

Observational Study of Oral Health Status and Treatment Need of Institutionalized Mentally Retarded Children.

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Abstract

Mental retardation is a deficiency in theoretical intelligence that is congenital or acquired in early life. Depending upon intelligence quotient, classification is mild (50-70), moderate (35-40), severe (20-25) and profound (below 20). Presence of disability makes oral health maintenance difficult for them. Dental caries is the most prevalent disease among them with dental treatment being most unattended.

The study aimed to assess oral hygiene status and treatment needs of institutionalized mentally retarded children. This observational cross-sectional study, wherein 4 descriptive surveys were conducted, to examine 195 MR children aged 3-18 years with Mild (60), Moderate (65) and severe (70) were examined. Caries prevalence was recorded according to deft and DMFT index and oral hygiene according to OHI-S.

Caries prevalence is high. Caretakers and parents need to focus on maintenance of oral hygiene along with general

health in disabled children. Comprehensive treatment plan should be devised to meet treatment needs.

Key words: Mental Retardation (MR), Institutionalized, Intelligent quotient (I.Q), DMFT, OHI-S.

Introduction

Mental retardation has been defined by the American Association of Mental Deficiency (AAMD) as a deficiency in theoretical intelligence that is congenital or acquired in early life. It has been classified depending upon I.Q^s as mild (50-55 or about 70), moderate (35-40), severe (20-25) and profound retardation (below 20). [1] The recent National Sample Survey Office report suggests that the number of disabled person in the country is estimated to be 18.49 million, i.e 1.8% of the total population, while the mentally retarded population is 0.44 million. [2] Developmental disabilities can develop due cerebral palsy, Down's syndrome, mental retardation, autism, seizure disorders, hearing and visual impairments, congenital defects, and even social or intellectual deprivation. [3]

Oral health plays an important role in an individual's life. Maintenance of oral health becomes more difficult for a child with special needs. Dental caries is the most prevalent disease among mentally retarded children and "dental treatment is the greatest unattended health need of the disabled". [4] Some of the reasons may be inadequate recall systems, practical difficulties during treatment sessions, socioeconomic status, underestimation of treatment need or pain, communication problems and bad cooperation. [4-8] Moreover many dentists are unwilling to treat people with disabilities as they often require more time and effort. [9]

I.Q- Intelligence quotient

Municipal Corporation registered nearly 3000 special need children in district and about 9 schools work for the betterment of these children. However, there are no dedicated dental services for children with special needs. Therefore, this study not only concentrated on diagnosis of oral health but also informed the caretaker about the treatment need and further follow ups. The study also analyzed the variation of oral health with gender, age and level of retardation. The study included educating the care giver and the guardian of the child about the methods of maintaining proper oral hygiene and adequate diet so that oral hygiene is not compromised.

The study was conducted with an aim to determine oral health status of mentally retarded children and to find association of oral health with various clinical variables.

Method

Informed consent: After seeking ethical approval from the Dental College Research Ethics Committee and permission from Municipal Corporation and heads of institutions, study was conducted. Informed consent was obtained from parents of each participant prior to any interviews or examinations. Participation in this study was entirely voluntary and the participants were allowed to

withdraw from the study at any time if they wished. It was emphasized that strict confidentiality was maintained and no names or personal details were used in write up of the study.

Study Design: 4 descriptive survey were conducted in mentally retarded subjects, aged 3-18 years, attending Special Needs School.

Clinical Examination

All the clinical assessments were done according to the WHO[†] guidelines. Strict sterilization protocols were followed. Prior to the dental examination, information like age, gender, I.Q level of each subject was recorded.

Caries prevalence of the students was recorded according to deft[‡] and DMFT[±] index under proper illumination. Oral hygiene was assessed according to the rules of OHI-S[‡]. Visual examination by means of an artificial white light source and plane mouth mirror was combined with probing diagnosis in caries examination, according to codes and criteria as established by the WHO [10]. Variation of caries and oral hygiene with aspects like age, gender and level of retardation was analyzed. Mean and scores were calculated. Furthermore teaching camps were conducted to educate caretakers about general oral hygiene and brushing technique.

Clinical assessment was done with sterilized mouth mirror and no. 23 explorer. Clinical assessment of oral hygiene status was done in presence of caregivers, instructors or parents to achieve maximum cooperation.

Instruments: Mouth Mirror, probe, explorer and excavator were used to perform clinical examination of the child's oral hygiene. Usage of head Cap, gloves and mask by the examiner was ensured. Model showing various caries extension, dentulous Model for brushing habits and charts and posters showing ill-effect of tobacco chewing were used to educate the guardian and care givers.

WHO - World health organization, deft - decayed, extraction, filled tooth index, \pm DMFT - Decayed, missing, filled tooth index, OHI-S - Oral hygiene index simplified.

Results

A total of 197 participants took part in the study, 65 female and 132 male.

The mean of the age range is 12.13 and the mode is 8 years.

Statistical analysis: SPSS V 16.0 was used. Descriptive & inferential statistics were carried out for categorical & continuous data. Chi-square test was used to find out difference in distribution of caries & OHI-S between different grades of mental retardation. One-way ANOVA with post-hoc Tukey's test was used to compare mean OHI-S & DMFT scores between different grades of mental retardation. P value less than 0.05 was considered to be significant.

Discussion

Oral health is important for everyone. It is an integral part of general health and wellbeing and more so for those with disabilities. Dental health is greatest unmet need due to compromised medical and congenital conditions. [11]

During the period of two month, oral examination of 195 institutionalized children was carried, out of which 67.2% were males and 32.8 % were females. [TABLE 1] Mentally retarded children aged 3-18 years were considered for study. The mean of the age range is 12.13 and mode is 8 years. Prior to the dental examination, information like age, gender and I.Q level of each subject was recorded. This was done to categorize the children and to know the correlation of these factors in occurrence of caries and maintenance of oral hygiene. The etiology for many cases was unknown but the majority was prenatally-related.

It has been found that 99% students were using horizontal motion with tooth brush for cleaning their teeth. [TABLE 2] 1.5% of severe mentally retarded children were not cleaning their teeth at all. For such children, proper brushing technique was advised and demonstrated to their care takers or parents. 5.07% children were brushing twice daily, they show less carious lesion and their oral hygiene was good. This finding is similar to the finding reported by Li Zui. [12]

Caries status: It was observed that caries were present in 57.4% of mentally retarded children. [TABLE 3] Caries percentage was more in male 59.39% while in female it was 53.84%. Caries percentage in 3-6 age groups is 66% while that of 7-12 age group and 13 onwards are 63% and 47 % respectively. Deciduous teeth were affected more with caries than the permanent teeth. This observation is in contrast with the results of ME Sari (2014). [13]

The mean DMFT/dmft noted was 2.13 with standard deviation of 2.79. These findings are nearly similar to the result of Khursheed O (2015) and Ajami BA (2007). [14, 15] One-way ANOVA with post-hoc Tukey's test was used to compare mean OHI-S & DMFT scores which suggest that there is statistically significant difference in mild, moderate and severe cases. Children with severe mental retardation have greater caries rate when compared with moderate and mild the reason could be low physical abilities of these individuals and consequent difficulties in tooth brushing.[16] Oral health may be affected by the following: limited understanding on the importance of oral health management, difficulties in communicating oral health needs.

Oral hygiene status: The mean OHIS noted was 1.71 with standard deviation of 1.78. This findings are nearly similar to the result of Khursheed O and Bhowate. [14,15] OHIS is poor for 21.3% of MR children. [TABLE 4] The

mean oral hygiene score of the study population is 47.7%, 31.0% and 21.3% for good, fair and poor components, respectively.

There is no statistical significant difference in OHIS among mild, moderate and severe MR children. [TABLE 5] These findings are contradictory to findings reported by Kaur S et al, Kumar et al and Ajami BA et al [27,29,25]

It was observed that the children who attended residential school had good oral hygiene compared to the children who attended the day care schools. The reason may be the reflection of better supervision of children by the caretaker in charge of their welfare. This finding is in accordance with OO Denloye while in contrast to Tesini. It was the care the child gets that affected the oral hygiene rather than the parent's education and socio-economic status. [29,30] The result of this study is in contrast with Altun C for DMFT and oral hygiene. [13]

Though the care takers at residential schools were very particular about the habits of the children some children in residential school had bad habits like tobacco chewing and symptoms of oral sub-mucous fibrosis. For this, the student has been explained about the consequences of the same and was motivated to discontinue the habit and also referred this patient for further treatment.

Treatment needs: Amongst the study population, 46.70% required restorative care. Restorative requirement as per age group are - 3-6 age group is 66% , 7-12 age group and 13 onwards are 63% and 47 % respectively. 14.72% required extraction of teeth due to caries, 50.76% required oral prophylaxis, 100% of patients required oral health education, 2.53% required complex periodontal therapy, 5.58% requires orthodontic treatment and 2.03% required occlusal splint. [TABLE 6] Treatment needs do not show statistically significant variation with respect to level of retardation.

Mal- alignment and crowding was common with lower anterior. Only 5.58% study population showed mal-aligned teeth. Malocclusion complicates the child's ability, resulting in dental trauma (e.g. a large overjet predisposes the children to trauma during seizures), periodontal disease (promoted by crowding or eruption problems), functional problems (mastication, drooling), speech impairment and even temporomandibular joint dysfunction; the same has also been reported by Pope (1991). [31]

Most of the children had no access to a dentist. One child was undergoing treatment out of 195 MR children. Ignorance may be the reason for incomplete treatment as also reported by Rao. [19]

Also the caretaker and guardian were unaware of the fact that the state government provide free treatment to special kids, this might also be the contributory factor in their deprivation to dental treatments.

Even though many efforts have been made in the western world for improving the oral health status of disabled individuals, not much attention is given to this serious issue in India. It appeared that a relatively high proportion of the children do not currently receive or had not yet received any form of professional oral care. This suggests that there is a need for renewed collaborative efforts by the various health disciplines and social service agencies to increase access to dental services for these children.

Although a very small sample size, with a wide age range remained the major limitation of our study. Study underlines the need for the establishment and maintenance of dental care facilities in order to address the oral health needs of mentally ill group. An oral health care system must have three concurrent approaches to care: oral health promotion, prevention of oral diseases and treatment of oral diseases.

Future researches should be conducted and should focus on continually monitoring the oral health status of mentally retarded patients and seeking ways to adjust the resources available to best meet the needs of these patients. A more coordinated effort between medical, dental and social care sectors must be established to serve the needs of this underprivileged population.

Conclusion

The result of the present study showed that

1. DMFT/dmft score showed statistically significant difference among level of retardation with severe cases showing more value when compared with moderate and mild.
2. The variation of oral health status of mentally disabled subjects with gender (males with high caries percentage), age (Caries percentage was more in 3-6years of age group) and level of retardation (Severe mental retardation cases shows significantly high DMFT than moderate and mild mental retardation cases) was found. It was evident how these factors affect the oral hygiene of a special child.
3. Oral hygiene of 21.3% children was poor. Oral hygiene of mild, moderate and severe does not show a statistical significance.
4. There were high numbers of untreated carious lesions which requires restorations and other complex dental treatment which includes scaling, extractions, periodontal therapy, orthodontic treatment and night guard.
5. Counseling of study population was done regarding oral hygiene maintenance, hazards of tobacco and importance of oral health for general health and dental treatment has been explained to their care takers and parents.
6. Caregivers and parents were educated about diet and other oral hygiene habits.

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Legend Figure

Level of Retardation		CAMP 1	CAMP 2	CAMP 3	CAMP 4	TOTAL (gender wise)	TOTAL
Mild	F	5	5	4	4	18	60
	M	6	6	5	25	42	
Moderate	F	3	11	6	3	23	65
	M	8	13	4	17	42	
severe	F	8	11	1	4	24	72
	M	22	10	1	15	48	

Table 1: Sample Collection and Distribution Depending Upon Retardation and Gender

Number Of Times	Never1.5%	Once93.43%	Twice5.07%
Aid Used	Tooth Paste99%	Dentrice1%	Other0%
Method	Horizontal96.44	Vertical1.01%	Circular2.5%

Table 2: Aids the Child Use for Maintaining the Oral Hygiene

	Retardation			P Value
	Mild	Moderate	Severe	
ABSENT	29 48.3%	29 44.6%	26 37.1%	0.41
PRESENT	31 51.7%	36 55.4%	46 62.9%	
Total	60 100.0%	65 100.0%	72 100.0%	197 100.0%

Table 3: Chi-square test was used to find out difference in distribution of caries & OHI-S between different grades of mental retardation.

		Retardation			P Value
		Mild	Moderate	Severe	
	GOOD	28 46.7%	31 47.7%	34 48.6%	0.24
	FAIR	23 38.3%	15 23.1%	22 31.4%	
	POOR	9 15.0%	19 29.2%	14 20.0%	
Total		60 100.0%	65 100.0%	70 100.0%	195 100.0%

Table 4: Chi-square test was used to find out difference in OHI-S between different grades of mental retardation.

		N	Mean	Std. Deviation	P Value	Post-Hoc Test
Age	Mild	60	11.4667	4.41671	0.19	Mild=Moderate=Severe
	Moderate	65	12.5231	4.41272		
	Severe	70	11.1286	4.88096		
	Total	195	11.6974	4.60342		
DMFT	Mild	60	1.4833	1.86395	0.04	Mild<Moderate<Severe
	Moderate	65	2.0462	2.40722		
	Severe	70	2.6000	3.33797		
	Total	195	2.0718	2.67192		
OHIS	Mild	60	1.6000	1.58596	0.48	Mild=Moderate=Severe
	Moderate	65	1.9385	1.96752		
	Severe	70	1.6143	1.79607		
	Total	195	1.7179	1.79272		

Table 5: One-way ANOVA with post-hoc Tukey's test was used to compare mean OHI-S & DMFT scores

	Retardation			P Value
	Mild	Moderate	Severe	
Absent	7 11.7%	5 7.7%	9 12.9%	0.13
Restoration & Scaling	8 13.3%	5 7.7%	8 11.4%	
Scaling	21 35.0%	21 32.3%	17 24.3%	
Restoration	14 23.3%	16 24.6%	11 15.7%	
Extraction	2 3.3%	1 1.5%	8 11.4%	

Rest, Scaling & Extraction	3 5.0%	5 7.7%	1 1.4%	
Rest & Extraction	2 3.3%	5 7.7%	10 14.3%	
Ext & Scaling	2 3.3%	5 7.7%	6 8.6%	
Ret Or Extraction	1 1.7%	2 3.1%	0 .0%	
Total	60 100.0%	65 100.0%	70 100.0%	195 100.0%

Table 6: Treatment Needs according to Retardation