

Unmet Treatment Needs and Oral Health Status of School Children in Rural Bangalore– A Cross Sectional Survey**Punith Shetty¹, Shamala A. ², R. Murali³, Mansi Yalamalli², Roomani Srivastava¹**

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ABSTRACT:

Background: Access to oral health care is very limited in rural areas. About 69% of Indian population who resides in rural areas has poor access to oral health care facilities. The impact of poor access to health care services is even higher in population like children. Thus the aim of this study was to assess the oral health status and treatment needs of 13-15 year old children in Doddaballapur taluk, Bangalore Rural district.

Method: A Cross Sectional Survey was conducted on 13-15 year old government school children in Doddaballapur taluk. A total of 10 government schools were selected by simple random sampling to obtain the sample size of 500. Children who did not wish to participate in the study were excluded from the study. Oral health status was assessed using WHO Oral Health Assessment form 1997.

Results: Prevalence of Calculus was 79.8%. The need of treatment among this population was restoration in 32% extraction 22% and pulp care was 53%. Means of the 3 groups – 13, 14 and 15 year old children was compared using ANOVA. Chi-square test was applied to see the difference in proportions of treatment needs.

Conclusion: Unmet treatment need was found to be high among these children. Providing oral health education at an early age along with school based preventive programs would help in improving the oral health status of these children.

Keywords: Child, Rural, Treatment needs.

INTRODUCTION

One of the most important aims in the field of healthcare and thereby in dentistry is equitable distribution of services. Oral health is influenced by many social and environmental factors; one such factor is accessibility to oral health care services. Achieving universal access to care is major challenge in a country like India because inadequate infrastructure in poorly connected geographical locations and non-existent payment programs (insurance).¹ Mahatma Gandhi once stated that “The future of India lies in its villages”, but whether they have equal opportunities to better their future or not is a matter of debate. About 72% of Indian population reside in rural areas and have poor access to oral health care facilities.² As on March 2012, there are about 24,049

Primary Health Centers functioning in the country but not even 30% have Oral Health Care personnel posted in them.³

This sorry state of affairs affect individuals across all age groups. Children, however form the most vulnerable group as lifelong habits, whether good or bad, are formed in this age group and oral diseases such as dental caries are quite common. Children form about 38-40 percent of India's population and 85 percent of them have high levels of dental disease.⁴ Dental caries is an infectious yet preventable disease that is near epidemic proportions among populations that lack access to dental services. In children dental caries has been described as a 'pandemic' disease characterised by a high percentage of untreated caries

causing pain, discomfort and functional limitations. These untreated lesions, furthermore, have a significant impact on the general health of children and on the social and economic wellbeing of communities and more dramatically, it is becoming a disease of the poor and low-income children of all races at risk.

It is also reported that almost 85 percent of children suffer from periodontal disease at some point in time. About 35 percent of children suffer from mal-aligned teeth and jaws affecting their proper functioning.⁵

All children, particularly low-income school children, benefit from increased access to preventive and reparative dental services.⁶ Access to and utilization of oral health services can reduce oral health related problems and lead to improved school attendance, better quality of life, and reduced financial and societal costs.

In developed countries, the low prevalence of oral diseases is predominantly due to children's extensive use of preventive oral health measures, supported by appropriate curative care provided by an umbrella of accessible clinics and affordable health insurance. In contrast, most developing countries and those in transition, lack the resources and infrastructure required to provide children with the necessary care and attention. This scenario is more evident in rural areas compared to urban areas.¹

This condition is no different in Bangalore Rural District, in spite of being in close proximity to Bangalore city. For instance, Doddaballapur, a taluk in Bangalore Rural District has only one government appointed dentist to cater to the whole population. In order to effectively address this problem it is essential to uncover baseline information in the form of treatment needs of the population. Thus the present study was conducted with the aim of assessing the oral health status and treatment needs of 13-15 year old school children in Doddaballapur Taluk, Bangalore Rural district.

MATERIALS AND METHODS

The present cross-sectional study was conducted among 13-15 year old Government school children of Doddaballapur taluk. Ethical approval was obtained to conduct this study from the Institutional Review Board of the Dental Institute. Necessary permissions were sought from the authorities of the respective schools. Informed consent was obtained from parents of the participating children to perform oral examination and verbal assent was obtained from the children in the presence of the class teacher.

Prevalence of treatment needs in India reported in previous studies was used to calculate the sample size. The estimated sample size for the proposed study was 500, which was obtained by keeping alpha at 5%, variance at 10% and power at 80%. The final sample size by the formula $N = \frac{Z^2(1-\alpha/2)(1-p)}{\epsilon^2p}$ was 476 which was rounded off to 500.

Children who were present on the day of examination were included in the study where as children with mixed dentition and differently abled children were excluded.

Total number of govt. schools in Doddaballapur Taluk is 24 out of which 6 schools were randomly selected. Among these 6 schools, children in the age group of 13-15 years were selected by systematic random sampling.

Oral health status and treatment need was assessed using World Health Organization (WHO) Oral Health Assessment form 1997. The data was reported in terms of prevalence of oral health conditions. The Decayed, Missing and Filled Teeth (DMFT) index was derived from Dentition Status and the mean scores were calculated.

A single examiner conducted all examinations. The examiner was trained by experienced faculty members and intra examiner calibration was done by re-examining 10% of the population on the first day of examination (Kappa = 0.91). The schedule for examination was prepared prior to the start of the study and communicated to the schools concerned.

STATISTICAL ANALYSIS

The data collected was compiled using MS-Office Excel and was subjected to statistical analysis by using the Statistical Package for Social Sciences for Windows version 18 (SPSS Inc., Chicago, IL, USA). Statistical significance was set at $p < 0.05$. Descriptive and Inferential statistics were used to analyze the data. Shapiro Wilk’s test was performed to ascertain the normalcy of the data. Means of the 3 groups – 13, 14 and 15 year old children was compared using ANOVA. Chi- square test was applied to see the difference in proportions of treatment needs.

RESULTS

The study examined 500 government school children in the age group of 13- 15 years. Figure 1 shows the distribution of study population according to age and gender. Thirteen year olds comprised of 47% of the population followed by fourteen and fifteen

year olds at 30% and 23% respectively. Among the total study population 49% were males and 51% were females.

Oral Health Status

Prevalence of the specific conditions were determined and analyzed. Overall prevalence of decayed teeth was very high at 81.6% as compared to missing and filled which were only 14.8% and 7% respectively. The differences in the prevalence of extra oral lesions, enamel opacities, calculus, missing teeth and prosthetic need was not significant across age groups.(Table 1) However differences in the prevalence of decayed teeth and filled teeth was found to be statistically significant with highest prevalence in the age group of fourteen years for both conditions. Prevalence of malocclusion reported also showed statistically significant differences between the three age groups, with 13 years showing the highest prevalence at 57.6%.(Table 1)

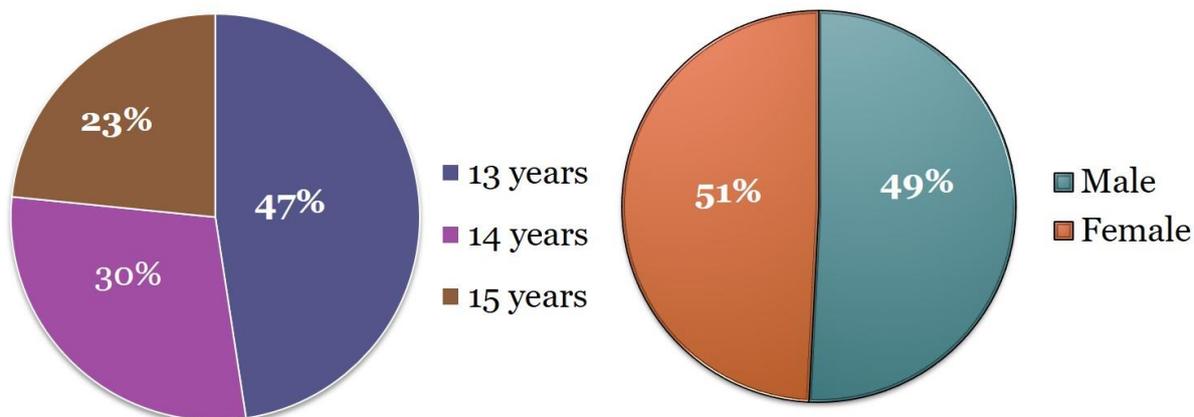


Figure 1 Distribution of the study population according to age and gender

Table 1: Age wise distribution of Oral Health Status of the Study Population

Variants	13 year	14year	15 year	Total	'p' value
Extra oral examination (ulcerations, lesions, swelling)	5.9%	5.14%	6%	5.8%	Not significant
Enamel opacities	37.4%	35.2%	23.9%	33.6%	Not significant
Calculus	75.6%	84.1%	82.9%	79.8%	Not significant
Decayed	82.3%	96%	76%	81.6%	0.006*
Missing	13.4%	11.1%	22.2%	14.8%	Not significant
Filled	2.5%	13.8%	7.8%	7%	0.001*
Malocclusion	57.6%	44.8%	48.7%	51.8%	0.04*
Prosthetic need	13.4%	11%	22.3%	14.8%	Not significant

* Statistically Significant

Decayed, Missing, Filled, Teeth Index

The mean DMFT score was highest for fourteen year olds and this difference was statistically significant. Among individual components of DMFT Index, the differences in mean number of decayed and filled teeth were statistically significant for age and differences in mean number of missing teeth was statistically significant with respect to gender. It is noteworthy that males had higher number of filled teeth. (Table 2)

Treatment Needs

The need for ‘pulp care’ was similar across the three age groups and both the genders. Need for restorations was greater in fourteen year olds and this difference was statistically significant. The differences in the need for ‘extraction’ was statistically significant for both age and gender with more number of fourteen year olds and females requiring extractions respectively. (Table 3)

Table 2: Age and Gender wise distribution of Decayed, Missing and Filled Teeth Index

		N	Decayed	‘p’ value	Missing	‘p’ value	Filled	‘p’ value	DMFT	‘p’ value
Age (in years)	13	238	1.64	0.006*	0.13	0.058	0.3	0.001*	1.80	0.003*
	14	145	2.06		0.16		0.14			
	15	117	1.56		0.25		0.11			
	Total	500	1.74		0.17		0.08		1.99	
Gender	Male	254	1.77	0.705	0.91	0.262	0.11	0.038*	2.06	0.313
	Female	246	1.72		0.15		0.05		1.91	
	Total	500	1.74		0.17		0.08		1.99	

* Statistically Significant

Table 3: Age and Gender wise Distribution of Treatment Needs

		N	Restorations (%)	‘p’ value	Pulp care	‘p’ value	Extraction (%)	‘p’ value
Age	13	238	20	<0.001*	57	0.077	20	0.039*
	14	145	40		52		21	
	15	117	44		45		17	
	Total	500	32		53		22	
Gender	Male	254	32	0.738	26	0.097	50	0.037*
	Female	246	31		18		56	
	Total	500	32		53		22	

* Statistically Significant

DISCUSSION

In the present study the oral health status and treatment was recorded for the school going children aged 13- 15 years using WHO Oral Health Assessment Form 1997 in order to obtain baseline data to understand the problem of access to health care in rural populations. Government school children were selected as this provides a proxy for the lower socioeconomic strata.

Mean DMFT in the present study of all the three age groups combined was 1.99. This was in accordance with the study conducted by Arun Kumar S et al in 2014³ and Mittal et al⁷ in 2014 which was at 1.9 and 1.93 respectively. The mean DMFT was higher in the study conducted by Mahesh et al⁸ in 2005 which was 3.89 and a study by Saravana et al⁹ in 2008 it was 2.81.

In the present study the mean DMFT was 2.06 among males and 1.91 among females, which was in accordance with the study conducted by Mittal et al⁷ in 2014. The mean DMFT of males and females in the present study was higher than that reported in a study conducted by Nanak Chand Rao et al¹⁰ in 2010. In spite of the close proximity to Bangalore city the probable reason for the present study reporting higher DMFT could be that Doddaballapur is a rural area with minimum dental facilities. This shows neglect on the part of these children and a callous behaviour towards oral health, in rural places were other things like water, and other resources are scarce, oral health takes a back seat. This study showed a higher DMFT in males and females, however difference in percentage of filled teeth was more drastic – indicating better care for the male child. The onus of eliminating these old school thoughts and uplifting the oral health status is the need of the hour.

In the present study Calculus was seen in 79.8% of the subjects. This was in accordance with the study reported by Mittal et al⁷ in 2014 in which 80.2% of the study subjects had Calculus. Doddaballapur is a rural area with lack of good preventive and curative services. These villages had no exposure to basic dental

screening until this study was conducted; this could be the probable reason for poor oral hygiene seen in the present study.

In the present study the percentage of population requiring ‘restorations’, ‘extractions’ and ‘pulp care’ was 31.6%, 21.8% and 52.8% respectively. These findings corroborated with those reported by Nanak Chand Rao et al¹⁰ in 2010 where the population requiring pulpal care was the highest with 18.6% followed by restorations at 11.9% and extractions at 8.2%. ‘Pulp care’ being the highest highlighted that many lesions were allowed to progress till this stage of severity was reached. This great neglect for oral health on the part of the parents. Limited dental services, lack of access to care and general ignorance are the possible reasons which have to lead to this sorry state of affairs. The present study had certain limitations; the study aimed at targeting the lower socioeconomic strata, however socioeconomic status was not collected directly, government schools were considered for this. The utilization rates of oral care of the population were not collected.

The overall results of the present study showed that rural areas especially the individuals of the lower socio economic strata have poor oral health and high prevalence of treatment needs. The main reasons for this is access to oral health care.

The problem of ‘access to care’ in our country is complex with infrastructure, cost and lack of manpower being primary issues. The proposals of the National Oral Health Policy if implemented will be of greatest advantage to the segment of the populations which is most neglected.¹¹ A Dentist appointed in every Primary Health Center and training of village health workers to deliver oral health education by trained teachers are effective steps and must be implemented on priority basis.¹²

CONCLUSION

The present study revealed poor status of Oral health in the rural population and high prevalence of treatment needs. These results

brings to light the need for improved dental care facilities in these areas. Effective methods of oral health care delivery must be formulated and implemented for the uplifting these underprivileged populations.

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