

# Prevalence of Gingivitis in School Children at Different Government Schools of District Hyderabad

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## ABSTRACT:

**Objective:** To estimate the prevalence of gingivitis and periodontitis in 5-15 years school going children at different government schools of district Hyderabad.

**Materials and Methods:** This cross sectional study was conducted in government schools on children from nursery to grade 8 in Hyderabad, Sindh from 5<sup>th</sup> October, 2015 to 6<sup>th</sup> November, 2015. A total 1093 students varying in age from 5-15 yrs. were counted in the study. We used Periodontal Disease Index (PDI) to assess the prevalence of gingivitis and periodontitis. A preformed questionnaire was used; one house officer and 2 Assistant professors examined the students according to PDI and completed the data form. After evaluation the score was calculated. Data was analyzed via SPSS version 21. Descriptive statistics such as percentage, frequency distribution, cross tabulation were included in data analysis. The level of significance was set at <0.05%.

**Results:** This study revealed that 70.4% students were suffering from gingivitis; 25.2% of students suffered from periodontitis and only 4.4 % of students were healthy.

**Conclusion:** The prevalence of gingivitis and periodontitis in government school children of Hyderabad is found to be high.

**Keywords:** Gingivitis, Periodontitis, Periodontal Disease Index.

## INTRODUCTION:

Gingivitis is an inflammatory disease most commonly affecting the gingiva. Pain, inflammation, redness and bleeding on brushing are some of the signs and symptoms of gingivitis, which if not diagnosed and treated on time, may progress further to involve the periodontium, leading to periodontitis and may eventually end with the loss of affected tooth.<sup>1,2</sup> In this world, many people are suffering from periodontal diseases like gingivitis and periodontitis but old aged people are more commonly affected as

compared to their younger counterparts. Yet, people at young age are also relatively affected by some types of the periodontal diseases.<sup>3,4,5</sup>

Various researchers have reported that marginal gingivitis initiates in early childhood and if not treated, its degree of severity increases in adolescents, making way to a more severe form in adulthood. Furthermore it has been reported that 50 to 100% of population generally suffer from gingivitis.<sup>6</sup>

The main etiological factor of gingivitis and periodontitis is poor oral hygiene along with poor and improper brushing habits. WHO conducted a National Oral Health Survey in 21 districts of Pakistan instead of conducting at entire National level in the year 2003.<sup>7</sup> One of the minor constituent of this survey was periodontal health as well. This survey was not especially meant to evaluate the incidence of periodontal diseases but it revealed that Pakistan's periodontal health was very poor and in 65 year old population more than 93% of them had periodontal disease while only 28% of 12 years old population had healthy gingiva. This result shows that periodontal disease including gingivitis and periodontitis is prevalent in Pakistan and its prevalence is greater in rural population of Pakistan as compared to urban areas.<sup>7,8</sup>

The gingival inflammatory response due to dental plaque in children is entirely different from the adults.<sup>1</sup> In adults, inflammatory response is characterized by rapid increase in gingival fluid, the number of neutrophils and the inflammatory infiltrate into the connective tissue. It is completely different in young children, as plaque accumulate, clinical signs of inflammation either doesn't appear or it appears relatively late in adults. There is very small amount of exudate and few neutrophils are seen in the connective tissue.<sup>9</sup> Although, periodontal disease is plaque induced inflammation and most are reversible but some may also indicate more serious underlying systemic disease.<sup>10</sup> In gingivitis, process of inflammation is limited to the free gingiva and does not spread to the periodontal webs. It can be treated

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successfully at this stage. If not treated, the epithelium of gingiva with tooth surface can be destroyed and then the inflammation progresses to the marginal periodontal tissues and then involves the alveolar bone. Once the disease process reaches the periodontium, periodontal recession starts and at this stage of periodontitis teeth start to become mobile.<sup>11,12,13</sup> It is very important to know about the intensity and spread of the disease and their risk factors for the successful prevention of periodontal disease. Many researchers recently published in the number of articles, with the aim to investigate the prevalence of gingivitis and periodontitis among school children and adolescence and focus on the preventive measures.<sup>12,14,15</sup> The aim of this study was to estimate the prevalence of gingivitis and periodontitis in students at different government schools in the city of Hyderabad, Pakistan.

**MATERIALS AND METHODS:**

This study was conducted over the period of one month from 5<sup>th</sup> October, 2015 to 6<sup>th</sup> November, 2015 at different government schools in Hyderabad, Sindh. This research was carried out at 8 randomly selected government schools of Hyderabad City. Students from nursery to grade 8 were included in this study.

A questionnaire was designed and approved from the ethical committee at Isra Dental College, Isra University Hyderabad regarding the study. Periodontal Disease Index (PDI) given by Ramjford, 1959<sup>16</sup> was used to evaluate the incidence of gingivitis and periodontitis in students. The details of index are given in Table 1.

Eight Indexed Teeth

16	11	21	24
44	41	31	36

The above eight teeth were selected as per Ramjford, 1959.<sup>16</sup> In absence of any of the indexed teeth, another

tooth was not substituted in its place.

PDI score: Total number of tooth scores ÷ Number of teeth examined

Gingivitis: PDI score 1 - 3

Periodontitis: PDI score 4 – 6.

A house officer was trained up-to the standards and was instructed to use the PDI to collect the data and record it on specially designed data form, accordingly. Total 1093 students were questioned and examined randomly without any particular gender selection. Data was analyzed by SPSS version 21. Descriptive statistics such as percentage, frequency distribution, cross tabulation were included in Data analysis. The level of significance was set at <0.05%.

**RESULTS:**

Investigation of 1093 students was done. Out of 1093 students, 680 students (62.2%) were boys and 413 students (37.8%) were girls, with the male to female ratio of roughly around 2:1. The distribution of students according to age and gender is shown in Table 2. The age of the study population ranged from 5-15 years. Mean age was 9.97 years with a standard deviation of 3.145. It was seen that only 48 (4.4%) of the study population were healthy while 770 (70.4%) students were suffering from gingivitis and 275 (25.2%) students suffered from periodontitis. Gingivitis was comparatively more common among boys than in girls that is 61.3 % and 38.7 % respectively. Of the 770 students suffering from gingivitis, 472 were males and 298 were females. Periodontitis was also relatively more common among boys as compared to girls; 275 students suffering from periodontitis, 176 (64%) were boys and 99 (36%) were girls. Distribution of students according to gender and periodontal condition is shown in Table 3 and in figure 1. Table 4 shows the distribution of periodontal conditions related to age. Gingivitis was seen to be the most common in students of age between 5 and 8, while periodontitis was more frequent at the age of 13 years.

Table: 1  
Periodontal Disease Index

0	Healthy periodontium/ Absence of inflammation.
1	Mild to moderate inflammatory gingival changes not extending all around tooth
2	Mild to moderately severe inflammatory gingival changes extending all around the tooth
3	Severe gingivitis, characterized by marked redness, tendency to bleed and ulcerate
4	Gingival crevice/ attachment in any of the measured areas of the tooth are extending apical to cemento enamel junction (CEJ) but not more than 3 mm
5	Gingival crevice/ attachment in any of the measured areas of the tooth is ranging from 3mm to 6mm apical to CEJ
6	Gingival crevice/ attachment in any of the measured area of the tooth is more than 6 mm apical to the CEJ

Table: 2  
Distribution of students according to age and gender

Gender	Age											Total
	5	6	7	8	9	10	11	12	13	14	15	
Male	70	46	45	80	70	60	49	45	81	66	68	680
Female	36	38	39	49	50	36	38	31	38	28	30	413
Total	106	84	84	129	120	96	87	76	119	94	98	1093

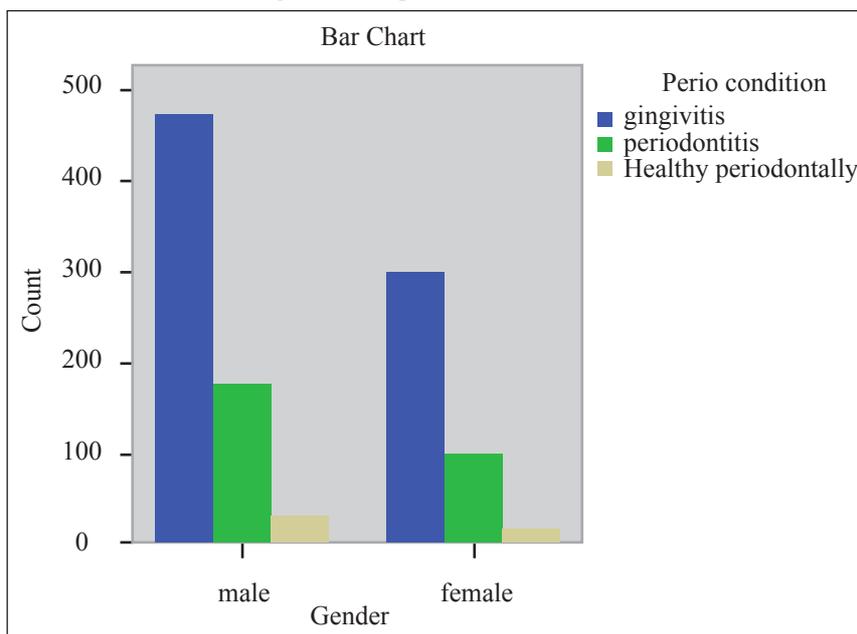
Table: 3  
Distribution of students according to gender and periodontal condition

Gender	Perio Condition			Total
	Gingivitis	Periodontitis	Healthy Periodontally	
Male	472	176	32	680
Female	298	99	16	413
Total	770	275	48	1093

Table: 4  
Distribution of students according to age and periodontal condition

	Gingivitis	Periodontitis	Healthy Periodontally	
5.	69	11	4	84
6.	75	9	0	84
7.	90	35	4	129
8.	79	35	6	120
9.	77	17	2	96
10.	56	28	3	87
11.	46	26	4	76
12.	71	40	8	119
13.	57	32	5	94
14.	62	28	8	98
Total	770	275	48	1093

Figures: 1  
Bar chart showing distribution of students according to gender and periodontal condition



## DISCUSSION:

This study was the first of its kind in this region and was performed to evaluate the prevalence of gingivitis and periodontitis in 5-15 years school going children at different government schools.

70.4% of students suffering from gingivitis and 25.2% of the students suffered from periodontitis. This research also partly is in coherence with the National Oral Health Survey, according to which individuals among 12 years old were only 28%, among 15 year old there were 26.5%, among 35-44 years old population this incidence was 16.8% and in population aged 65 and above only 6.7% of individuals were healthy.<sup>17</sup>

PDI used in this study showed that most of the students were suffering from moderate to severe gingivitis, while students suffering from periodontitis were from mild form of the periodontitis to moderate form of periodontitis. This showed that there was lack of understanding and awareness for the students regarding dental hygiene and other common dental diseases as they were not attentive about their dental health especially when signs of gingivitis started appearing.<sup>18</sup> It showed once again the paramount need for a detailed oral health promotional and educational program which should be implemented at school level in order to provide more knowledge to students regarding common oral diseases, their consequences, prevention and more precisely, the role of oral hygiene in prevention of these diseases. A special attention should also be paid on student's inspiration and motivation for betterment of oral hygiene and thus oral health by educating and thus giving awareness to the students and youth hence helping them change their attitudes and behaviours towards tooth brushing habits and other oral hygiene aids.<sup>19, 20</sup> Gingivitis was seen to be more in females (72.2%) as compared to males (69.4%), while periodontitis was seen more in males (25.8%) than in female students (23.9%). These results were in contrast with a study done in China where they concluded that there was no difference in distribution of gingivitis based on gender.<sup>21</sup> Another study conducted on American population revealed that males were affected more commonly by gingivitis as compared to their female counterparts.<sup>22</sup> The study of Moller<sup>23</sup> showed that 23% of children had gingivitis. While another study of Dunbar<sup>24</sup> using Russell index<sup>25</sup> found that 75% of children had mild gingivitis. Shabinul- Hassan<sup>26</sup> observed the frequency of gingivitis in his study to be 14%. The study done at Kathmandu University Teaching Hospital, Nepal have showed that 25% of their population was suffering from periodontal disease.<sup>27</sup> In another study of Haffman<sup>28</sup> it was observed that the prevalence of periodontitis was 70.9% and it was significantly higher in males.

The prevalence of gingivitis directly correlates with the condition of oral hygiene and studies have documented that the incidence and severity of gingivitis could be decreased by improving oral hygiene.<sup>29,30,31,32</sup> It is very important to employ oral hygiene specialist in vacant rooms of schools. Dentists, parents and teachers should collectively play their role in promoting healthy life style

and healthy teeth and it can help children and adolescence to achieve good oral health and thus enjoy improved general health.

## CONCLUSION:

Prevalence of gingivitis and periodontitis in 5-15 years school going children at different government schools of district Hyderabad was found to be high. Only 4.4% were healthy while 70.4% students were diagnosed as having gingivitis and 25.2% were diagnosed to have periodontitis. Gingivitis and periodontitis was comparatively more common in boys than in girls. Gingivitis was seen most commonly in students of age between 5 to 8 years, while periodontitis was more frequent at age 13.

**Recommendations:** Oral hygiene instructions should be given in all schools. Students should be educated on how to prevent gingivitis and periodontitis and also be told of their consequences. Oral hygiene education and awareness programs for prevention from gingivitis and periodontitis should be the joining efforts of teachers, dentists, parents and school children themselves. Such a raised prevalence of gingivitis and periodontitis may lead to increased incidence of edentulous population in future, so steps should be taken for its prevention from now onwards.

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