

# Referral patterns to the Paediatric Dental Emergency Clinic at The University of the West Indies, School of Dentistry, Trinidad and Tobago

Ishaanaa Sagewan<sup>1</sup>, Rahul Naidu<sup>1</sup>, Visha Ramroop<sup>1</sup>

<sup>1</sup>School of Dentistry, The University of the West Indies, Faculty of Medical Sciences, St Augustine, Eric Williams Medical Sciences Complex, Champ Fleurs. Trinidad and Tobago, West Indies.

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## Corresponding Author:

Ishaanaa Sagewan  
ishaanaa.sagewan@gmail.com

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## ABSTRACT

**Aim:** To determine sources and reasons for referral of patients to the paediatric dental emergency clinic at The UWI School of Dentistry and to identify factors that can improve the efficiency and quality of services provided at the clinic.

**Method:** Referral records for consecutive patients were reviewed for reason and source of referral and the region referred from. Data was collected over a three-month period. Reasons were recorded based on a list of pre-defined criteria and categorised by their sources.

**Results:** Referral records were reviewed for 200 patients. The most common reasons for referral were for toothache or abscess (36%), followed by extensive dental disease (15.5%), medically compromised (13.5%) and dental trauma (9.5%). The most frequent sources of referral were from public health dentists (34%), followed by hospital departments (25%), self-referrals (24.5%) and private dentists (12%). With respect to region, majority of referrals came from North (27%) and Central Trinidad (25%).

**Conclusion:** Children with toothache or abscess were the most common referrals to the clinic, and the majority were from the public dental services. These findings indicate that referrals to the clinic are mainly for emergency care, but the service is also being utilized for diagnostic services and treatment planning, through referrals from hospital department and general dental practitioners.

## Introduction

The Oral Health System of Trinidad & Tobago includes both private and public sectors. The public sector is divided into Regional Health Authorities: Northwest, North Central, Southwest and Eastern Regional Health Authorities. Each region has health centers which provide dental treatment however, their services are very limited for children<sup>1</sup>. The University of the West Indies (UWI) School of Dentistry is based within (The Eric Williams Medical Sciences Complex (EWMSC), a large public hospital in north Trinidad. Trinidad & Tobago is a twin-island independent nation with a population of 1.3 million and is the most southerly of the Caribbean chain of islands.

The Child Dental Health Unit at The UWI School of Dentistry provides dental care for children up to the age of 17 years, including a 'walk-in' emergency and referral clinic. Patients in the emergency clinic are seen by recent graduates of the school (dental interns) working under the supervision of clinical academic staff of the Unit. This service runs from Monday to Friday (9 am to 4 pm) with a visit fee of \$100.00TT (\$14.80US). Although some dental care for children is available at Public Health Centers, outside of the private sector, the UWI Child Dental Health Unit is the only facility in the country offering a full range of preventive, restorative and emergency dental care to children. This includes, examinations, radiographs, cleanings, restorations, root canals, dentures, extractions with and without general anaesthetic, consultations and treatment supervised by Paediatric, Special Needs and Orthodontic specialists. In a previous audit of this service provided at the School of Dentistry, patient satisfaction levels were high with respect to the quality of the dentist-patient interaction<sup>2</sup>. Earlier research in Trinidad reported that pain caused by

toothache/abscess or dental trauma were the most frequent problems of patients presenting to this clinic<sup>3</sup>. National oral health survey data in Trinidad & Tobago found that almost two thirds of school children aged 6-8 years-old had caries experience in their primary teeth<sup>4</sup>. This finding was consistent with younger children being the most frequent attenders at the UWI emergency clinic<sup>3</sup>.

Possibly due to the high prevalence of dental disease in young children and a growing awareness of the service offered, the volume of patients attending the clinic has been increasing. There appears to also be a wider range of cases presenting to the clinic, in addition to pain and trauma. More information is therefore required to understand patient needs and whether facilities and resources are adequate for service demands and training requirements of the dental program.

The aim of this study was to describe reasons and sources of referral of patients who present to the UWI paediatric emergency clinic, and to describe the demographic profile and region of referral of the patients.

## Method

Approval for this research was granted by the University of the West Indies Campus Research Ethics Committee and patients/guardians were informed about the study prior to gathering data. Two hundred (200) consecutive patients who were referred to the Paediatric Emergency clinic were examined within a 3-month period (November 2019 – January 2020). It should be noted that this does not represent the total patient attendance during this period as data could only be collected on four of the seven weekly emergency clinic sessions. Patient demographics, reason and source of referral were recorded for each case. The reason for referral to the clinic was determined by the clinical findings or a letter of

referral.

Patients were categorized according to a predefined list of reasons for admission into the clinic. The categories included are shown below:

1. Toothache/ abscess: Children presenting with pain or swelling due to dental caries.
2. Dental trauma: Children presenting with dento-alveolar trauma which includes crown fracture, root fracture, luxation injuries, avulsion, displacement injuries and alveolar fractures.
3. Uncooperative for dental treatment/Anxiety: Children presenting to the clinic with high levels of dental anxiety and are unable to receive routine dental treatment.
4. Extensive dental disease: Children presenting with extremely high levels of dental caries.
5. Dental developmental anomalies: Children presenting with dental developmental conditions, which include supernumerary teeth, hypodontia, molar incisor hypomineralization etc.
6. Medically compromised: Children presenting with severe medical conditions which include, leukemias, heart conditions, bleeding disorders.
7. Special needs: Children with a physical, emotional, behavioral, or learning disability or impairment. This includes children with Autism, Down's Syndrome, Cerebral Palsy etc.
8. Treatment planning only: Children who present with no emergent complaint but would like guidance or treatment planning for their dental needs.
9. Malocclusion: Children presenting for orthodontic treatment including increased overjet, anterior open bite, overcrowding, spacing etc.

The source of referral was determined and categorized as one of the following: dentist (public health / private), hospital department, medical doctor, self or other.

Information was recorded on an anonymous data collection form before being entered into an Excel database. Data analyses to provide descriptive statistics was undertaken using a statistical package (SPSS version 24).

## Results

The age distribution of the 200 patients in the sample is shown in *Figure 1*. It was found that the most common age for emergency patients was 6 years old (14%).

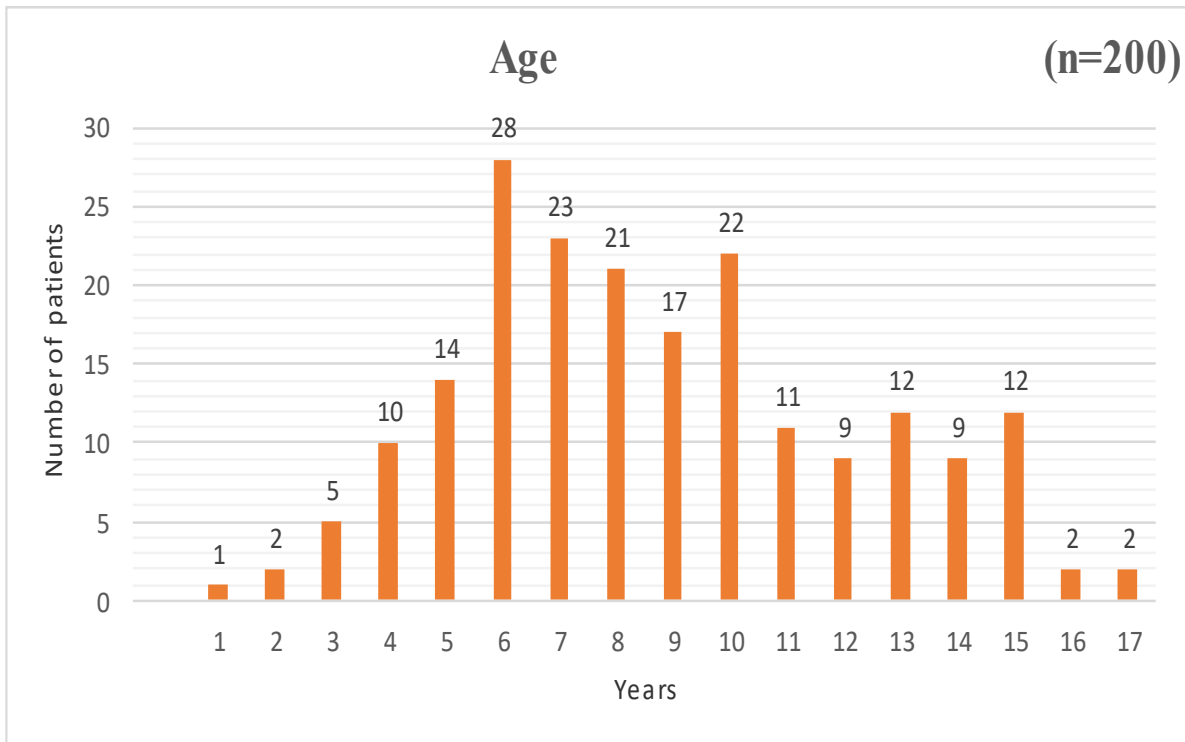
*Figure 2* shows the overall distribution of patients divided into 3 age-groups. The 7-11 years age-group was the most common group accounting for 47% of patients.

*Figure 3* shows the distribution of reasons for referral of patients to the paediatric clinic. Seventy-two children (36%) presented with toothache or abscess, this being the most common reason for referral. This was followed by 31 referrals for children with extensive dental disease (15.5%), 27 referrals for medically compromised patients (13.5%) and 19 referrals for dental trauma (9.5%).

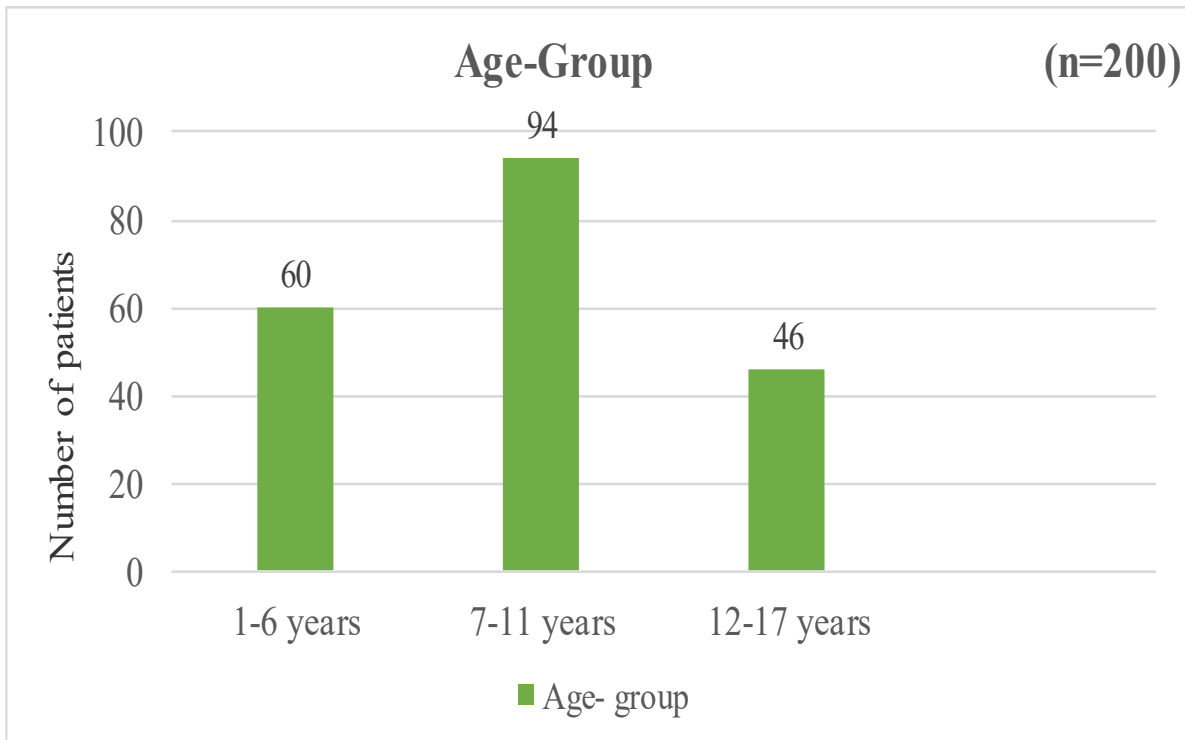
*Figure 4* shows the distribution regarding sources of referral. It was found that 68 of the referrals (34%) were from public health dentists and 50 of the referrals (25%) were from a hospital department. Forty- nine of the referrals (24.5%) were self-referrals, which meant that these patients had no referral letter and attended on their own. Private dentists accounted for 24 of the referrals (12%), 7 referrals (3.5%) were by "other" and medical doctor accounted for 2 referrals (1%).

*Figure 5* shows the distribution regarding the region of referral. This was categorized into North, East, South, West, and Central Trinidad. The largest groups of

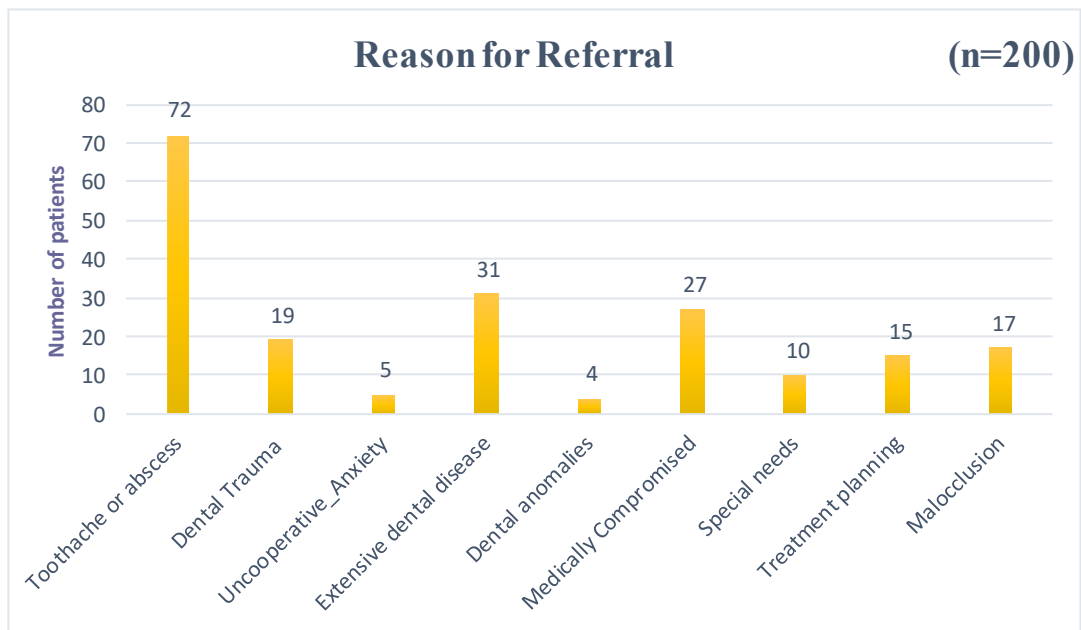
**Figure 1: Distribution of age of patients**



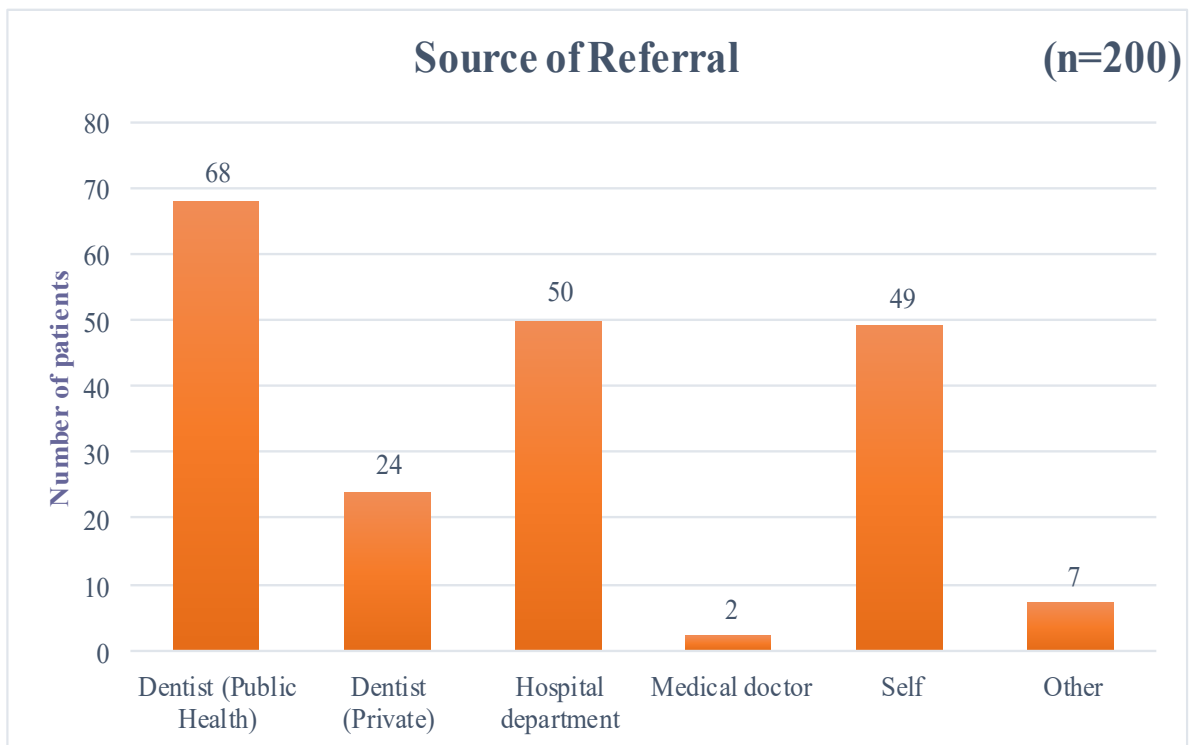
**Figure 2: Distribution of age-group of patients**



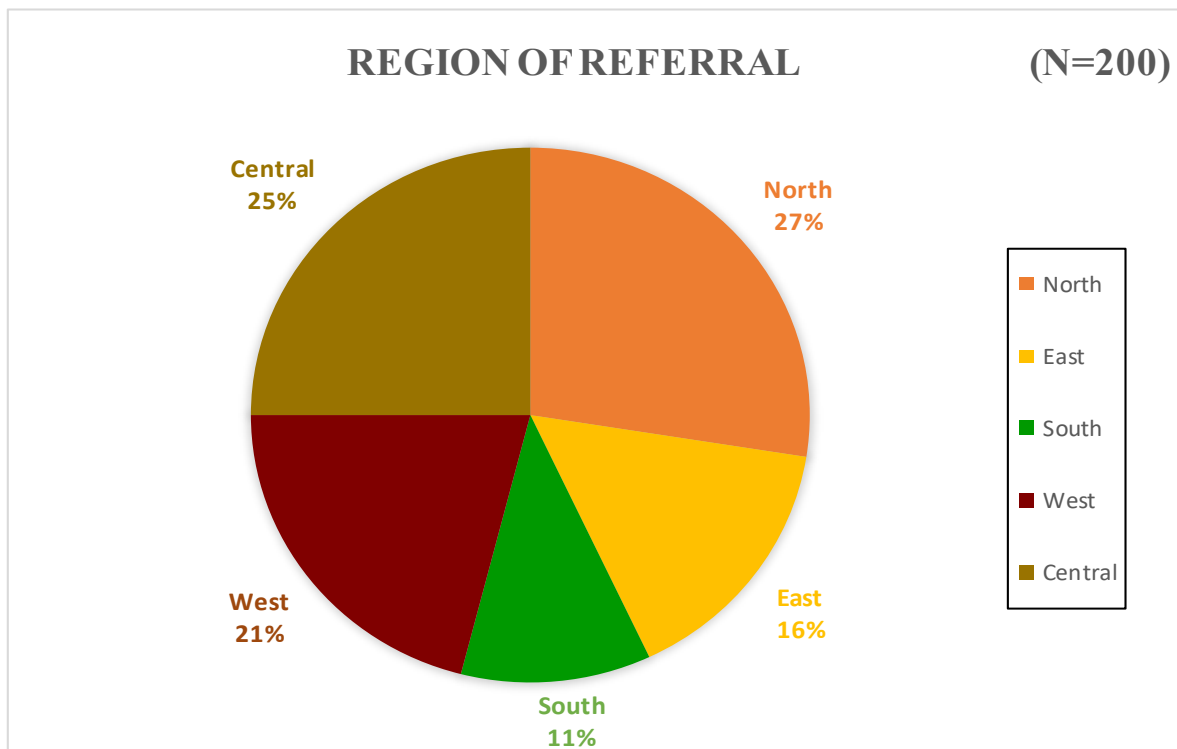
**Figure 3: Distribution of reason for referral**



**Figure 4: Distribution of source of referral**



**Figure 5: Distribution of region of referral**



referrals came from North Trinidad (27%) and Central Trinidad (25%) followed by West Trinidad (21%). The corresponding regions shown in *Figure 6*, is color coded to the chart for region of referral described in *Figure 5*.

*Table 1* gives details of source of and reasons for referral from each source type. Among the referrals from the public health dentists (34%), the most common reason for referral was found to be toothache or abscess (44%), followed by extensive dental disease (21%). The hospital department primarily referred patients who were medically compromised (44%). The most common reason for self-referrals was toothache or abscess (49%), followed by treatment planning (27%). Private dentists (12%) referred mostly patients with extensive dental disease (38%), followed by toothache or abscess (25%).

### Discussion

The main sources of referral to this paediatric emergency clinic were from the Public Dental Service, hospital departments and self-referrals. This suggests that the

clinic is providing support to the public dental services and dental needs of the country. Until recently this university run clinic provided its services free to patients, consistent with the public health services where there are no patient charges for treatment. Even with the introduction of a minimal visit fee, it is possible that this service is still quite accessible to the general population. This is supported by the referral patterns found in this study.

With over half of the referrals coming from the north and central regions of the country, it suggests that this is the main catchment area, and is consistent with the clinic being in the North Central Health Authority, one of four Health Authorities in the island, the others being Northwest (NWRHA), Southwest (SWRHA) and Eastern (ERHA).

The findings of this study indicate that the main reason for referral to the paediatric emergency clinic was for problems involving dental caries, these being toothache/

**Table 1: Relationship between sources of referral and reasons for referral of patients attending the paediatric emergency dental clinic**

	Tooth-ache or abscess	Dental Trauma	Uncooperative or anxiety	Extensive Dental Disease	Dental Anomalies	Medically Compromised	Special Needs	Treatment planning	Mal-occlusion	Total
<b>Dentist (Public Health)</b>	30 (44%)	5 (7%)	3 (4%)	14 (21%)	2 (3%)	3 (4%)	0 (0%)	1 (2%)	10 (15%)	<b>68 (34%)</b>
<b>Dentist (Private)</b>	6 (25%)	0 (0%)	2 (8%)	9 (38%)	1 (4%)	1 (4%)	1 (4%)	0 (0%)	4 (17%)	<b>24 (12%)</b>
<b>Hospital Department</b>	6 (12%)	8 (16%)	0 (0%)	4 (8%)	1 (2%)	22 (44%)	9 (18%)	0 (0%)	0 (0%)	<b>50 (25%)</b>
<b>Medical Doctor</b>	1 (50%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	1 (50%)	0 (0%)	<b>2 (1%)</b>
<b>Self</b>	24 (49%)	5 (10%)	0 (0%)	4 (8%)	0 (0%)	0 (0%)	0 (0%)	13 (27%)	3 (6%)	<b>49 (24.5%)</b>
<b>Other</b>	5 (72%)	1 (14%)	0 (0%)	0 (0%)	0 (0%)	1 (14%)	0 (0%)	0 (0%)	0 (0%)	<b>7 (3.5%)</b>
<b>Total</b>	72 (36%)	19 (9.5%)	5 (2.5%)	31 (15.5%)	4 (2%)	27 (13.5%)	10 (5%)	15 (7.5%)	17 (8.5%)	<b>200</b>

abscess and extensive dental disease. This is consistent with previous research in Trinidad where almost three-quarters of all emergency cases seen at the clinic were for caries-related problems<sup>3</sup>. This finding is also similar to data from Ireland where the majority of children being referred for hospital-based dental care were for extensive dental disease<sup>5</sup> (i.e., exceptionally high levels of dental caries), and research from Europe where among 1000 patients seen over a three-year period, half were for caries-related problems<sup>6</sup>. In a nationwide survey of dental attendance at Emergency Departments in the USA among patients under 21, again over 50% were for caries related problems<sup>7</sup>. It should be noted that medically compromised and special needs patients are likely to suffer from extensive caries and potentially debilitating illness. Children with special needs are less able to self-report pain and dental infections therefore the burden of

disease may be greater than what is reported.

This predominance of caries-related problems suggests an urgent need for more community-based preventive strategies. As dental caries is a preventable disease that is highly influenced by social and behavioral factors, preventative strategies are paramount for improving the oral health of children in Trinidad and Tobago. These strategies include dental health education to parents focusing on dietary advice, the importance of fluoride usage, as well as brushing techniques with parental supervision in younger children. In addition, encouraging attendance for routine dental care at an early age will contribute to better patient outcomes<sup>8</sup>.

In this regard the American Academy of Pediatric Dentistry (AAPD) also recommends that ideally all children should have a 'dental home' i.e., an ongoing relationship between the dentist and patient from an

early age, where routine prevention and dental care can be delivered in a continuously accessible, well-coordinated and family-centered way<sup>9</sup>. The AAPD advises that a dental home should be established no later than 12 months of age. Establishing a dental home should result in heightened awareness of oral health among parents and caregivers, enable caries risk assessment (CRA) and early treatment of oral health issues, thereby reducing the need for emergency dental care and referral<sup>9</sup>.

Most patients in the present study were 7 -11 years-old which is similar to a finding from the UK which found that 70% of children referred to a dental hospital were between 7 and 15 years of age<sup>10</sup>, and Ireland where the mean age was 9 years<sup>5</sup>. Management of caries-related problems during this mixed dentition period requires careful follow-up and treatment planning after the emergency care, to ensure good oral health in the permanent dentition.

In this present study, referrals for uncooperative patients and those with extensive dental disease were less than referrals for acute problems (toothache and abscess). This differs with studies internationally where for instance in Ireland and England, behavioral problems were the most common reason for referral<sup>5, 10</sup>.

The main source of referrals to this paediatric emergency clinic were public health dentists which agrees with Stewart et al<sup>5</sup>, where most referrals to a dental hospital in Ireland were from the public dental service. This may suggest that some public clinics require additional support to manage acute caries-related paediatric cases. Furthermore, in the present study, several of the referral forms received from the public service indicated equipment problems, or lack of materials limiting the treatment they could offer. These issues should be

addressed at a national level to allow for greater treatment capacity in the public service and reduce the need for referral. Access to care may also be improved by increasing the number of dental healthcare professionals in the service. The University of the West Indies (UWI) recently graduated a cohort of qualified Dental Hygienists/Dental Therapists (DHDTs) to be deployed in the public sector. Consistent with international trends related to mid-level dental providers<sup>11</sup> these DHDT's are qualified to provide preventive, minimal restorative treatment and extractions for children, thereby improving access to dental services in the community, including emergency care.

With the most common reason for referral to the clinic being caries-related problems involving toothache/ abscess, this may affect the behavior and level of cooperation of the child in the chair. Their treatment may often require anxiety management in the form of conscious sedation or general anesthesia (GA). These services are currently quite limited due to availability of theatres and operating lists. Therefore, emphasis should be placed on improving the availability of GA services in the dental hospital for children who present with acute and/or extensive dental disease, as a priority area for developing the efficiency of the paediatric emergency clinic.

One limitation in this study is that the principal investigator was only able to collect data on three days per week which included 4 out of the 6 clinic weekly clinic sessions. Therefore, not all patients referred to the clinic during the period of data collection were included in the study. Also, this research reports findings from cross-sectional data. A longitudinal study with data on treatment outcomes and follow-up care may further inform the development of services in the clinic.



In conclusion, this study found that most referrals to The UWI paediatric emergency dental clinic came from the public health dental service, with the majority being young children presenting with toothache or abscess. These referrals were from across the country with the majority coming from the North and Central region. While largely providing emergency care, the clinic is also being utilized for diagnostic and specialist treatment planning services through referrals from hospital department and general dental practitioners.

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**AUTHOR CONTRIBUTIONS:** I.S. and R.N. conceived the idea; I.S. collected the data; I.S. and R.N. analysed the data; and R.N. and V.R. led the writing.

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