to go back into the waiting room?’ (Ahmed, 11 years)

‘I had some took my teeth out. I didn’t like it very much. I didn’t like the cotton wool in my mouth. I had eight teeth taken out at the hospital. The hospital has dentists. When the dentist took my teeth out, I fell asleep’ (Alex, 9).

Popular aspects of dental care included being given a sticker and some participants commented that their dentist was ‘nice’. However, some participants suggested that they felt ‘sad’, ‘angry’ and ‘cross with mummy’ when they had to go for a dental appointment, which may indicate some negative feelings regarding dental attendance.

**Oral health practices**

When children discussed their oral health practices, this included resources, frequency and who this involved. Children reported that they brushed their teeth, and some added that they used mouthwash too. Participants reported that they used toothbrushes and described the one they used, for example:

‘I use Big Teeth toothpaste’ (Kelly, 8)

‘I use Colgate’ (Amber, 10)

‘I use Colgate or Aquafresh’ (Ahmed, 11)

‘Yes, I sometime use Colgate like Amber’ (Adam 9)
Children with more profound learning disabilities were able to indicate what colour their toothbrush was.

For some children, cultural aspects of toothbrushing practices may be relevant, as in the case of Iqbal:

‘In my religion, since I am a Muslim, sometimes we use a special stick called the Miswak, not all the time in England, but in Saudi Arabia’ (Iqbal, 9).

In terms of frequency, children typically reported that they brushed their teeth twice a day, though this was not always the case.

‘Every day and every night’ (Alex, 9).

Simon (8) said, ‘Well I sometimes brush my teeth...sometimes it’s just that I don’t want to brush them. I might forget’.

Children often reported relying on their parents or carers to remind them or help them to brush, but for others independence and being able to brush their own teeth was felt to be important:

‘I sometimes do it once a day, but sometimes do it twice. It usually depends on what my mum says’ (Kelly, 9).

‘Our mums and dads don’t help us’ (Iqbal, 10).

Discussion

To date, there has been some quantitative research with children to assess their oral health. However, there is an absence of research with children with learning disabilities that explores their experiences of their oral health, taking a qualitative approach. Qualitative approaches, as demonstrated by this first study, bring insights into children’s perspectives and complements findings from quantitative studies.

The results indicate children’s descriptions of their experiences of dental treatment and dental care. Some participants considered their own responsibilities for maintaining oral health, though it was clear that parents played a central role in this, as did moral discourses
surrounding oral health, evidenced by notions of the negative impact of sugary food and implications of insufficient toothbrushing. Participants acknowledged the roles of dentists in caring for their oral health, for example, attending regular appointments. They demonstrated an awareness of procedures that were carried out, for example, radiographs, fillings and general anaesthetic.

Consumerist aspects of oral health emerged through the discussions. When discussing oral health practices, children focused on the brand names of toothpaste and were keen to describe their toothbrush.

**Implications for services and oral health promotion**

The results of this study suggest that children with severe and complex learning disabilities were able to understand and communicate about their oral health and treatment experiences very effectively. Dentists and dental care professionals should not underestimate the ability of children with learning disabilities to communicate and their needs for information about their care.

Children stated that they were attending the dentist on a regular basis. However, two participants reported that they were not, and while this study is qualitative and generalisations cannot be drawn, it nonetheless highlights that regular dental attendance is not necessarily universal for children with learning disabilities. Further investigation is needed to explore why this is the case. In addition, access to dental services needs to be maintained during the transition from child to adulthood, a finding that emerged from the complementary oral health needs assessment of adults.

The consumerist aspects of oral health products have not been described previously with respect to children with learning disabilities and have implications for oral health promotion activities in which free toothpaste and brushes are distributed. The use of branded products should be considered to appeal to these children and potentially improve compliance with the use of the products.
Quantitative study

The aim of this aspect of the project was to describe the oral health status of children with mild and moderate learning disabilities in special schools in Sheffield.

Overview

The clinical assessment was carried out as part of the annual school screening programme, currently undertaken by Sheffield Salaried Primary Dental Care Service. Children and young people with mild to moderate learning disability who attended special schools in Sheffield in the age range of 5-19 years were the target population.

Recruitment

All children and young people (up to 19 years old) with learning disabilities from special schools for those with mild to moderate learning disabilities were invited to take part. Schools included Seven Hills (Hemsworth Road site), Seven Hills (East Bank Road site), Mossbrook, Autism 16 Plus, Bents Green and Rowan.

Demographic variables

Demographic data were collected for all participants for descriptive purposes. This included ethnicity data obtained from schools, age and gender. Young children at Rowan and Mossbrook who had not previously been screened were prepared before the survey by an oral health promoter from Sheffield Salaried Primary Dental Care Service.

Clinical variables

Caries status was assessed by enumerating the number of decayed primary and permanent teeth. Caries was defined as caries into dentine including visible and cavitated lesions to allow comparisons to be made with previous studies. The BASCD criteria were used (Pitts et al., 1997). Sepsis was recorded as present or absent. Gingival health was recorded using presence or absence of plaque, bleeding and calculus using the BASCD criteria (Pitts et al., 1997). Trauma to the upper permanent incisors was recorded as present or absent.
The position of the patient was recorded during the examination as in the dental chair, in the screening chair or in another position, for example on a beanbag.

The ability to carry out an examination was recorded as a full examination, a limited examination or if no examination was possible.

Permission

Permission was sought from special school head teachers, Sheffield City Council and the Clinical Director of Sheffield Salaried Primary Dental Care Service.

Research governance approval from NHS Sheffield and research ethics approval from Sheffield Ethics Committee and was granted in 2010.

Training and Calibration

The clinicians conducting the clinical dental examination received training and calibration according to the criteria used by BASCD. Training was given in caries diagnosis, gingival health/disease, presence of infection and trauma (Pine et al., 1997). Both examiners were calibrated and demonstrated good agreement with the BASCD trainer, with high sensitivity, specificity and kappa scores.

Equipment

A standard mirror and probe was used. Dental overhead lighting was used in those patients who permitted examination in a dental chair. In other situations a dental torch was used. In those schools where no dental facilities existed a portable screening chair and light was used.

Consent

Guidance issued by the Department of Health requires those administering dental surveys to obtain positive consent, implying that parents/guardians have to opt into the survey. This involves sending a form home for a parent/guardian to sign and return to school (Department of Health (2006b)).

Patient information sheets for children and their parents were distributed to children in special schools two weeks prior to the planned visit. Consent was then obtained via the
normal procedure used by Sheffield Salaried Primary Dental Care Service for their school dental screening programme.

Results

The clinical status of 366 children and young people with mild to moderate learning disabilities attending five special schools in Sheffield (Rowan, Bents Green, Autism 16+, Seven Hills and Mossbrook) was assessed. The age of these children ranged from 5-19 years. The mean age of all the children examined was 12.4 years. Of those examined 64 were female, 229 were male.

In total, 282 children had a full examination (77.0%). The majority of children sat on a dental chair or a chair that was present in the school for dental examinations (n=289). Six children were examined on a bean bag or on the floor in the room (Figure 1).

Reasons for not taking part included parental refusal, child refusal and absence on the day of screening. Parental refusal was the most common reason for not carrying out the examination. This occurred in 49 children (13.3%). Child refusal on the day comprised of 13 children (3.5%) and 11 children were absent on the day of the survey (3%) (Figure 1).
<table>
<thead>
<tr>
<th></th>
<th>Autism 16+</th>
<th>Seven Hills</th>
<th>Mossbrook</th>
<th>Bents Green</th>
<th>Rowan</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of children</td>
<td>18</td>
<td>85</td>
<td>75</td>
<td>123</td>
<td>65</td>
<td>366</td>
</tr>
<tr>
<td>Age range (years)</td>
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<td>11-16</td>
<td>5-12</td>
<td>12-16</td>
<td>5-12</td>
<td></td>
</tr>
<tr>
<td>Site of examination- dental chair</td>
<td>18</td>
<td>73</td>
<td>60</td>
<td>86</td>
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<td>0</td>
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<td>52</td>
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<td>0</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>No. of children with full examination</td>
<td>18</td>
<td>73</td>
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<td>86</td>
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<td>2</td>
<td>0</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>No. with parental refusal</td>
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<td>5</td>
<td>9</td>
<td>26</td>
<td>9</td>
<td>49</td>
</tr>
<tr>
<td>No. with child refusal</td>
<td>0</td>
<td>2</td>
<td>3</td>
<td>7</td>
<td>1</td>
<td>13</td>
</tr>
<tr>
<td>No. of children absent</td>
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<td>5</td>
<td>0</td>
<td>4</td>
<td>2</td>
<td>11</td>
</tr>
<tr>
<td>No. requiring clinical holding</td>
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<td>0</td>
<td>7</td>
<td>0</td>
<td>0</td>
<td>7</td>
</tr>
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</table>

**Figure 1:** Site and type of examinations carried out during survey.

The ethnicity of the participants was recorded. Most children and young people were White British (n=247), with 17 children and young people of mixed race (5.8%), 11 (3.7%) were Black, 18 (6.1%) were of Asian origin and no participants were of Chinese origin.
Caries experience

In total, fifty eight children (15.8%) had dental caries experience. The mean dmft of 5 year olds (n=11) was 0.006, with the d-component forming the largest proportion of the score.

In 8 year olds the DMFT was 0.14 (n=22). However in this group the missing due to caries component formed the highest score of 0.07.

The DMFT of 12 year old children (n=33) was 0.14. The missing component formed the greatest share of the score, M=0.014. Four children had signs of sepsis (1.36%).

Figure 2 shows caries experience in individual schools. Caries experience was low in all schools.

<table>
<thead>
<tr>
<th></th>
<th>Autism 16+ n=18</th>
<th>Seven Hills n=73</th>
<th>Mossbrook n=63</th>
<th>Bents Green n=86</th>
<th>Rowan n=53</th>
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<tr>
<td>D</td>
<td>0.04</td>
<td>0.04</td>
<td>0.19</td>
<td>0.02</td>
<td>0.03</td>
</tr>
<tr>
<td>M</td>
<td>0.09</td>
<td>0.02</td>
<td>0.13</td>
<td>0.08</td>
<td>0.00</td>
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<tr>
<td>F</td>
<td>0.04</td>
<td>0.02</td>
<td>0.15</td>
<td>0.02</td>
<td>0.00</td>
</tr>
<tr>
<td>DMFT</td>
<td>0.08</td>
<td>0.08</td>
<td>0.46</td>
<td>0.12</td>
<td>0.03</td>
</tr>
</tbody>
</table>

Figure 2: Caries experience in each individual special school

Gingival health

Calculus

Approximately one third of participants (n=90, 30.7%) had evidence of calculus. This was particularly evident in the older age group (16 +) where 13 out of 18 participants had calculus (72.2%). In the 8 year old group, 20% of participants had calculus. The presence of calculus was higher in the 12 year old age group (34.7%) (Figure 3).
Gingivitis

Approximately one third of all children and young people (n=91, 31%) exhibited signs of gingivitis. In the older age group of 12 year olds, 34.7% of participants showed signs of gingivitis (Figure 3).

Plaque

Over half of the participants (n=155, 52.9%) of all ages demonstrated visible plaque on their anterior teeth, with 12 participants exhibiting substantial amounts of plaque (Figure 3).

<table>
<thead>
<tr>
<th></th>
<th>Autism 16+ n=18</th>
<th>Seven Hills n=73</th>
<th>Mossbrook n=63</th>
<th>Bents Green n=86</th>
<th>Rowan n=53</th>
</tr>
</thead>
<tbody>
<tr>
<td>No calculus</td>
<td>5</td>
<td>34</td>
<td>47</td>
<td>68</td>
<td>49</td>
</tr>
<tr>
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<td>13</td>
<td>39</td>
<td>16</td>
<td>18</td>
<td>4</td>
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<tr>
<td>No gingivitis visible</td>
<td>9</td>
<td>29</td>
<td>55</td>
<td>59</td>
<td>50</td>
</tr>
<tr>
<td>Little gingivitis visible</td>
<td>9</td>
<td>44</td>
<td>8</td>
<td>27</td>
<td>3</td>
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<tr>
<td>No visible plaque</td>
<td>5</td>
<td>19</td>
<td>29</td>
<td>37</td>
<td>32</td>
</tr>
<tr>
<td>Little visible plaque</td>
<td>10</td>
<td>54</td>
<td>28</td>
<td>42</td>
<td>21</td>
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<tr>
<td>Large amount of plaque present</td>
<td>0</td>
<td>0</td>
<td>6</td>
<td>6</td>
<td>0</td>
</tr>
</tbody>
</table>

Figure 3: Levels of calculus, gingivitis and plaque in children and young people with learning disability by individual schools

Fissure Sealants

Approximately one fifth of participants (n=62, 21.1%) had fissure sealants applied, 15% of 8 year old children and 26.1% of 12 year olds had fissure sealants (Figure 4).
Stainless steel crowns

Eight patients had stainless steel crowns (2.7%) (Figure 4).

4.1.6. Trauma

Overall, 22 participants (7.5%) had evidence of trauma to their permanent incisors, including 17.4% (n=4) in the 12 year old age group (Figure 4).

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<tbody>
<tr>
<td>Fissure sealants</td>
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<td>14</td>
<td>24</td>
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<td>Trauma</td>
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<td>0</td>
<td>10</td>
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**Figure 4:** Presence of trauma, provision of fissure sealants and stainless crowns in children with learning disabilities in special schools in Sheffield.

**Discussion**

The aim of this strand was to conduct a survey of the oral health of children with mild to moderate learning disabilities attending special schools in Sheffield.

The results demonstrated low caries experience in all age groups. The mean dmft of 5 year olds (n=11) was 0.006 compared to the mean dmft of 1.66 in 5 year olds in mainstream schools in Sheffield in 2008 (BASCD, 2008). It was also lower than the national average for England (Child Dental Health Survey, 2003, dmft=1.5), with the d-component forming the largest proportion of the score. The DMFT of 12 year old children (n=33) was 0.14 compared to the BASCD (2009) survey data of 0.8 in Sheffield and 0.64 in England. Overall, four children had signs of sepsis (1.36%). No 5 year olds had signs of sepsis compared to 3.1% in
mainstream schools in Sheffield (BASCD, 2008). Whelton and co-workers (2009) also found that children and adolescents in their study had a lower caries experience than their mainstream counterparts, however this study was not inclusive of all children with mild and moderate learning disabilities as the 7-10 year age group was excluded. However, studies by O’Leary (2007) and Gizani (1997) found children with disabilities to have higher caries experience. Overall, the caries experience of the children in this survey was lower than in mainstream schools in Sheffield. There are many possible explanations for this including the background characteristics of the children and the targeting of preventative programmes by the salaried dental service. For example, children in special schools in Sheffield participate in toothbrushing clubs and have regular application of fluoride varnish. Whelton and co-workers (2009) in their study, attribute low caries experience to water fluoridation. However, difficulty in access to specialist services was found in those children with more severe disabilities and in those living in rural communities.

Another encouraging finding was that almost a fifth of participants had fissure sealants applied including 15% of 8 year old children, which was slightly higher than the national average of 11% (Child Dental Health Survey, 2003). In 12 year olds 26% of children had fissure sealants, which was comparable with findings of 28% of 12 year olds in the BASCD (2009) survey. Eight patients also had stainless steel crowns placed in this survey (3%). In a study by Whelton et al., (2009), 47% of 12 year olds attending special schools had at least one fissure sealant compared to 69% of 12 year olds in the general population. A similar difference was seen for the 15 year old group, with 48% of those attending special schools having at least one fissure sealant compared to 69% in the general population.

This survey revealed gingivitis and plaque in the majority of participants. Over half of the participants demonstrated visible plaque on their anterior teeth, with 12 participants exhibiting substantial amounts of plaque. In the 8 year old age group, 65% (n=13) had plaque
visible, which was slightly lower than in the Child Dental Health Survey (2003) of 76%. In the 12 year old age group, 61% (14 participants) had visible plaque, significantly less than found in national surveys (Child Dental Health Survey, 2003) of 73%.

Approximately one third of participants had gingivitis and calculus. This was most obvious in the older age group (16+) where 13 out of 18 participants had calculus (72%). In the 8 year old group, 20% of participants had calculus present, this was similar to findings in the Child Dental Health Survey where 23% of participants had calculus in this age group. The presence of calculus was higher in the 12 year old age group (35%) than in the national Child Dental Health Survey (30%). In the older age group of 12 year olds, the presence of gingivitis was seen in 65% of participants in national surveys while in this study only 35% of participants showed signs of gingivitis. Poor periodontal health was also a significant finding in previous studies by Whelton et al., (2009), O’Leary (2007), Jokic (2007) and Gizani (1997).

Higher levels of trauma to central incisors were noted in children with disabilities in this study. Overall, 8% (n=22) had evidence of trauma to their permanent incisors with 17% (n=4) in the 12 year old age group with evidence of trauma, higher than the national average of 11% (Child Dental Health survey, 2003). Similar finding were also found in the study by Whelton et al., (2009), where the percentage of children (aged 12-15 years) with at least one permanent incisor affected by trauma was 10% for 12 year olds to 18% for 15 year olds and where children with a mild intellectual disability had the highest levels of trauma. These findings also correspond to a study by Costa et al., (2008).

**Limitations**

Although this study provided new insights into the oral health of children with learning disabilities, there were some limitations. Schools were reluctant to release postcode information for children, therefore assigning a deprivation score was not possible. It would
have been interesting to investigate whether those children with caries in this survey lived in more deprived areas. In addition, the numbers of children in some of the age groups were low.

Only children that had mild to moderate disabilities were surveyed. This was because the survey was timed to co-incide with the salaried dental service screening programme. The screening of those children with more profound disabilities had already taken place before this study commenced. It was felt that to burden the children and school with an extra dental examination was unnecessary. A similar survey of children with more profound disabilities should be conducted. In addition, some children refused an examination or had medical problems that caused long periods of absence from school. There was also a chance of ‘fatigue’ i.e. parents becoming tired of signing yet another piece of paper so chasing up consent would have been time consuming. It may be that those children who refused or were absent had higher caries levels than those examined.
Conclusions and recommendations

In conclusion, generally the oral health of children with learning disabilities in special schools in Sheffield was good. Low caries experience was noted across all age groups, although poor oral hygiene was highlighted in some case. The relationships between the children, parents, special schools and Sheffield Salaried Primary Dental Care Service have been instrumental in achieving these levels of good oral health. The priority given to oral health by the special schools should be maintained in future particularly during times of change within the schools.

Other recommendations from this report include the need to ensure the toothpaste and toothbrushes used in oral health promotion programmes are branded products rather than cheaper generic products with which children fail to engage.

Training to dentists and dental care professionals in Sheffield about the oral health needs and perspectives of children with learning disabilities should be provided.

Care should be taken to continue to ensure children with learning disabilities are able to access a dentist and provisions are made for dental care as they leave special schools.

Despite their varied disabilities, children were readily able to vocalise their thoughts and experiences in relation to their oral healthcare. The study has demonstrated the feasibility of conducting qualitative and quantitative research with children in special schools.

The findings will be disseminated to commissioners, service providers and the special schools involved.
References for the qualitative strand


Cameron, L., and Murphy, J., (2006). ‘Obtaining consent to participate in research: the issues involved in including people with a range of learning and communication disabilities.’ British Journal of Learning Disabilities. Vol. 35, pp. 113-120


References for quantitative strand


Hareman M, Van Berkmin G, Reijnders R: Differences in service needs, time demands and care giving burden among parents of persons with mental retardation access the life cycle. Family Relations 1997; 46: 417-25.


Sheffield Education Day Services for Case Register Clients aged 5-19, October 2010.


