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RESEARCH ARTICLE

Outcomes of a mobile paediatric dental intravenous sedation service in primary care: four-year results

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ABSTRACT

Background: In 2020 a private mobile paediatric intravenous sedation (IVS) service was established for low-risk children in the south-east of England in line with UK Standards for dental sedation. This study aims to assess the outcomes of this service over a four-year period.

Materials and methods: A retrospective evaluation was carried out, including all paediatric dental patients sedated by the IVS service between the1st October 2020 and 30th September 2024.

Results: A total of 274 sedations were included. The mean age was 8.99 years old. No serious adverse events occurred. Eight patients (2.9%) experienced transient post-sedation nausea/vomiting. A total of 271 patients were successfully sedated, a success rate of 98.9%.

Conclusion: This IVS service has been established successfully, with no serious adverse events observed. Parental feedback was overwhelmingly positive. By utilizing moderate sedation, the IVS service offers paediatric patients a safe, outpatient alternative to general anaesthetic for dental procedures. This service addresses an important gap in dental care for children. Expansion of the IVS program could have a major impact on the waiting lists for general anaesthetic paediatric dental procedures in England.

Key points

- With comprehensive risk assessments, quality control measures implemented and regular patient feedback it is possible to provide effective multidrug moderate intravenous sedation (IVS) without serious adverse events, for dental procedures in primary care to a level expected in an acute NHS Trust.
- This out of hospital IVS service, has been shown to be a successful treatment modality in low-risk children.
- IVS can be used for a variety of dental procedures, including restorations, extractions, orthodontic surgical procedures and soft tissue surgery in children.
- The widespread provision of IVS may ease pressure on dental hospital general anaesthetic waiting lists.

Introduction

Pain and anxiety control is a long-established prerequisite for the provision of dentistry. This has been successfully achieved with behaviour management, sedation and general anaesthetic (GA)[1]. Following a series of reports which looked into the number of GA's being performed and number of deaths in dentistry, on the 1st of January 2001, the United Kingdom (UK) Government implemented an official ban on the administration of general anaesthetics to both adults and children in out-of-hospital settings for dental procedures[2]. This regulatory change resulted in a response by some dental practices to establish intravenous sedation (IVS) services for eligible paediatric patients requiring mild to moderate sedation within National Health Service (NHS)-commissioned, out-of-hospital environments. These dedicated facilities became known as dental sedation referral centres, which routinely provided sedation services for children across all age groups until March 2017. At that time, the Office of the Chief Dental officer for England published "Commissioning Dental Services: Service Standards for Conscious Sedation in a Primary Care Setting," which revised the guidelines to limit simple, midazolam only, intravenous sedation strictly to children aged 12 and above[3]. Consequently, children under the age of 12 were restricted to receiving inhalation sedation with nitrous oxide in primary care facilities or were required to undergo general anaesthesia in hospital facilities.

These new restrictions significantly curtailed access to dental care for the young population, resulting in increasing NHS waiting lists, exacerbated further by backlogs resulting from the COVID-19 pandemic[4].

The 2020 Report of the Intercollegiate Advisory Committee on Sedation in Dentistry (IACSD) updated guidelines for dental sedation in the UK, which were originally formulated in 2015[5]. This original stipulated that it was expected that children can only be sedated in facilities "equivalent to an Acute NHS Trust", but it was not clear what this meant. The 2020 update importantly clarified what additional requirements were necessary to be equivalent, and specifically that facilities needed to be staffed and equipped equivalent to secondary care NHS settings. Following these updates, a mobile IVS service described here was established with all the necessary requirements to treat children under intravenous sedation. They expanded their service from an adult only service to include children in the private sector. This paper will be the first report of the outcomes of this mobile intravenous sedation service for children, 4 -16 years age, in an office-based/primary care setting.

Materials and Methods

This study is a retrospective evaluation of a mobile IVS service. The population comprised of all suitable patients referred for dental treatment under 17 years of age over the four-year period of 1 October 2020 to 30 September 2024. Data was collected retrospectively using patient records and analysed on Excel. Acceptance criteria for the IVS is shown in Table 1.

Table 1: IVS service acceptance criteria for dental treatment under intravenous sedation (ASA= American Society of Anaesthesiologists, IVS = intravenous sedation)

Inclusion criteria	Exclusion criteria
Over 20 kg	Under 20 kg
Age 4-16 years	Under 4 years old
ASA I or II	ASA III and over
BMI under 30	BMI over 30
Complexity of dental treatment suitable for IVS	Allergy to benzodiazepines
Fasting for 4 hours, clear fluids 2 hours	Recent upper respiratory infection 2 weeks
Suitable airway for sedation	Obstructive Sleep Apnoea

Children in the London area who were deemed unsuitable by their dentist for nitrous oxide sedation were referred for treatment under moderate IVS (Table 2)[6].

Table 2: Levels of sedation, adapted from ASA

Level of sedation	Description
Minimal	Retains the patient's ability to independently and continuously maintain an airway and respond normally to verbal commands
Moderate (conscious)	Drug-induced depression of consciousness during which patients respond purposefully to verbal commands, either alone or accompanied by tactile stimulation
Deep	Drug-induced depression of consciousness which might affect airway and spontaneous ventilation during which patients cannot be easily aroused but respond purposefully following repeated painful stimulation

Common reasons for IVS referral are listed in Table 3, however, the specific reason was not always recorded as it was often a combination of these factors.

Table 3: Reasons for dentists referring children for IVS

Common reasons
Complex dental work
Complex patient needs where nitrous oxide not deemed effective
Severe anxiety not suitable for nitrous oxide
Failed nitrous oxide sedation
Non-pharmacological behaviour management has failed
On a waiting list for treatment under general anaesthetic

Developing a paediatric mobile sedation service required the creation of standardized policies, protocols, guidelines and quality metric collection metrics. Policies included compliance with the Care Quality Commission (CQC)[7] and the Standards for conscious sedation in the provision of dental care released in 2020 by the Intercollegiate Advisory Committee for Sedation in Dentistry (IACSD)[5]. For a service offered in primary care settings to be considered equivalent to a secondary referral service, immediate availability of advanced airway equipment, emergency ventilatory support and emergency drugs were essential, listed in Table 4. Sedation policies and procedures were followed and described below.

Paediatric emergency algorithms and resources by Resuscitation Council UK was always available in a printed version[8].

Table 4: How equivalence to an NHS Acute Trust was achieved and governance maintained	
Sedation Practitioner	Medically qualified with extensive Emergency Medicine experience of over 15 years Paediatric Sedation Courses completed 2016, 2020, 2021, 2024 Annual Paediatric Sedation Conferences Extensive paediatric sedation experience over 8 years with >3200 children Paediatric Advanced Life Support (PALS) provider status current Evidence of continuing professional development Protected by IACSD Transitional Arrangements (page 88) Maintains sedation logs as recommended Sedation-based audits and reflection in annual appraisals Regular review of Clinical Governance as set in IACSD report Support from specialists who are familiar with all of above practice and experience
One of four Sedation Assistants present	Sedation assistant with more than 10 years' experience in sedation recovery Either a registered dental nurse with GDC or HCA (health care assistant) Annual Paediatric Immediate Life Support (PILS) Certificate Regular validated continuing professional development
CQC criteria met for each facility	In-date emergency oxygen cylinder Automatic electric defibrillator with in-date paediatric and adult pads Working suction
Emergency equipment and drugs (batch numbers and expiry dates for each made available)	Oropharyngeal airways Age-appropriate bag valve mask Age appropriate supraglottic airway device (iGel) Emergency drugs: flumazenil, naloxone, adrenaline, atropine, glucose, glucagon, cetirizine, chlorphenamine, salbutamol inhaler with spacer
Written flowcharts/protocols (printed and always available)	Paediatric emergency algorithms and resources updated March 2024 by Resuscitation Council UK The timely hospital transfer of a collapsed patient will differ between surgeries and agreed with each practice manager
Team-based emergency rehearsals	Regular team-based participation in real time emergency scenarios

Sedation was administered by a single emergency physician, called the sedation practitioner. The decision to set up the private IVS service was based on the sedation practitioner's extensive experience providing sedation for patients of all ages, including 3,280 children's sedations at various NHS dental sedation referral centres around London between 2009 and 2017, without any serious adverse events or hospital admissions. In addition to training and extensive experience in Emergency Medicine, the practitioner received sedation training and completed a formal paediatric sedation course. The sedation practitioner maintained a European Paediatric Advanced Life Support (EPALS)[9] and Advanced Life Support (ALS)[10] provider accreditation. The assistant nurse was current in Paediatric Immediate Life Support (PILS)[11].

UK dental sedation guidelines advise that the sedation practitioner should have "skills equivalent to those expected of a consultant in anaesthesia competent in sedation for dentistry"[5]. However, the guidelines made provisions for practitioners who have extensive experience in the field of paediatric sedation in their Transitional Arrangements[5].

Sedative doses were titrated to effect, targeting minimal to moderate sedation, using combinations of sedatives available. Midazolam was mainly used for its anxiolytic and amnesic effects, administered in boluses of 0.05 to 0.1 mg/kg. Ketamine was used for its analgesic effects, administered in boluses of 0.25 to 0.5 mg/kg. Where needed propofol was titrated in very low bolus doses of 0.5mg/kg where patients struggled with issues like the sound of a dental/surgical drill or the pressure sensation during extractions. Alfentanyl was administered in boluses of 5-10 mcg/kg if additional analgesia was needed. Boluses were always followed by at least 5 minutes interval before administering another dose.

Patient data, including age, sex, weight and height, was recorded onto a standardized electronic sedation form, which was added to the electronic patient medical record. Drugs used and their doses were recorded. Treatment category was briefly noted. Justification for sedation was recorded. Oxygen saturation, pulse rate, capnography and haemodynamic status were monitored and recorded. The sedation provider initially documented all adverse events contemporaneously, but during the study period incorporated the sedation outcomes checklist described below as a standard tool. Quality assurance outcomes routinely measured were the Ramsay Sedation Scale[12] and the Modified Aldrete Score.[13]

OUTCOME MEASURES

Quality assurance outcome definitions and metrics using International Committee for the Advancement of Procedural Sedation (ICAPS) Tracking and Reporting Outcomes of Procedural Sedation (TROOPS) standardized descriptors of events and outcomes were implemented during the study period[14]. The success of sedation was defined as having the planned dental treatment completed.

Parent feedback was collected using a digital questionnaire designed by the UK medical regulator, the General Medical Council (GMC) for multisource patient feedback form. The words were modified to be relevant asking parents how they experienced the service relating to their child's sedation appointment[15]. The questionnaire was manually sent to parents on the first weekday after their child had their sedation by means of digital signature software. The feedback form was valid for 10 days before it expires. Reminders were sent on day 5 and day 10 post-operatively.

Sedation Service Policies and Procedures

PRE-SEDATION ASSESSMENT

All patients were identified as needing IVS by their dentist, who referred them to this IVS service. Treatment options such as local anaesthetic alone, inhalation sedation, IVS and GA were always discussed with parents.

Patients referred to the IVS service were all telephonically pre-assessed by a trained sedation nurse using a specific proforma within a week of the

scheduled treatment. Parents were informed that if their child was determined by the sedation practitioner to be unwell on the day, the treatment would either be postponed if the condition was temporary or referred to general anaesthesia if the illness was longstanding. The nurse also offered verbal pre-operative information including advice to be accompanied by a responsible legal guardian and asked not to take public transport home. Patients were required to remain nil by mouth for four hours prior to scheduled sedation to minimise the risk of nausea and vomiting. Parents were asked to measure their child's height and weight, but vital signs were not required pre-operatively. The need for pre-operative vital signs was considered, but if normal deemed to give a false sense of security to parents, as a child can become unwell in the time between the consultation and the day of dental surgery. Vital signs were therefore checked pre-operatively on the day of treatment.

Written instructions and consent forms were sent electronically to legal guardians to be signed after the telephone consultation.

SEDATION APPOINTMENT

On the day of treatment, the attending nurse would apply topical anaesthetic cream and adhesive dressings to the dorsum of the hands and occasionally the antecubital fossa if there were no veins visible on the dorsum of the hands. The minimum period before cannulation was 30 minutes. Written consent for the procedure and sedation was reconfirmed on the day with the patient's legal guardian.

Patients were assessed by the sedation practitioner to check for recent or current respiratory infections and to confirm suitability for sedation as described in Table 1. Vital signs including oxygen saturation and blood pressure were checked pre-operatively on the day. All children had sedation administered by the same sedation practitioner, assisted by one of four appropriately experienced and trained nurses with a current PILS certificate.

Patients were cannulated by the sedation practitioner with their parents present in the treatment room. They stayed until the patient was appropriately sedated. They were then gently guided to leave the treatment room as soon as treatment started. It was explained to parents that this was done in the interest of safety to avoid distraction from continuously monitoring their child.

The dentist was responsible for all dental related treatment including the administration of adequate and appropriate local anaesthetic.

The dentist, sedation practitioner, dental nurse and attending nurse would be present in the treatment room throughout the procedure.

Continuous vital sign monitoring included oxygen saturation and since 2022, also capnography. Oxygen saturation and pulse rate were recorded every five minutes and end-tidal CO2 every ten minutes until the child became fully responsive with a Ramsay score of 1.

Sedatives were administered with an initial dose of midazolam for anxiolysis and amnesia, followed by either ketamine or alfentanyl for their analgesic effect. Titration of these resulted in moderate sedation for the dentist to be able to maintain communication with a consciously sedated patient. Propofol was used in low doses for children who did not tolerate certain treatments or sounds. Occasionally ketamine and alfentanyl were used together when one of the two was not adequate to control the patient's response to discomfort experienced. The intention was to maintain moderate (conscious) sedation and adequate pain control.

The dentist would always administer adequate local anaesthetic for the intended procedure, as would be expected for a patient having dental treatment without sedation as the main pain control measure during sedation.

RECOVERY

The initial phase of recovery occurred in the treatment room with continuous vital sign monitoring until the child was fully responsive. At this point they were moved to a quiet area as available until they could

walk unaided. Patients were only discharged when the Aldrete discharge criteria score was at least 9 out of 10[14]. Children were always accompanied by a responsible adult who received verbal and written post-operative instructions from both the sedation practitioner and the dentist.

The Ramsay Sedation Scale, operating conditions and recovery times to meet discharge was recorded.

POST-OPERATIVE CARE

All parents were telephoned within 24 hours to check on their child's welfare and to enquire if they had any questions or concerns.

Results

A total of 274 sedations met the criteria of this study over the four-year period and were included. The patient demographics are described in Table 5. A total of 42 clinics in London region and surrounding areas sent referrals to the mobile IVS service.

It is essential to note that there were indeed parents who would call the service a few days before their appointment reporting their child developed a cough, cold or acute illness. These children's appointments were then postponed until two weeks after they were symptom free. Unfortunately, the service did not document the number of cases that were postponed.

Table 5: Sample characteristics (ASA= American Society of Anaesthesiologists, SD= standard deviation)

Gender	Age (years)			ASA score (%)		Outcome	
	N	Mean	SD	I	II	Success % n	Failure n
Boys	150	8.72	2.80	129	21	100% (150)	0
Girls	124	9.29	2.80	117	7	97.6% (121)	3
Total	274	8.99	2.80	246(89.8%)	28 (10.2%)	98.9% (271)	3

The mean age of boys were 8.72 years and for girls 9.29 years old, with a mean age of 8.99 for both. Most of the children (89.8%) were ASA I and 10.2% were ASA II. Three patients out of 274 met criteria for failed sedations, resulting in a success rate of 98.9%. Failure for two patients was due to inability of the patient to comply with IV cannulation, hence these two were not included in the sedation quality assurance outcome metrics (Table 6). One child's treatment was cancelled after cannulation due to the parent requesting the sedation to cease as the child was hyperventilating and panicked. The last-mentioned child was included in the outcome metrics and logged as "Operating Conditions: impossible, treatment abandoned". All three children were referred for GA.

Table 6: Sedation quality assurance outcome metrics

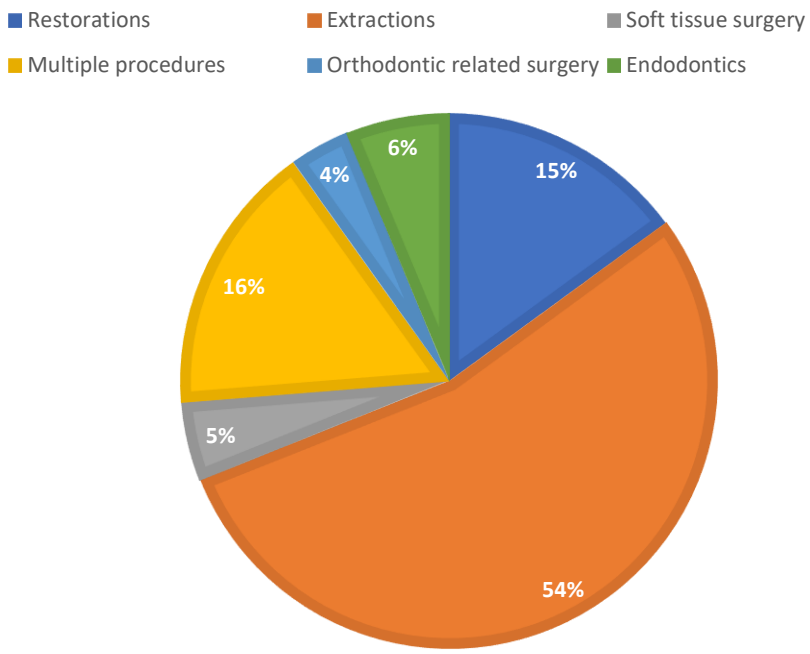
Aspect	Score	Results % (n=272)
Ramsay Sedation Scale	1. Awake	0.4% (1)
	2. Awake, cooperative, oriented, and tranquil	26.7% (73)
	3. Awake but only responds to commands	72.4% (197)
	4. Asleep and responds briskly to a loud auditory stimulus or light glabellar tap	0.4% (1)
Operating conditions	1. Good: co-operative	84.2% (229)
	2. Fair: minimal interference	14.7% (40)
	3. Poor: under or over sedated	0.7% (2)
	4. Impossible: treatment abandoned	0.4% (1)

Time met Aldrete discharge criteria	Expected (less than one hour after last dose)	97.1% (264)
	Prolonged	0.4% (1)
	Rapid	2.6% (7)

Ten of the 272 children who complied with cannulation needed more than 1 attempt, which translated to a successful cannulation rate on first attempt of 96.3%.

The specific dental treatments undertaken during each sedation can be seen in Figure 1. Most patients were referred for either extractions alone (54%) or extractions in combination with restorative treatment (16%), which was a combined 70% of all referrals. These patients often had combinations of dental phobia, needle phobia or severe gag reflex associated with anxiety. This information was usually kept by the dentist and did not form part of the sedation practitioner's records.

FIGURE 1. KIND OF DENTAL TREATMENT PERFORMED N=271



Drug combinations administered are summarised in Figure 2. The most common drug combinations were Midazolam-Ketamine (95 patients) and the Midazolam, Ketamine and Propofol combination (97 patients).

Sedation scoring, operating conditions and recovery time to meet the Aldrete Criteria are shown on Table 6. Most children were either drowsy (26.7%) or responded to verbal commands with eyes closed (72.5%). Cooperation was mostly good (84.2%) and fair with minimal interference (14.7%). Recovery duration was mostly within an hour, which is reported as expected (97.1%). One child was recorded as prolonged recovery (longer than an hour) and 7 (2.6%) rapid (less than 15 minutes).

There were no serious adverse events reported for any patients. Minor adverse events and actions taken for these are listed in Table 7. Rare minor interventions (chin lifts) were needed, especially when treatment temporarily ceased, i.e. stimulation level decreased e.g. when radiographs were taken or when the dentist was waiting for instruments to be collected. Occasionally post-operative nausea and vomiting occurred either during recovery or after clinic discharge.

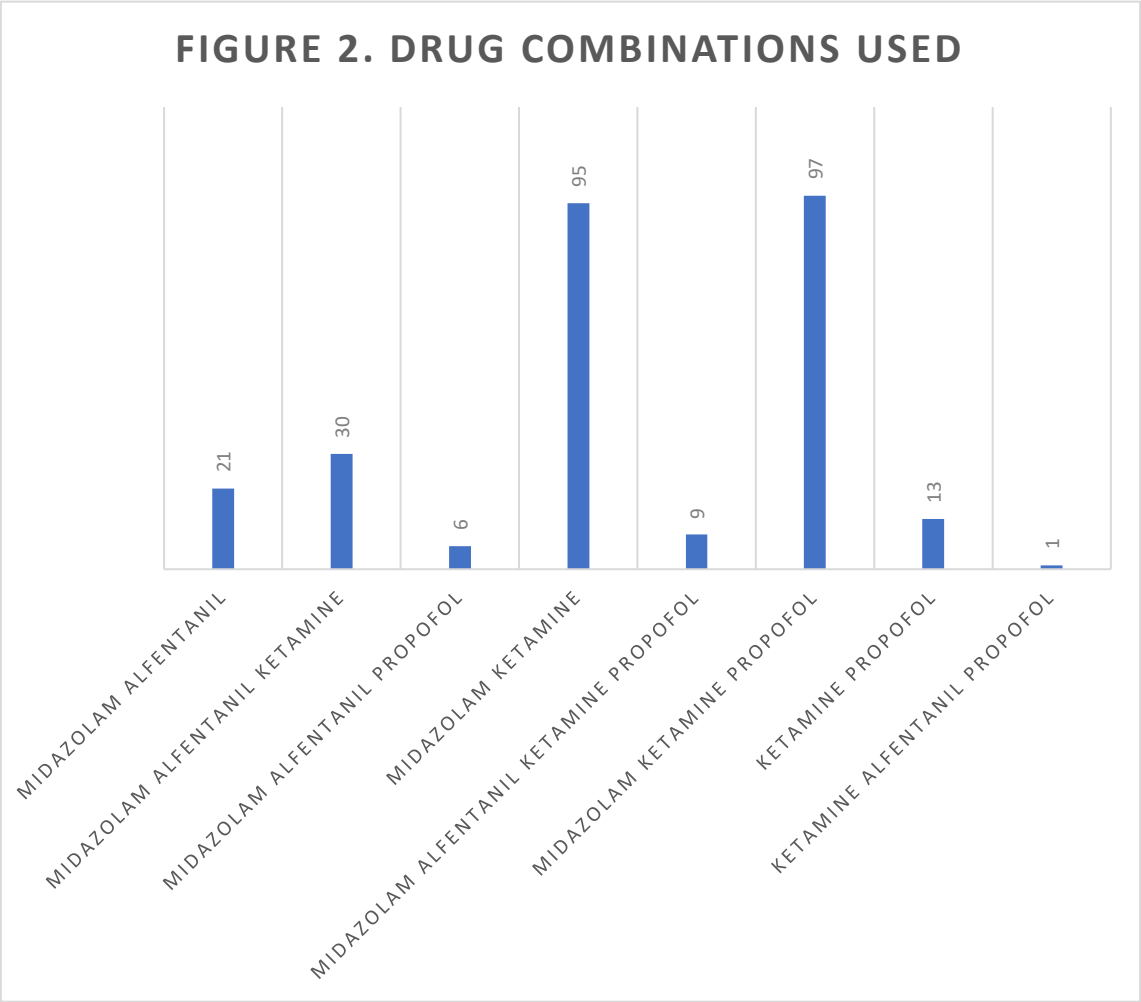


Table 7: Adverse events recorded (including Troops events) and actions taken during

Adverse event	Results % (n)	Action taken
Upper airway obstruction and desaturation	0.02% (5)	Basic airway maneuver
Vomiting during procedure	0	None
Vomiting during recovery	0.02% (6)	No action needed, spontaneously resolved
Vomiting after discharge	0.01% (2)	No action needed, spontaneously resolved

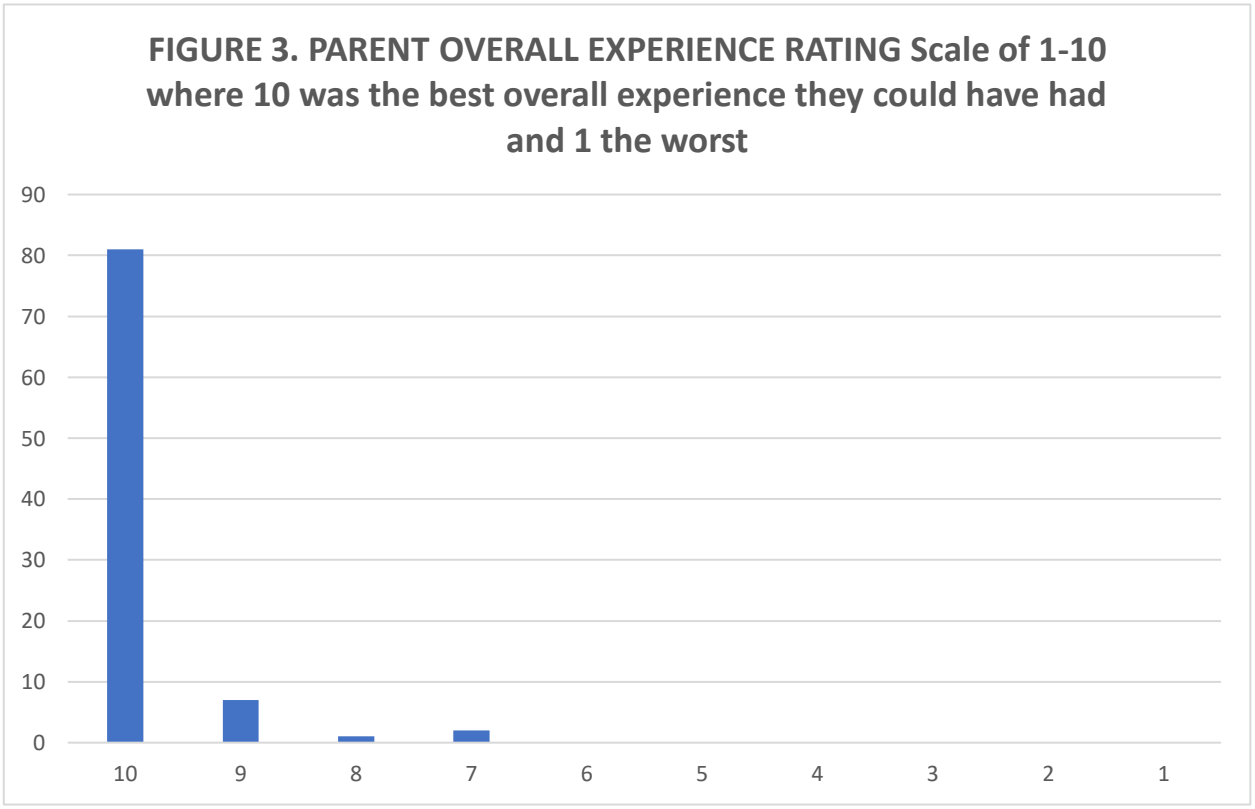
There were however no incidents of intra-operative vomiting, aspiration or acute laryngospasm. No sedation appointments needed treatment with advanced airway adjuncts, assisted ventilation or even supplemental oxygen. Advanced airway equipment, emergency ventilatory support, emergency drugs like flumazenil and naloxone and defibrillators were always immediately available, but never used for any patient in this study.

Of the 271 successful sedations 241 children completed their course of treatment in a single appointment and 15 children needed two appointments. The children who needed two appointments were for two-stage treatments, mostly root canal treatments.

From the feedback forms sent to parents, 81 replied with fully completed feedback forms. This was a response rate of 29.9%. Incomplete feedback forms were omitted. Results of feedback forms can be seen in Table 8.

Table 8. Patient feedback based on GMC questionnaire					
	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Dr Swart was polite	0	0	0	0	81 (100%)
Dr Swart made me feel at ease	0	0	0	1 (1.2%)	80(98.8%)
Dr Swart listened to me	0	0	0	1 (1.2%)	80 (98.8%)
Dr Swart assessed my medical conditions	0	0	1 (1.2%)	1 (1.2%)	79(97.5%)
Dr Swart involved me in decisions about my treatment	0	0	2 (2.5%)	0	79 (97.5%)
Dr Swart made experience under sedation good	0	0	0	0	81 (100%)
Dr Swart will keep information confidential	0	0	2 (2.5%)	1 (1.2%)	78 (96.3%)
Dr Swart is honest and trustworthy	0	0	2 (2.5%)	0	79 (97.5%)
I am confident in Dr Swarts ability to provide care	0	0	0	1 (1.2%)	80(98.8%)
I would be completely happy to see Dr Swart again for sedation	0	0	0	0	81 (100%)

The overall experience score of the IVS service (pre-operative, intraoperative and post-operative) given by parents is summarised in Figure 3. Parents were also asked if they would have sedation again and 90% of parents indicated they would consider IVS again for their children.



Discussion

The results of this study illustrate that IVS provided to children for dental procedures in the outpatient setting can be successful and safe when administered by experienced and qualified sedation and dental teams working cohesively. Best outcomes are achieved by performing sedation in paediatric-friendly facilities, alongside dentists experienced in treating children, using appropriate equipment, strictly adhering to protocols and choosing patients at low-risk, hence avoiding sedation-related adverse events. It has previously been reported that in addition to anaesthetists, other trained clinicians can safely provide sedation for children given strict adherence to sedation guidelines and this evaluation supports this finding.[16,17]

The efficacy of sedation in our study was 98.9%. This result showed that with a dedicated team, even the most behaviourally challenging ASA I and II patient cases can be managed out of hospital, as long as careful assessments are carried out in advance of treatment. It also illustrates that by following a protocol as presented here, all treatment can be completed with multi-drug intravenous sedation. This intravenous sedation service provided the much-needed dental treatments to children, needing fewer appointments and avoiding the need for GA.

Several sedative drug combinations were used in this study to achieve adequate sedation and analgesia whilst maintaining safety. The most commonly used combination was midazolam and ketamine with or without propofol. While some studies of paediatric sedation outside of the operating room have found an association with increased risk of adverse events when combinations of drugs are used,[18,19] this was not the case in our patient cohort where no serious adverse events occurred.

The safety of propofol use in paediatric sedation by clinicians other than anaesthetists has been well documented.[20,21] When administered by practitioners of any specialty type who are able to recognize and manage complications requiring advanced airway manoeuvres, propofol has been found to be as safe as other sedatives and combinations.[16] One study of propofol sedation in children found 1 in 65 sedations needing minor airway interventions like chin lifts, which compared with the results in this study.[22]

A common concern with children's sedation in primary care is the occurrence of acute laryngospasm, noted as a rare adverse event with a quoted incidence of 0.4 to 0.7% in procedural sedation.[23,24] Even though none of the children in this study had such an event, the sample size was not large enough to detect risk with our sedation regimens. The sedation practitioner has however set his age criteria in line with both his experience and an office based dental anaesthesia study of over 7000 children which showed the risk for adverse events are considerably less in children older than 6 years.[23]

A further reason for the chosen age criteria is to obtain co-operation with a child who is at an age that they can understand basic instructions to have their dental treatment completed successfully.

With strict risk assessment criteria adhered to along with close observation intra- and post-operatively this service can potentially be replicated. It needs to be emphasised that appropriate standards need to be met by the surgery, the team and the equipment needed to rescue in case of a medical emergency.

One of the criteria set out by the IACSD for provision of such sedation for young children under 12 years of age is assessment and treatment by teams with skills equivalent to a specialist or consultant in paediatric dentistry and we would endorse this as the purpose of providing sedation was dentistry in the first place. Children receiving this form of sedation were either very anxious or required complex procedures needing IVS. Even though there was no evidence in this study for unplanned repeated sedations, we do need to ensure we avoid the need for repeat sedation in this group of patients. Hospital studies in the past conducted on children having repeat dental GA were strongly linked to not having had an assessment

for treatment planning with specialist paediatric dentists.[26,27]

Sedations in this study were often performed alongside general dentists or non-paediatric dental specialists who had plenty of experience treating children. The mobile service informed all dentists of the IACSD criteria, but did not enforce this point as parents often insisted that they wanted their child to be treated by their own dentist at their own surgery. This might be something lacking in our service evaluation and criteria which we aim to work towards.

The feedback from parents has illustrated the positive effect sedation can have for children and parents alike, avoiding either long waiting on the national health service or paying to have a general anaesthetic at a private hospital. An added plus point was being able to have treatment carried out locally.

Our study has important limitations. In our cohort of 274 patients who received IV sedation, none experienced serious adverse events such as apnoea, laryngospasm or airway obstruction. These important sedation-related adverse events are rare and a much larger sample size would be required to accurately determine the incidence of these in this IVS service. It should also be noted that it wasn't the objective of this evaluation to look at the dentistry provided in these treatment episodes and these children were not followed up long term by the sedation service after the initial treatment course set out by the dentist was completed. The results of this study represent outcomes of a single sedation clinician. Larger studies which include a number of sedation providers are needed to demonstrate generalizability of these results.

Conclusion

In this mobile paediatric dental IVS service for children in primary care, rigorously designed to support safe practice, sedation was provided effectively with minimal adverse events. With excellent parental feedback and the absence of serious interventions or complications this IVS service was successful.

The continuation of primary care IVS service is however dependent on national UK guidelines for dental sedation in the UK. Until guidance changes, further auditing of patient data in this practice will continue. It is suggested that other centres engaging in paediatric dental sedation in the primary care, should also share their results, as currently there is limited data available.

It is further noted that there is a lack of adequate training opportunities for non-anaesthetist physicians in the UK if they would be interested in offering moderate sedation to low-risk children for dental treatment. There are examples of excellent paediatric sedation conferences and training courses offered worldwide. Paediatric sedation training is available in the United States[28,29] and in Europe[30]. If such training programmes are replicated with additional criteria such as case logbooks described in IACSD Guidelines, this can be a service that can be expanded in the UK to alleviate pressure on the national waiting lists for dental general anaesthetics.

Conflict of Interest:

None

Acknowledgements:

None

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