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Original Research Article

Oral health status and treatment needs of individuals with special health care needs in Port Harcourt, Nigeria

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Abstract: Individuals with special health needs are disadvantaged by virtue of the health challenges they face which contributes to their reduced ability to take care of their overall health. The aim of the study was to determine the oral health status and treatment needs of a group of individuals with special health needs. A cross-sectional study was carried out in an institution for individuals with special health needs in Port Harcourt, Nigeria. Information on demographics and medical conditions of the participants was obtained from their teachers/minders. Their oral cavities were then examined for their oral hygiene status, dental caries, malocclusion, dental anomalies and dental trauma. Sixty four subjects consisting of 34 (53.1%) males and 30 (46.9%) females with a mean age of 13.6 (± 6.86) years were assessed. Five health conditions were noticed; Cerebral palsy 23 (35.9%), Down's syndrome 21 (32.8%), learning disability 11 (17.2%), autism 7 (10.9%) and seizure disorders (3.1%). Although 46 (71.9%) were caries free, the mean DMFT was 0.61 (±1.16) and there was no significant difference (p=0.50) across the gender. The decayed component was 75% and there were no filled teeth. The mean OHI-S was 1.66 (± 0.79) and thirty three (51.6%) had good oral hygiene with no significant differences (p=0.16) across the medical conditions. Thirty (46.7%) individuals needed oral prophylaxis and 18.1% were in need of restorative care. Fourteen (21.9%) needed composite/labial facing while 10.4% would need stainless crowns on the posterior teeth. The study establishes inadequate utilisation of dental services among special healthcare need individuals.

Keywords: Special health care need, Oral health status, Treatment needs.

INTRODUCTION

The World Health Organization (WHO) qualifies oral diseases as one of the major public health problems due to its high prevalence and incidence in all regions of the world [1]. The disadvantaged and socially marginalized individuals especially those living in developing countries have the greatest treatment needs of oral diseases as with other health problems [2]. One of the groups of disadvantaged or socially marginalized populations is those with special healthcare needs. Individuals with special health needs are disadvantaged by virtue of the health challenges they face which contributes to their reduced ability to take care of their overall health [3, 4].

Basic oral hygiene activities such as tooth brushing and flossing which engender good oral health may not be feasible without help or constant supervision even amongst older individuals. These individuals living at home or in institutions are usually dependent on family or caregivers for the maintenance of their personal hygiene and these caregivers may lack requisite knowledge of preventive dental care [5, 6]. The special needs of these individuals impose considerable economic, physical and psychological stress on the affected families/care givers which may result in indifference, abandonment or institutionalization leading to further neglect with consequences of oral diseases associated with reduced oral care [6].

Several studies within Nigeria [6, 7-16] and global reports [2, 17-25] have documented oral diseases (such as periodontal diseases and dental caries) and disorders (trauma to the dentition and malocclusion) associated with people living with various degrees of disabilities and thus requiring special health care. Literature shows that most of the studies on oral health status and treatment needs of people with Special Health Care Need(SHCN) were conducted in the south western part of Nigeria[8-16] Although there are reports [4,26-28]on children with special health needs in the

South South part of Nigeria, especially Rivers state where our study was conducted, none has addressed the oral health status/ treatment needs of these children Our aim therefore was to document the oral health status and treatment needs of individuals with special needs in Port Harcourt, Nigeria.

METHODOLOGY

This study was carried out in an institution that cares for individuals with special health needs in Port Harcourt. Permission was sought and obtained from the institution and the parents. Information on demographics and medical conditions of the participants was elicited from their teachers/minders. The most severe medical condition was noted when there was more than one condition in an individual. The age as at last birthday and gender were the demographic information elicited. The oral cavities were examined for the teeth present/missing, dental caries, gingivitis, dental trauma, and dental anomalies such as anomalies in number, structure and form. These were assessed based on the following criteria below.

Dental caries

The diagnosis of dental caries was made by using the World Health Organization (WHO) Oral health assessment criteria for children [28]. The D component was used to describe decayed tooth; filled tooth with recurrent caries/decay; retained root; temporary filling or filled tooth surface with other decayed tooth surface while the M component: was used to describe missing teeth due to caries and F component was used to describe filled teeth due to caries. The DMFT index values according to the World Health Organization were assessed as: Very low (0.0-1.1), Low (1.1 to 2.6), Moderate (2.7 to 4.4), High (4.5-6.5) and Very high (>6.5).

Oral hygiene status

Oral hygiene status was assessed using the Simplified Oral Hygiene Index (OHI-S) of Greene and Vermillon. The oral hygiene was categorized as 'good' when the OHI-S score was 0–1.2, 'fair' (1.3 -3.0) and 'poor' (3.1-6).

Occlusion anomalies

Occlusion anomalies recorded were crowding, spacing and anterior open bite. A tooth was recorded as missing when it had not erupted after six months of its expected eruption date while a tooth was recorded as retained when it was still in the arch after six months of its expected date of exfoliation.

OTHERS

Chronologic enamel hyperplasia was recorded when consistent discoloured malformations on teeth of the same series occurred in at least two quadrants. Fractures of anterior teeth were also recorded. The treatment needs were classified according to the procedures required; oral prophylaxis, restorative (anterior/posterior), extractions and orthodontics.

Oral health education that comprised the frequency and techniques of tooth brushing, dietary counselling and importance of regular dental attendance was given to all the caregivers and children that could comprehend the information. Based on the assessment of oral health conditions, the subjects were counselled, oral prophylaxis given to those who could cooperate while those with more severe oral conditions were referred for treatment.

Information obtained was then analyzed using Statistical Package of Social Science version 20.Descriptive summary statistics was obtained; Chi square test, t-test, and Fisher's exact test were used where applicable when comparing findings across health conditions and gender. The level of statistical significance set at $p < 0.05$ at 95% confidence interval.

RESULTS

The institution had 85 individuals with special needs enrolled. Sixty eight (80%) individuals were present on the day of the survey and 4 (5.9%) of them were excluded because they were uncooperative. Of the 64 (94.1%) subjects that allowed screening; 34 (53.1%) were males and 30 (46.9%) females. Their mean age was 13.6 ($\pm$ 6.86) years ranging between 4 and 34 years. Majority (54.7%) were in the 11 – 20 years group; [11-15 years were 19 (29.7%) 16-20 years were 16 (25%)]. There were five health conditions; Cerebral palsy 23 (35.9%), Down's syndrome 21 (32.8%), learning disability 11 (17.2%), autism 7 (10.9%) and seizure disorders (3.1%). (Table 1)

Table 1: Sociodemographic characteristics and oral health status among the subject's health conditions.

	MEDICAL HISTORY					
	Down S N (%)	**C PALSY**	**AUTISM**	**LEARNING DISABILITY**	**SEIZURE**	**Total**
SEX						
MALE	6(17.6)	14 (41.2)	5 (14.7)	7 (20.6)	2 (5.9)	34 (53.1)
FEMALE	15 (50.0)	9 (30.0)	2 (6.7)	4 (13.3)	0	30 (46.9)
Total	21 (32.8)	23 (35.9)	7 (10.9)	11 (17.2)	2 (3.1)	64 (100)
P=0.06						
Age group						
0-5	2 (28.6)	3 (42.9)	1 (14.3)	1 (14.3)	0	7 (10.9)
6-10	4 (30.8)	4 (30.8)	1 (7.7)	3 (23.1)	1 (7.7)	13 (20.3)
11-15	6 (31.6)	8 (42.1)	2 (10.5)	3 (15.8)	0	19 (29.7)
16-20	7 (43.8)	4 (25.0)	3 (18.8)	2 (12.5)	0	16 (25.0)
20+	2 (22.2)	4 (44.4)	0	2 (22.2)	1 (11.1)	9 (14.1)
P=0.85						
OHI						
GOOD	7 (21.2)	11 (33.3)	7 (21.2)	6 (18.2)	2 (6.1)	33 (51.6)
FAIR	8 (42.1)	8 (42.1)	0	3 (15.8)	0	19 (29.7)
POOR	6 (50.0)	4 (33.3)	0	2 (16.7)	0	12 (18.8)
P=0.16						
DMFT						
0	15 (32.6)	17 (37.0)	7 (15.2)	7 (15.2)	0	46 (71.9)
1	2 (28.6)	3 (42.9)	0	1 (14.3)	1 (14.3)	7 (10.9)
2	1 (20.0)	1 (20.0)	0	3 (60.0)	0	5 (7.8)
3	1 (50.0)	1(50.0)	0	0	0	2 (3.1)
4 P=0.17	2(50.0)	1 (25.0)	0	0	1 (25.0)	4 (6.3)
GINGIVITIS						
GENERALISED P=0.20	15 (37.7)	17 (34.0)	2 (7.5)	7 (17.0)	1 (3.8)	42 (65.6)
MICRODONTIA P=0.06	8 (66.7)	1 (8.3)	1 (8.3)	2 (16.7)	0	12 (18.8)
FRACTURED ANTERIOR *P=0.02	1 (7.1)	9 (64.3)	3 (21.4)	1 (7.1)	0	14 (21.9)
AOB P=0.25	7 (46.7)	6 (40.0)	2 (13.3)	0	0	15 (23.4)

*p<0.05 is significant

The mean OHI-S was 1.66 (± 0.79) i.e. fair. Thirty four (53.1%) had good oral hygiene while 17 (26.6 %) and 13 (20.3%) had fair and poor oral hygiene, respectively. Females had a mean score of 1.79 ± 0.79 and males was 1.53 ±0.82 and this difference was not statistically significant (p=0.06). (Figure 2) Also, when the mean OHI-S values were compared among the health conditions there was no significant difference (p=0.16). (Tables 1 and 2)

Table 2: The distribution of dental disorders among the individuals with special healthcare needs according to gender.

	Males(34) n (%)	Females(30) n (%)	Total(64) n (%)	p value
Dental caries	8 (23.5)	8 (26.7)	16 (25)	0.88
Gingivitis	22 (64.7)	19 (63.3)	41(64.1)	0.96
Microdontia	4 (11.8)	8 (26.7)	12 (18.8)	0.2
Retained teeth	1(2.9)	2 (6.7)	3 (4.7)	0.6
Supernumerary teeth	2 (5.9)	0	2 (3.1)	0.49
Generalised enamel hypoplasia	3 (8.8)	4 (13.3)	7 (10.9)	0.59
Localised enamel hypoplasia	4 (11.8)	3 (10.0)	7(10.9)	0.79
Fractured anterior teeth	6 (17.6)	8 (26.7)	14 (21.9)	0.55

Forty six (71.9%) were caries free. All autistic subjects, 71.6% subjects with Down's syndrome, 73.4%with cerebral palsy and 63.6% individuals with learning disability were caries free, however the two individuals with seizure disorders had dental caries (p=0.17). The mean DMFT was 0.61 (±1.16) (very low based on the WHO criteria), the mean DMFT for males and females was 0.69 ±1.2 and 0.59 ±1.1, respectively and there was no significant difference (p=0.50) across the gender. (Table 1 and Figure 1)

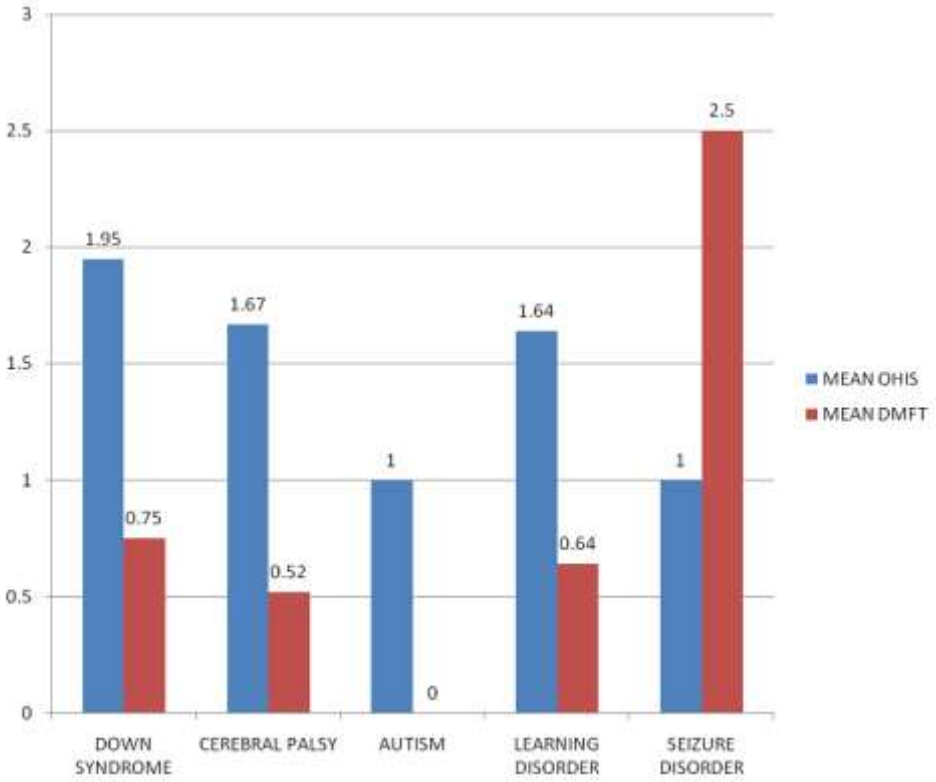

Fig-1: The mean OHIS and DMFT among the health conditions

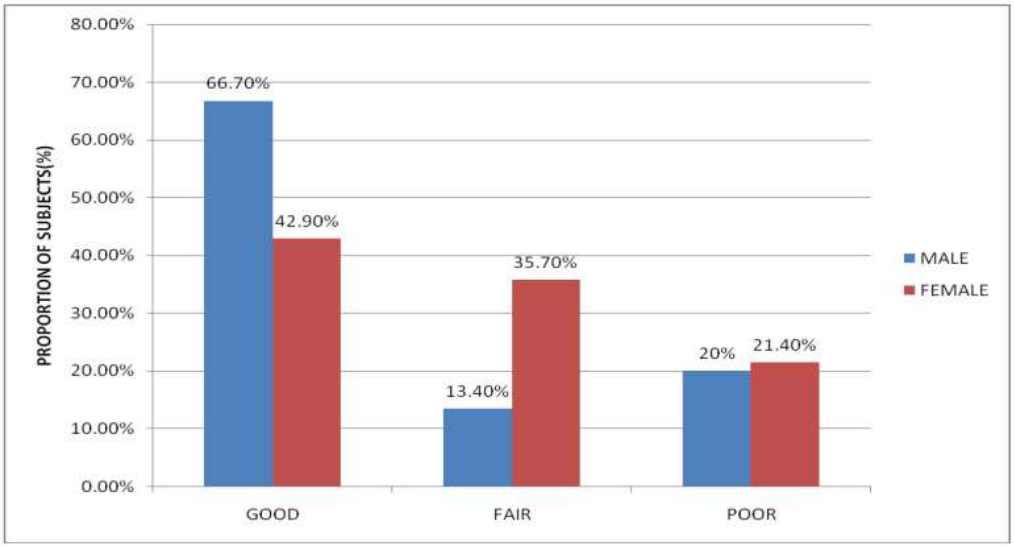

Fig-2: Gender differences in oral hygiene status in the subjects

The decayed component was 75%, missing component was 25% and there were no filled teeth. The distribution of untreated dental caries among the health conditions is shown in figure 3. Fifty percent of the males that had a DMFT>0 had 50% missing component while the females with a DMFT >0 had 37.5% missing component. Equal number of males and females had decayed teeth.

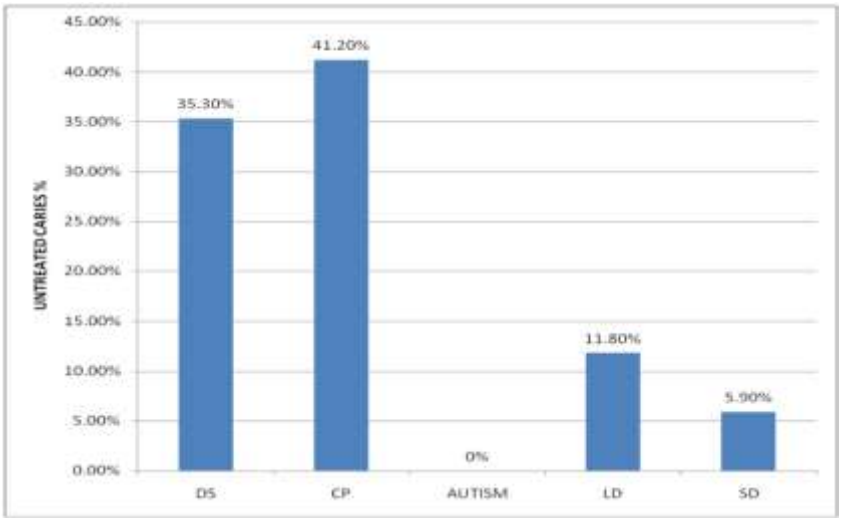

Fig-3: The proportion of subjects that had untreated dental caries.

Fractured anterior teeth were found in 14 (21.9%); 8 (26.7%) females and 6 (17.6%) males and the differences between the males and females was not significant. (Details in Table 2)When the health conditions were considered69.2% subjects with Cerebral Palsy, 23.1%with Autism and 7.7% with Learning Disability had fractured anterior teeth. Twenty (31.3%) had dental anomalies; chronologic enamel hypoplasia 14 (21.9%), supernumerary teeth 2 (3.1%), retained primary teeth 3 (4.7%) and hypodontia 1 (1.8%). Microdontia was found in 12 (18.8%) [Peg shaped lateral incisors was found in 4 (6.3%)] and 8 (66.7%) of these were individuals with Down's syndrome.

Varying malocclusions was observed in 25 (39.1%); Angles Class I was found in 48.1% while Angles Class II div 1 14 (26.9%), 4 (7.7%) Angles Class II div2 and Angles Class III (17.3%) Fifty percent of those with cerebral palsy had Class II div 1 while 6 (66.7%) class III were Down syndrome. Fourteen (21.9%) had crowding[9 (14.1%) anterior crowding, 3 (4.7%) posterior crowding,3 (4.7%)anterior upper crowding and 2 (3.1%) posterior upper crowding], 7 (10.9%) had crossbites [4 (6.3%) posterior and 3 (4.7%) anterior]. Anterior open bite (AOB) was found in 15 (23.4%) and 7 (46.7%) of those with AOB had Down syndrome.

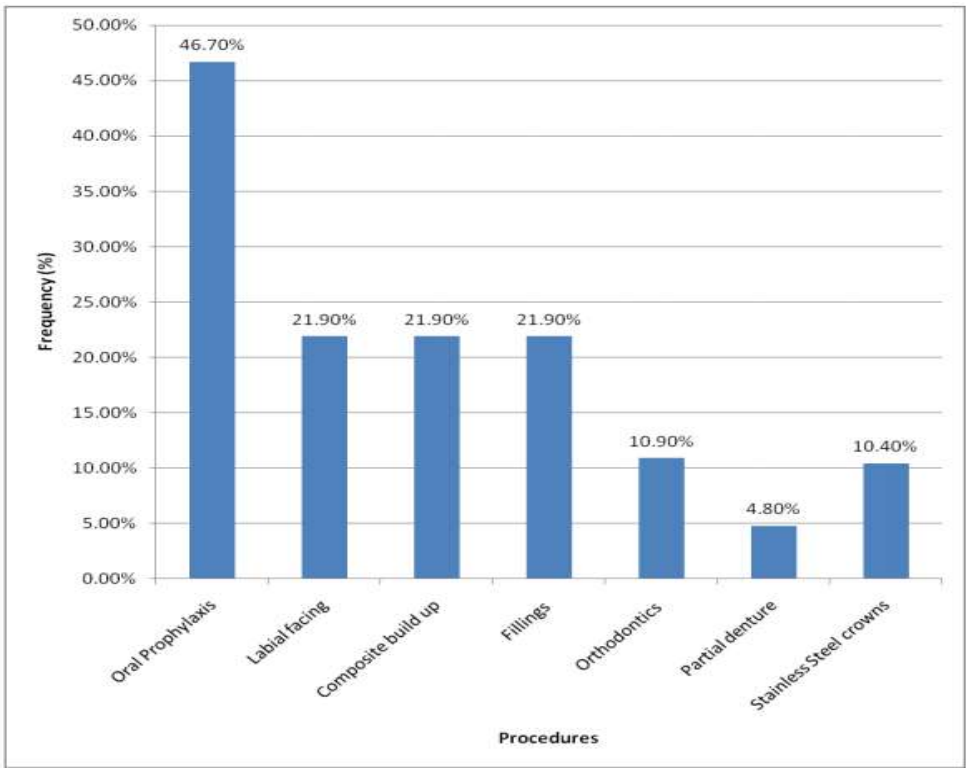

Fig-4: Treatment needs of the subjects

Treatment needs

The most common dental disorder requiring management were untreated dental caries (75%).Thirty (46.7%) needed oral prophylaxis; while labial facing (21.9%), composite build up (21.9%), stainless crowns (10.4%) on the posterior teeth and orthodontics (10.9%) were needed by the subjects. (Details in Figure 4).

DISCUSSION

Diets, efficient plaque control and regular dental visits are needed for optimal oral health of individuals however in SHCN these are compromised one way or the other. Medications (syrups containing sugar), poor swallowing ability, the need to increase the frequency of ingestion of meals in these individuals has been cited as predisposing to oral health problems [29] Poor motor functions affect dexterity and their inability to understand, assume responsibility for or cooperate with preventive oral health practices results in poor oral hygiene [13] In this study over 50% had good oral hygiene and this may be as a result of being day students since parents might be more disposed towards assisting in their oral hygiene compared to the minders. In previous studies, institutionalized persons were reported to have poorer oral hygiene than the normal population [6, 16, 22]. However, about 46% of them still needed oral prophylaxis. This is no surprise because of non comprehension of oral hygiene instructions and the limitations in motor functions leading to poor dexterity hence inefficient hygiene practice.

In this study, there were more males than females and this corroborates what had been reported in previous studies [13, 15, 30]. Over two thirds of the subjects in our study were caries free, though the 71% was higher than the 66.7% reported by Oredugba and Akindayomi [9] in a similar private institution but was lower than the 93% reported in a public institution [31] and this may be because private institutions have better care and facilities than their public counterparts. The difference between this present study and that of Oredugba and Akindayomi[9] could be the sample size. The mean DMFT was very low, however the decayed component was high, and this is an indicator of poor utilization of dental services. This is comparable to that of 'normal children and among SHCN [6, 9] There was no significant sex difference. This may have been as a result of poor awareness among the parents and caregivers, priority for the general health condition over oral health or poor access to dental facilities. Furthermore, ill equipped dental facilities may play a role and very few people are trained to manage oral conditions in people with SHCN in the dental facilities.

In this study 64.3% of children with cerebral palsy had trauma to their anterior teeth and this was also observed by Diéguez-Pérez,et al in their systematic review of children with SHCN [23]. Individuals with cerebral palsies have seizures as common co morbidity and may also be accompanied by epilepsy [31]. In most cultures in Nigeria, objects such as spoons/ wood forcefully placed between the maxillary and mandibular anterior teeth during seizures may result in trauma to the teeth [32]. Their gait and balance may be affected as a result of the medical condition and consequently are prone to falls. Also, the facility had floor surfaces that were concrete and in most places tiled. Though these types of flooring may enhance sanitation they are non impact absorbing [33] and predispose to dental injuries.

In this study the incidence of open bite and microdontia was more in subjects with Down's syndrome than other disabilities. The open bite has been attributed to the mid face hypoplasia [12]. One of the characteristics of the dentition of individuals with Down syndrome has been reported to be microdontia and this was reported among a group of individuals living with Down Syndrome in Lagos Nigeria [12].

Most of the oral conditions noted were easily treated conditions and underutilization of dental services by this group of individuals is a major constraint. However, health education may improve knowledge and consequent increase in dental facility utilization. Periodic dental visits may reduce the burden of untreated oral health disorders that cause pain and consequent tooth loss. Governmental and non Governmental organizations support may be necessary. This is necessary because the logistics involved in bringing the children to a dental facility may be very daunting to the staff of the institutions. Reports have shown that good remuneration and further training will improve dentists and other members of the dental team's willingness and ability to manage individuals with special health care needs [34].

CONCLUSION AND RECOMMENDATION

- The subjects had a very low DMFT index though over a quarter of them had caries.
- Utilisation of dental services was inadequate.
- There is a need to raise oral health awareness amongst families, caregivers, medical and dental health personnel.
- The caregivers (parents/minders) need oral health education with emphasis on diet, efficient assisted/supervised oral hygiene practice and routine dental check-ups.
- Regular dental outreaches to these special institutions/facilities by the dental practitioners.

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