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CHILDREN WITH BIRTH DEFECTS; A CHALLENGE FOR PUBLIC HEALTH SERVICE

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Abstract: Children having birth defects denote a high risk group for oral diseases compared to their healthy counterpart. Untreated dental caries significantly accounts for the oral disease burden of children with birth defects. A preventive oral health and restorative dental care package with close follow up could offer much benefit for such children and this poster provides some baseline information in this regard. A Sample of 79 children with birth defects who visited the Preventive Oral Health Unit of the National Dental Hospital (Teaching) Sri Lanka from 1st January 2017 to 29th April 2019 were included in the present analysis, by extracting data from unit's data base. The level of corporation of a child for oral health care was assessed by child's compliance with mouth examination and provision of simple dental treatment in a child-friendly dental setting. Children with birth defects aged (mean ± SD) [6.02 ± 3.17-years], carried a high burden of untreated dental caries. The mean number (±SD) of non-cavitated decayed teeth was 2.65± 3.62, cavitated decayed teeth was 2.97±2.97 and pulp exposed teeth was 3.59 ±3.60 respectively. Children were offered a preventive oral health care package comprised of customized behavioural management, oral hygiene instructions and dietary counseling (for parental care givers), professional fluoride applications, simple restorations of carious teeth, fissure sealant applications for permanent molar teeth, referral for pulp therapy for pulp exposed symptomatic teeth under general anaesthesia to Restorative Unit B with follow up of care. 50.6% of children deemed cooperative and 8.9% were partially cooperative to receive oral health care provided by the Preventive Oral Health Unit. This baseline information must be utilized for effective planning of oral healthcare for children with birth defects.

Introduction

Oral health an integral part of the good health and well-being. However, many people have untreated oral diseases, resulting in preventable pain, infection and reduced quality of life, in addition to missed school and productivity losses. Oral health is defined the ability to speak, smile, smell, taste, touch, chew, swallow, and convey a range of emotions through facial expressions with confidence and without pain, discomfort, and disease of the craniofacial complex[1]. It has been estimated that the burden of oral health accounted for US$357 billion in direct cost and US$188 billion in indirect cost during the year 2015[2] According to the definition of World Health Organization birth defect is any structural or functional anomaly with measureable effects on physical, intellectual, and social wellbeing[3]and it has become a clinical and public health challenge globally.

Children with birth defects have been identified as a disadvantage population for the proper oral health services and these children carry a high untreated dental caries burden attributed to an array of risk factors and determinants[4]. For example, overwhelming priority needed for managing respective medical conditions, low priority given for oral health of the child, lack of awareness of parental

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caregivers on child's oral health, less optimal oral hygiene practices, sugary medication, unhealthy dietary patterns, high levels of dental anxiety among children with special needs, availability and accessibility constraints in child friendly oral health care services and heavy care giving burden on the parental and other care givers negatively impact on oral health status of the child[4].

However, improving oral health status of children with birth defects by appropriate oral health promotion and restorative dental treatment strategies will prevent serious life-threatening complications of dental disease such as bacteremia and sepsis in medically compromised children while enhancing their quality-of-life. Therefore, providing oral health care services for children with birth defects as early as possible not only rewarding but demanding as well. However, it is challenging thus demonstrating variable success even in high income, developed countries [5]. Moreover World Health Organization (WHO) has stated that there is a greater unmet need for oral healthcare of individual with disabilities than healthy person[6].

The prevalence of birth defect in Sri Lanka is 62.2 for every 1000 live births[7] and therefore it is a felt need to establish the specialized oral health service for these children. This study aimed to describe an oral health care package offered to high caries risk children with birth defects at a multi-specialty, tertiary care, and premier public dental hospital setting in Sri Lanka.

National Dental Hospital in Sri Lanka, is providing multidisciplinary oral health service to the nation and it includes out patient care, oral and maxillofacial surgery, orthodontics, restorative dentistry and public health dentistry[8].

F.J Fenton and others have stated that autism children are more vulnerable for gingivitis and bleeding due to mood disorders, attention insufficiency, aggression, anxiety and sleeplessness[9]. Periodontal diseases are more common among the down syndrome population including children[10]. As well as A.K Smith and colleagues have stated that down syndrome people have mid-facial abnormality, narrow palate, macroglossia, delayed teeth eruption, missing and malformation in tooth morphology which are caused to poor oral health[11].

This study aims to describe an oral health care package offered to high caries risk children with birth defects at a multi-specialty, tertiary care, and premier public dental hospital setting in Sri Lanka.

Objective

To describe an oral health care package offered to high caries risk children with birth defects at a multi-specialty, tertiary care, and premier public dental hospital setting in Sri Lanka.

Method

A descriptive study was conducted based on data records of 79 children with birth defects who visited the Preventive Oral Health Unit of the National Dental Hospital (Teaching), Sri Lanka from 1st January 2017 to 29th April 2019. The children were referred by the out-patient-department of the National Dental Hospital and other specialized units. Data were extracted from unit's data base which included socio-demographic information, dietary and brushing habits, clinical oral health status, medical history and dental treatment details. The level of cooperation of a child for oral health care was assessed by child's compliance with mouth examination and provision of simple dental treatment in a child-friendly dental setting.

Birth defects were categorized into an operational classification of broad groups based on main diagnosis stated in the diagnostic card of each child.

The data were entered and analyzed using SPSS-21 Statistical Software Package.

Results

The mean ± (SD) age of the children with birth defects was 6.02 years ± 3.17 years ranging from 1 to 18 years. There were 37(46.8%) boys and 42 (53.2%) girls thus demonstrating a female preponderance. According to operationalized birth defect categorization, the most common single entity was "development delays"-15 (18.9) followed by" cleft lip and palate" 12(15.2%).) However, combined categories for example. "autism/autism spectrum disorder/Down Syndrome"-15 (18.9%) and "Congenital Heart Disease combined with other categories"-26 (32.9%) demonstrated prominence (Table 1).

Table 1: Birth defects categories among children who received preventive oral healthcare

Birth Defect Category	Number	%	Ranking by frequency
Syndromic cases/Seizures/ Cerebral Palsy & related conditions	11	13.9	4
Cleft Lip & Palate	12	15.2	3
Developmental Delays	15	19.0	2
Autism/Autism Spectrum Disorder/Down's Syndrome	15	19.0	2
Other conditions including Congenital Heart Disease*	26	32.9	1
Total	79	100.0 * 7 (8.8%)	

The untreated dental caries burden revealed mean ± (SD) 2.65± 3.62, non-cavitated decayed teeth, cavitated decayed teeth 2.97±2.97 and pulp exposed decayed teeth 3.59 ±3.60 respectively. Moreover, non cavitated decayed teeth, cavitated decayed teeth and pulp exposed teeth ranged up to 12, 11 and 16 respectively showcasing a high unmet dental treatment need. All children practiced unhealthy dietary habits with daily consumption of biscuits, buns, toffees and chocolates as well as less optimal brushing habits compounded by their special needs. The children attended, 50.6% deemed cooperative and 8.9% were partially cooperative to receive simple dental care.

All parental and other care givers were counselled on healthy dietary habits without adversely interfering into special nutritional advice on diets based on high energy demands of the child and optimal oral hygiene practices based on existing practices and limitations and individual circumstances.

Children who did cooperate sufficiently for preventive oral health care having non-cavitated and cavitated dental caries were provided with professional fluoride application (slow release 22.6 mg fluoride varnish application), simple restorations and fissure sealant applications for permanent molars. Uncooperative children and children with symptomatic pulp exposed teeth received restorative dental care under general anesthesia (GA) by necessary referrals to Restorative Unit B, which provides advanced restorative dental treatment under GA for children with special needs and children with severe dental anxiety thus fulfilling a national need.

Figure 1. Fluoride varnish application on non-cavitated & cavitated carious

Teeth: Upper deciduous/primary/milk teeth of a child with dental caries

Figure 2. Behaviour Management of children for Preventive

Oral Health Care: Child-friendly-dental clinic setting

Discussion

The finding of this study is consisted with a previous study conducted by H.M Ali and other and they have stated that lower frequency of tooth brushing is a common practice among children with Congenital Heart Disease(CHD)[12]. As well as they have further mentioned that education level of mothers is a main factor affecting the oral health of these children. Moreover unmet need of oral health is high among the sample population of this study predominantly dental caries.

This has been concluded in previous study; that carries and gingivitis are the main form of oral health problem among children with CHD[13]. Apart from that oral health practices of autism children are very poor than even their family members[14]. Down Syndrome contribute to dental problems due to orofacial and skeletal development problems and therefore these children have greater risk to have poor oral health than healthy children[15]. The percentage of the children who cooperated to the study was 50.6 and it is an indication that the existing strategy of Sri Lankan health sector must be modified to get the maximum support from the participants. The following the proposed suggestions to

streamline this process; giving the schedule appointments early in the morning or best time of day for patient, talk with the parent or caregiver to determine the patient's level of intellectual and functional abilities and explain each procedure at a level the patient can understand, Use short, clear instructions and speak directly to the patient.

Conclusions

Children with birth defects treated at the Preventive Oral Health Unit and Restorative Unit B, National Dental Hospital (Teaching) Sri Lanka carried a high burden of untreated dental caries as non-cavitated, cavitated and pulp exposed teeth in their mixed dentition with milk teeth and permanent teeth.

An oral health care package that comprised of preventive oral health care combined with simple and advanced restorative dental care provision was offered to address the unmet need of untreated dental caries of the children.

Important baseline data should be utilized to plan the appropriate dental health strategies for children with birth defects.

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