

Oral Health Status of Institutionalized Street Children Aged 5-15 Years In Guntur City, Andhra Pradesh, India

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ABSTRACT :- OBJECTIVES: To assess the oral health status, oral hygiene practices and personal habits of institutionalized street children in Guntur city. **METHODOLOGY:** A cross-sectional descriptive study was conducted on all street children (255) between 5 -15 years present during the study period in Guntur city. Information regarding the demographic factors, personal habits and oral hygiene practices was obtained by interview method using questionnaire in a private area away from other participants. Along with this oral examination was performed according to ADA type III examination using mouth mirror, CPI probe in a natural day light. Data was collected by using modified WHO Proforma (1997). **RESULTS:** Mean age of study subjects was 11.02±2.3. Among the children interviewed in the present study, 3.1% had indulged in substance use any time in their life. Bleeding and calculus was diagnosed as 52.5% and 42.4% respectively in children. Prevalence of dental caries was 50.19%. The mean dmft value was 0.70±0.395 and mean DMFT value was 0.49±0.930. 43.13% subjects require one surface filling, 11.4% subjects require two or more surface fillings, 17.3% subjects require extraction. **CONCLUSION:** The present study reveals higher levels of dental caries experience and untreated dental disease. Institutionalized street children from present study are commonly faced with oral health problems, especially periodontal problems.

KEY WORDS: Institutionalized Street children, Substance use, Caries prevalence, Treatment needs.

INTRODUCTION:

Street children are increasingly seen as part of the urban landscape, the world over. There are social and institutional factors that serve to sustain their presence. They are a result of increasing poverty and unemployment, increased migration of families, broken families, neglect, abuse and violence, armed conflicts, natural and man made disasters, decreasing resources in rural areas and the attraction of cities¹. In India, the traditional approach towards care of children in difficult circumstances has been institutionalization. This practice started with the realization of the fact that there were a large number of children without parental care, vulnerable and in need of care and protection. State interventions resulted in setting up of state run institutions to provide food, shelter, clothing and education to children who were not living in the family environment¹. Studies on oral health status of street children are scarce². In India there are research studies on general health status of street children which includes oral health as a part of it, where as there are no direct studies on oral health status of street children in Andhra Pradesh. Hence the present study aims to assess the oral health status, oral hygiene practices and personal habits of institutionalized street children in Guntur city, Andhra Pradesh.

MATERIALS AND METHOD:

A total of 255 street children aged between 5-15 years participated in this study. Of these 64 (25.1%) were boys 191 (74.9%) were girls. These were drawn from five institutions which take care of street children in Guntur city. A cross-sectional descriptive study was conducted on all street children (255) aged between 5 -15 years present during the study period in institutionalized homes in Guntur city. Ethical clearance was obtained from the ethical committee of SIBAR Institute of Dental Sciences, Guntur and prior permission was obtained from Head of the Department and Principal to conduct the study. Permission to conduct this study was sought from the Rajiv Vidya Mission and institution authorities respectively. Children from all the institutions were included in this study. Informed consent was obtained from individual homes prior to the study. All the street children who are living in the institutional homes between 5 to 15 years of age are included and children who are not agreed to participate in the study were excluded. Study was conducted for a period of 4 months, between May 2011 to August 2011. Information regarding the demographic factors, personal habits and oral hygiene practices was obtained from 20 study subjects in a day by interview method using questionnaire in a private area away from other participants. Along with this oral examination was performed according to ADA type III examination using mouth mirror, CPI probe in a natural day light³. Data was collected by using modified WHO Proforma (1997)⁴. Modified WHO Proforma (1997) was used to collect information about dental fluorosis, community periodontal index status; dentition status and treatment needs and dentofacial anomalies. Data were transferred from pre coded Proforma to excel sheet in computer and were analyzed using SPSS-15. Chi-square test, Fisher exact test and ANOVA test were used. DAI (Dental Aesthetic Index) score was calculated by using regression equation⁴.

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RESULTS:

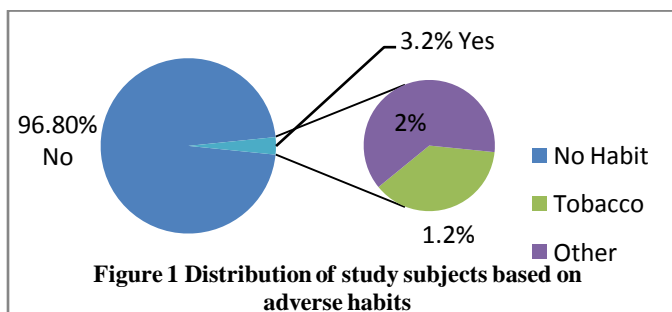
Out of 255 study subjects, 74.9% were girls and 25.1% were boys. Mean age of study subjects was 11.02 ± 2.3 . None of the study subjects fell in the age of 5 year old in this study, majority of children belong to 10 years of age and 12 years of age (Table 1).

42.4% respectively in children, despite reporting higher usage of tooth brush and tooth paste, high percentage of bleeding gums and calculus were found in these children and this could be attributable to improper tooth brushing techniques and lack of individual supervision (Table 2).

Table: 1 Distribution of study subjects by age:

Age	Number of study subjects	Percent
6	9	3.5
7	7	2.7
8	21	8.2
9	28	11.0
10	50	19.6
11	30	11.8
12	41	16.1
13	19	7.5
14	31	12.2
15	19	7.5
Total	255	100.0

Only 3.2% of study subjects are indulged in substance abuse any time in their life (Fig 1). The most common substance abused was tobacco in the form of cigarettes or bidis, gutkha and an inhalant substance, 'whitener'- a white fluid containing organic solvents, used to erase errors in handwritten, printed papers.



In the present study 170 (66.7%) children brush their teeth with tooth brush while 85 (33.3%) children use finger to clean their teeth. In the present study dental fluorosis was seen in 83 (32.5%) of children. In the present study bleeding gums and calculus are observed in 52.5% and

Table 2: Correlation of Oral hygiene practices with CPI score:

Oral hygiene practices	Number of children (n=255)		CPI		p value
		Normal (n=13)	Bleeding (n=134)	Calculus (n=108)	
Aid for cleaning					
• Tooth brush	170(66.7%)	13(100%)	93(69.4%)	64(59.3%)	0.008*
• Finger	85(33.3%)	0(0%)	41(30.6%)	44(40.7%)	
• Indigenous	0(0%)	0(0%)	0(0%)	0(0%)	
Materials used					
• Tooth paste	155(60.8%)	13(100%)	83(61.9%)	59(54.6%)	0.006*
• Tooth powder	100(39.2%)	0(0%)	51(38.1%)	49(45.4%)	
• Indigenous type	0(0%)	0(0%)	0(0%)	0(0%)	
Oral rinsing after food intake					
• Yes	64(25.1%)	7(53.8%)	39(29.1%)	18(16.7%)	0.004*
• No	191(74.9%)	6(46.2%)	95(70.9%)	90(83.3%)	

In the present study the prevalence of dental caries was 50.19% and prevalence of dental caries in 7 and 8 years was 85.7% and 66.66% respectively, which is more when compared to other age groups. The mean dmft value was 0.70 ± 0.395 ; dt value was 1.73 ± 0.449 , mt and ft values were zero in all ages. The mean DMFT value was 0.49 ± 0.930 ; DT value was 1.71 ± 0.457 , MT value was zero in all cases and FT value was 1.80 ± 0.422 . In boys dmft value was 0.63 ± 0.442 and DMFT value was 0.49 ± 0.930 , where as in girls dmft value was 0.72 ± 0.385 and DMFT value was 0.45 ± 0.915 (Table3).

Table 3: Mean dmft and DMFT according to gender:

	dmft	DMFT
MALE	0.63 ± 0.442	0.64 ± 0.966
FEMALE	0.72 ± 0.385	0.45 ± 0.915

When categorized according to treatment needs the number of children requiring, one surface filling were 43.13%, two or more surface fillings were 11.4%. Pulp care was needed in 7.5%, 17.3% subjects required extraction, 24.3% subjects required fissure sealants (Table 4).

Table 4: Treatment needs of study subjects:

Need	Percentage (%)
ONE SURFACE FILLING	43.13%
TWO SURFACE FILLINGS	11.4%
PULP CARE AND RESTORATION	7.5%
EXTRACTION	17.3%
FISSURE SEALANTS	24.3%

DAI (Dental Aesthetic Index) score was calculated by using regression equation. The total DAI score obtained in the present study was 20.1 (no or slight need for correction of malocclusion).

DISCUSSION:

Out of 255 study subjects, girls were 74.9% and boys were 25.1%. This is in accordance to the study conducted by Elsa K Delgado et al (2009)⁵ and Pisan et al (2006)⁶ who observed 46.6% boys and 53.3% girls, 42.9% boys and 57.1% girls respectively and in contrast to this study, study done by FK Kahabuka et al (2006)² reported 68% boys and 32% girls. Since the present study was conducted in institutional homes, the study population had more girls than boys as there are very few homes for boys than girls within Guntur city.

In the present study 255 children belong to the age group of 5 – 15 years. Mean age of study subjects was 11.02±2.3. None of the study subjects fell in the age of 5 year old in this study, majority of children belong to 10 years of age (n=50; 19.6%) and 12 years of age (n=41; 16.1%). This is in accordance to study conducted by R Contreras-Bulness et al (2008)⁷ reported that 32(10.3%) belong to 15 years of age and 31(9.7%) belong to 10 years of age. Many studies have determined that street children are most often aged between 10 – 14 years.

Among the children interviewed in the present study, 3.1% (n=8) had indulged in substance abuse any time in their life. The minimum age of starting substance abuse in this study was 7 years. The most common substance abused was tobacco in the form of cigarettes or bidis, gutkha and an inhalant substance, 'whitener'- a white fluid containing organic solvents, used to erase errors in handwritten, printed papers. Children pour whitener on a kerchief and use it as an inhaler, which gives them a high for 4-10 hours. This is differing from study coded by C Malhotra et al (2007)⁸ and Deepti Pagare et al (2003)⁹ who reported that 56.7% (n=34) and 57.4% (n=66) had indulged in substance abuse. Similar study conducted by Munevver et al (2004)¹⁰ reported that inhalant adhesives used by 2% (n=1). Reason for less number of study subjects indulged in substance abuse in the present study may be because of information given by study subjects, who may have under reported because of social stigma attached to consumption of intoxicating substances.

In the present study 170 (66.7%) children brush their teeth with tooth brush while 85 (33.3%) children use finger to clean their teeth. This is different from the results obtained by the study conducted by FK Kahabuka et al (2006)², they observed that 92.4% (n=110) children use tooth brush while 7.6% (n=9) children do not use tooth brush, this is because of various charity organizations visited this home and given oral education prior to the study.

Materials used to clean their teeth are tooth paste and tooth powder by 155(60.8%) and 100(39.2%) children respectively. Which is in contrast to study coded by FK Kahabuka et al (2006)² reported that 92.4% (n=110) of children use toothpaste while only 7.6% (n=9) children do not use tooth paste. 191(74.9%) children do not rinse their

mouth after taking food while 64(25.1%) children rinse their mouth after taking food. Majority of children do not rinse their mouth after food intake in the present study might be because lack of dental awareness.

In the present study dental fluorosis was seen in 83 (32.5%) of children. Almost similar results 75 (22.9%) were found in the study done by Abhinav et al (2011)¹¹. Prevalence of dental fluorosis in the present study might be due to presence of high fluoride areas within and surrounding of Guntur district, children with fluorosis might have migrated from fluoride belt areas.

In the present study bleeding gums and calculus are observed in 52.5% and 42.4% respectively in children, which is in contrast to study quoted by Donald Chi et al (2010)¹² and Blanaid et al (2009)¹³ reported that 27% (n=14) and 5% (n=13) of these studies were children with bleeding gums and which is in contrast to study observed by Abhinav Singh et al (2011)¹¹, 79.5% (n=260) children were with dental calculus. Despite reporting higher usage of tooth brush and tooth paste, high percentage of bleeding gums and calculus were found in these children and this could be attributable to improper tooth brushing techniques and lack of individual supervision.

In the present study the prevalence of dental caries was 50.19%. The mean dmft value was 0.70±0.395; dt value was 1.73±0.449, mt and ft values were zero in all ages. The mean DMFT value was 0.49±0.930; DT value was 1.71±0.457, MT value was zero in all cases and FT value was 1.80±0.422. In boys dmft value was 0.63±0.442 and DMFT value was 0.49±0.930, where as in girls dmft value was 0.72±0.385 and DMFT value was 0.45±0.915. Prevalence of dental caries in 7 and 8 years was 85.7% and 66.66% respectively, which is more when compared to other age groups. This could be because the majority of the study subjects in this age group use finger (7.05% and 17.64%) than tooth brush (0.58% and 3.5%). This is different from study conducted by R Contreras-Bulness et al (2008)⁷, where the caries prevalence was 94.9%, mean dft value was 3.5±3.7; dt value was 3.4, f component was 0.1 and e component was 0 in all cases. The mean DMFT value in the same study was 6.0±4.6; 5.8 of which were decayed, 0.01 were missing and 0.18 were filled. A similar study conducted by Dharam Singh et al (2008)¹⁴ reported that prevalence of dental caries was 49.5%. In the present study mean dmft and DMFT at 6 and 12 year of age was 0.11 and 0.44 respectively, which is a lower value when compared to mean dmft and DMFT obtained by National Oral Health Survey (2002-2003)¹⁵, where mean dmft and DMFT values in 5 and 12 year age were 1.9 and 1.7 respectively. Dental caries prevalence might vary according to diet, life style factors etc. There was no significant difference between oral hygiene practices and dental caries in the present study. This might be due to faulty brushing techniques.

When categorized according to treatment needs the number of children requiring, one surface filling were 43.13%, two or more surface fillings were 11.4%. Pulp care was needed in 7.5%, 17.3% subjects required extraction, 24.3% subjects required fissure sealants.

Trauma of teeth was seen in 7.4% of study subjects, which is in accordance to study conducted by Blanaid et al (2009)¹³ who reported trauma of teeth as 1%. The most traumatized tooth in the present study was the maxillary central incisor, which is seen as a common problem in children due to their active lifestyles.

Out of 255 study subjects, 111 children who are above 12 years were examined for dentofacial anomalies. Out of which 30 (27.02%) were males and 85 (72.9%) were females. Among 111 children 54 (48.6%) had no crowding, 50 (45.0%) had one segment crowding, 7 (6.3%) had two segment crowding. 82 (73.9%) had no spacing, 13 (11.7%) had one segment spacing, 16 (14.4%) had two segments spacing. 96 (86.5%) had no diastema 14 (12.6%) had 1-2mm diastema, 1 (0.9%) had more than 2mm diastema. 78(70.3%) had no maxillary irregularities, 32 (28.8%) had maxillary irregularities within 1-2mm, 1 (0.9%) had irregularities more than 2mm. 77 (69.4%) had no mandibular irregularities, 33 (29.7%) had mandibular irregularities within 1-2mm, 21 (18.9%) had mandibular irregularities more than 2mm. 2 (1.8%) had no overjet, 88 (79.3%) had overjet of 1-2 mm, 21 (18.9%) had overjet of more than 2 mm. 110 (99.1%) had no crossbite, 1 (0.9%) had 1-2 mm crossbite. 111(100%) had no open bite. 72 (64.9%) had normal molar relation, 39 (35.1%) had half cusp deviation. Study conducted by Allison J Page et al (1993)¹⁶ reported 4.8% of dental anomalies. DAI (Dental Aesthetic Index) score was calculated by using regression equation. The total DAI score obtained in the present study was 20.1 (no or slight need for correction of malocclusion).

CONCLUSION:

The present study reveals higher levels of oral health problems, especially periodontal problems. Despite reporting higher usage of tooth brush and tooth paste, high percentage of bleeding gums and calculus were found in these children and this could be attributable to improper tooth brushing techniques and lack of individual supervision.

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