ORIGINAL RESEARCH PAPER

Dentistry

PREVALENCE OF DENTAL CARIES AND ORAL HYGIENE STATUS AMONGST JUVENILE PRISONERS AND ABANDONED CHILDREN IN GOVERNMENT ORGANIZATIONS IN AHMEDABAD CITY, GUJARAT.

KEY WORDS: Oral health, caries, hygiene, prisoners, prevalence

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ABSTRACT

Background: The impact of oral diseases is seen on underprivileged and socially marginalized population compared with general population. Epidemiological studies on oral health of prisoners have concentrated on adults but children are not covered. The data of present study will help in drafting effective strategies to lessen and prevent oral diseases and promote oral health awareness of incarcerated children & adolescents. **Aim:** To determine prevalence of Dental caries and Oral Hygiene Status amongst juvenile prisoners and abandoned children in different government organizations in Ahmedabad, Gujarat. **Methods:** A total of 67 juvenile prisoners & abandoned children from government organizations of Ahmedabad aged 0-17 years were included. Clinical assessment was done using ADA Type III examination. Dental caries experience was measured using DMFT index. Oral hygiene was assessed by Oral Hygiene Index. Data collected was then statistically analysed. **Results:** The prevalence of dental caries is higher in primary dentition in subjects of 0-10 years of age where prevalence was 62.07%; in subjects 11-17 years of age, the prevalence was 0%. Caries prevalence in permanent dentition within age group 0-10 years of age was 17.2% while in 11-17 years, the prevalence was 34.21%. There is significant presence of fair to poor oral hygiene status thus indicating a lack of oral health awareness and treatment availability to them. **Conclusion:** The juvenile prisoners had high prevalence of dental caries in primary dentition followed by permanent dentition. The presence of fair-to-poor oral hygiene status indicates poor oral health status. Furthermore, the study emphasizes the need for special attention from the concerned health authorities, voluntary organizations, and surrounding dental colleges in meeting the oral health needs of this group.

INTRODUCTION

Good oral health is an integral component of good general health. Although enjoying good oral health includes more than just having healthy teeth, many children have inadequate oral and general health because of active and uncontrolled caries. [1]. Dental caries is the most prevalent disease among children in the global scenario.

The Indian Juvenile Justice system, the Juvenile Justice Act (Care and Protection of Children), approved in 2000 to reform the 1986 Act, is designed as a comprehensive legal framework by which the Indian government has pledged to alleviate the devastating impact that underdevelopment, poverty and crime have on children. The act spells out the government's responsibilities in the care, the protection, and the development of neglected children, but also tackles issues-related to crime prevention and the rehabilitation of juvenile delinquents. [3]

The provisions contained in the Juvenile Justice Act apply to two categories ofchildren: Those defined "in conflict with the law" and those considered as "in need of care and protection." The act sanctioned the establishment of new institutions charged with the care of neglected and delinquent children. Observation homes serve as temporary holding facilities for Juveniles who were arrested by the police or found to be living in neglect. The Juvenile Justice Act invests the government with the responsibility to care, protect, and work for the development and Rehabilitation of Neglected and Delinquent Juveniles.

METHODS

A cross-sectional study was conducted among 0 - 17 year-old children residing in three government juvenile observation home. A sample of 67 institutionalized children was selected and distributed into two age groups: i) 0-10 years (n=29) and ii) 11-17 years (n=38) by two-stage cluster sampling method. Clinical examination was conducted by a single - trained, calibrated examiner. American Dental Association (ADA) type III examination technique [4] was used: Each child was examined on an ordinary upright chair with the help of mouth mirror and CPI probe in an adequate natural light. Prior to examination, the child was asked to rinse the mouth thoroughly. The examination was done by single examiner only to eliminate selection bias. It was carried out in the uniform manner, starting from the most posterior tooth in maxillary right quadrant and then in a clockwise direction.

The dental caries was assessed as per the WHO criteria (1997).

CALCULATION:

1. DMFT for primary dentition
2. DMFT for permanent dentition. [5]

The oral hygiene status was assessed by OHI-S developed in 1960 by John C. Greene and Jack R. Vermillion.

RESULT:

After collecting the data, the coding was done and entered in Microsoft Excel 2007. The normality of the data was checked by Kolmogorov Smirnow test. The statistical difference forproportion was assessed by using Chi square test. Independent t test and Mann Whitney U test was applied to compare the mean score difference as and when appropriate. Statistical Package for Social Science (SPSS, IBM) version 22 was used for the statistical analysis. The level of significance was kept at $p \leq 0.05$.

DISCUSSION

Voluminous literature exists on the status of dental caries in the Indian school children by different investigators (Misra and Shee (1979)[6], El_Qaderi SS and Quteish Ta'ani D (2006)[7], Al-Haddad KA *et al* (2010)[8] . Currently, one under-researched area has been the oral health status and dental epidemiological investigations of the juvenile in the prison environment. Such studies are important in order to expand the knowledge. [9]

The prevalence of dental caries is higher in primary dentition in subjects of 4-10 years of age where prevalence was 62.07%; in subjects 11-17 years of age, the prevalence was 0%. Cariesprevalence in permanent dentition within age group 4-10 years of age was 17.2% while in 11-17 years, the prevalence was 34.21%, which is lower than the study done by Retnakumari N (1999) (68.50%)[7] .In this study, boys showed

higher caries prevalence (95.52%) than girls (4.48%). Similar findings were reported by Rao *et al* (1999) (77.4% and 76.5%, respectively) The increased prevalence in boys confirms the view that there is a marked preference for male child regardless of the socioeconomic class, which manifests itself in the better feeding to them compared with female child. It also may be due to their habits of taking soft drinks and other sweetened snacks during their longer stay outside observation home. These results are in contrast to Misra and Shee (1979) [6] as they found higher prevalence in girls (65%) than in boys (58.7%).

The caries prevalence in this study increased in 4-10 years dmft (62.07%) DMFT (17.24%) and then decreased in 11-17 years dmft (0%) DMFT (34.21%). The results are similar to that of Misra and Shee (1979)[6] . This is because of longer exposure of primary molars to the food habits in the age group of 8-10 years. Another reason is improper cleaning of teeth in early childhood and frequent intake of sweet and sticky food. These findings are contradictory to the study done by Retnakumari N (1999)[10] .

In this study, most of the juvenile group children (99.4%) brushed their teeth only once. These findings were highly significant in relation to oral hygiene. This may be due to non-availability of brushing aids (toothbrush and toothpaste) regularly and lack of guidance, assistance during brushing.

This study revealed least habit of snacking between meals in juvenile group. But this finding was highly significant in relation to dental caries, as caries was more prevalent amongst the juvenile group.

The food habits play an important role in the causation of dental caries. Since the time of early Greek philosophers diet has been suspected of influencing the etiology of caries. The direct relation of frequency of sweet, sticky snacks and dental caries incidence has been proved by Gustafsson *et al* (1954) in the Vipeholm dental caries study. The present result could be due to their previous frequent snacking habit prevailing amongst them.

Children of juvenile group had much poor oral hygiene. The Juvenile group had a fair to poor OHI (Mean ± SD) (2.58 ± 1.35) in 4-10 years age while (3.47 ± 1.17) in 11-17 years age.

Our findings confirm that prisoners have an impoverished oral health status due to reasons, such as inadequate oral care facilities, lack of dental health awareness among the prisoners, absence of oral health promotion programs, and finally, negligence from both the prison administration and prisoners. Although the juvenile prisons have dental services, the prisoners may use it only in emergency situations, such as severe pain or discomfort affecting their daily routine. In developing an oral health program for this special group, there are numerous challenges andobstacles. Possibly, it is the time for us to follow the Western countries in our approach to dental health care in prisons.

Table 1: Distribution of study subjects according to age and gender

Age Groups (in years)	Male n (%)	Female n (%)	Total n (%)
0-10	26(89.70)	3(10.30)	29 (43.28)
11-17	38 (100)	0	38 (56.72)
Total (%)	**64 (95.52)**	**3 (4.48)**	**67 (100)**

CONCLUSION

There is a broader range of oral health problems in such vulnerable population. Moreover, oral adverse habits like tobacco chewing, smoking, masala chewing, drug abuse etc. persists amongst them. Thus, the custody time provides an opportunity to identify and assess the oral health and understand the prevalence of oral diseases.

Table 2: Prevalence of dental caries (dmft/DMFT) among age groups

Caries	Caries Status	Age Groups (in years) n (%)		Total (n=67)	p-value
		0-10 (n=29)	11-17 (n=38)		
dmft	No Caries	11 (37.93)	38 (100)	49 (73.13)	<0.001**
	Caries Present	18 (62.07)	0	18 (26.87)	
DMFT	No Caries	24 (82.76)	25 (65.79)	49 (73.13)	0.20
	Caries Present	5 (17.24)	13 (34.21)	18 (26.87)	
	Caries Present	5 (17.24)	13 (34.21)	18 (26.87)	

Data presented in proportion and significant difference was assessed by Chi Square test.

**p<0.001 statistically highly significant

Table 3: Age wise Comparison of mean dmft/DMFT score

Age Groups (in years)	d/D	m/M	f/F	Total dmft/DMFT	Mean ± SD (dmft/DMFT)
4-10 (n=29)	31	7/0	0/0	38/5	1.31 ± 1.28^a / 0.17 ± 0.38^b
11-17 (n=38)	0/32	2/6	0/0	2/38	0.05 ± 0.32^a / 1.00 ± 1.66^b

Data presented in Mean ± SD, mean score compared by using t test

Mean score measured by using Mann-Whitney U test

- Policy can be set to meet the standard for appropriate health care for incarcerated adolescents.
- Specific attention to be paid to the needs of over represented indigenous groups within the territory.

This can be accomplished by:

- The visiting paediatricians and physicians can be collaborated for identifying their unmet oral health needs.
- The concerned health authorities, voluntary organizations and surrounding dental colleges should emphasize the need for special attention in meeting the oral health needs of this group.

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