ABSTRACT

This descriptive, cross-sectional oral health survey was carried out to document the oral health status of underprivileged school children of a trust school in Lahore.

The sample consisted of all the school children (n = 389). Each student was examined randomly by one of three calibrated examiners and the findings were recorded on a modified WHO oral health assessment form. In addition to DMFT index, oral hygiene status was recorded and the students who needed fillings, scaling or orthodontic treatment were referred for treatment.

In the permanent dentition, mean DMFT was 0.13, 95% CI = 0.09-0.18 (9.6% of the students had carious teeth) while in the deciduous dentition, dmft was 0.94, 95% CI = 0.76-1.11 (34.1% of the students had caries). One hundred and ten students (28.3%) were referred for fillings. Oral hygiene status was poor in 6.2% and 7.2% were referred for scaling. There was only one filled tooth in the entire sample.

The oral health status of these students from lower socioeconomic strata was good. Caries prevalence and treatment need was lower than most studies done the world over.

Key Words: Dental Caries, Prevalence, Children, Students, Oral Hygiene.

INTRODUCTION

Diseases of the oral cavity pose a threat to health-care the world over. Dental caries is by far the most common oral disease followed by periodontitis. Children belonging to lower socio-economic strata are more prone to dental caries and periodontal disease due to lack of awareness and limited access to resources.1 Oral health surveys establish the prevalence and severity of these diseases and determine the treatment need.

WHO recommends that children be surveyed periodically every five or six years for caries as part of community research programs.2 DMFT scores in the deciduous dentition range from 1.99 in Canada3 to 3.79 in Nepal4 and in the permanent dentition range from 0.49 in Canada3 to 3.0 in the United States.5 Although regular oral health surveys are not conducted in Pakistan, DMFT scores in the deciduous dentition range from 0.7246 to 1.957, and in the permanent dentition from 0.38 to 3.429. This survey was conducted on students from a lower socio-economic strata charity school in Lahore, Pakistan. The objective was to document the oral health status of all the students, to facilitate any treatment needed, and to increase awareness amongst children and parents regarding oral health.

METHODOLOGY

This oral health survey was conducted in the School of Sciences, Gohawa Village, Lahore, in May 2015 and was organized by members of the Institute of Dentistry (IOD), Combined Military Hospital (CMH), Lahore, Pakistan. Permission to conduct the research was received from the research committee of the institution and from the Principal of the School of Sciences. Three examiners were calibrated by examining 20 students from the school in a pilot survey.

A few days prior to data collection, a team of researchers visited all the individual classes of the school and conducted an oral health awareness program using...
models, audio visual aids, and learning games. Oral health information leaflets for children and parents were distributed.

Data on caries, oral hygiene status and treatment need were collected by three teams on a modified WHO oral health survey form. Each team consisted of an examiner and a recorder. Children were randomly allocated to one of the three teams. Researchers A, B and C (second, first and third authors respectively) each examined 151, 120, 118 students respectively.

**TABLE 1: ORAL HYGIENE STATUS AND TREATMENT NEED FOR DIFFERENT AGE GROUPS**

<table>
<thead>
<tr>
<th>Students age group (years)</th>
<th>No.</th>
<th>Gender</th>
<th>Oral hygiene (%)</th>
<th>Treatment need (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Male</td>
<td>Female</td>
<td>Good</td>
</tr>
<tr>
<td></td>
<td>4-6</td>
<td>126</td>
<td>32.5</td>
<td>32.2</td>
</tr>
<tr>
<td></td>
<td>7-12</td>
<td>212</td>
<td>56.1</td>
<td>52.5</td>
</tr>
<tr>
<td></td>
<td>13-16</td>
<td>51</td>
<td>11.3</td>
<td>15.3</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>389</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

**TABLE 2: DMFT AND DMFT VALUES FOR DIFFERENT AGE GROUPS**

<table>
<thead>
<tr>
<th>Age group (years)</th>
<th>n</th>
<th>d</th>
<th>m</th>
<th>f</th>
<th>dmft (s.d)</th>
<th>D</th>
<th>M</th>
<th>F</th>
<th>DMFT (s.d)</th>
</tr>
</thead>
<tbody>
<tr>
<td>4-6</td>
<td>69</td>
<td>1.17</td>
<td>0.00</td>
<td>0.00</td>
<td>1.17</td>
<td>0.03</td>
<td>0.00</td>
<td>0.00</td>
<td>0.03</td>
</tr>
<tr>
<td>Males</td>
<td>57</td>
<td>0.91</td>
<td>0.00</td>
<td>0.00</td>
<td>0.91</td>
<td>0.02</td>
<td>0.00</td>
<td>0.00</td>
<td>0.02</td>
</tr>
<tr>
<td>Females</td>
<td>126</td>
<td>1.06</td>
<td>0.00</td>
<td>0.00</td>
<td>1.06</td>
<td>(2.133)</td>
<td>0.02</td>
<td>0.00</td>
<td>0.02</td>
</tr>
<tr>
<td>Total</td>
<td>212</td>
<td>1.06</td>
<td>0.00</td>
<td>0.00</td>
<td>1.06</td>
<td>(1.638)</td>
<td>0.14</td>
<td>0.00</td>
<td>0.14</td>
</tr>
<tr>
<td>7-12</td>
<td>119</td>
<td>1.25</td>
<td>0.00</td>
<td>0.00</td>
<td>1.25</td>
<td>0.12</td>
<td>0.00</td>
<td>0.00</td>
<td>0.12</td>
</tr>
<tr>
<td>Males</td>
<td>93</td>
<td>0.82</td>
<td>0.00</td>
<td>0.00</td>
<td>0.82</td>
<td>0.16</td>
<td>0.00</td>
<td>0.00</td>
<td>0.16</td>
</tr>
<tr>
<td>Females</td>
<td>212</td>
<td>1.06</td>
<td>0.00</td>
<td>0.00</td>
<td>1.06</td>
<td>(1.638)</td>
<td>0.14</td>
<td>0.00</td>
<td>0.14</td>
</tr>
<tr>
<td>Total</td>
<td>389</td>
<td>0.94</td>
<td>0.00</td>
<td>0.00</td>
<td>0.94</td>
<td>(1.766)</td>
<td>0.13</td>
<td>0.00</td>
<td>0.13</td>
</tr>
</tbody>
</table>
Oral health survey of school children

If examiners B and C had any doubt regarding the diagnosis, examiner A was asked to examine the student and reconfirm the diagnosis. Each student was examined using a disposable tongue spatula and a hand held torch. All children requiring treatment were handed a report listing their treatment need with the offer of free treatment at IOD, CMH Lahore Medical College.

Data were analyzed using SPSS version 20 (IBM SPSS). Frequencies were calculated for basic demographic data, oral hygiene status and treatment need. Mean values and 95% confidence intervals were calculated for continuous variables (D, M, F, age), and DMFT was calculated. Differences in means for genders and age groups were tested using Man Whitney’s test (data did not fulfill parametric assumptions), while continuous variables (age, D) were correlated using Spearman’s rho test. The level of statistical significance was set at p < 0.05.

RESULTS

The entire school was surveyed starting from Playgroup, Nursery, Prep, and Classes 1-10. Of the 389 students examined, there were 212 males (54.5%) and 177 females (45.5%). The mean age of students was 8.49 (sd=3.26). The age ranged from 4-16. A total of 23 students were absent on the day of survey. In the permanent dentition, mean DMFT was 0.13 (sd=0.451, 95% CI=0.09-0.18). There were no missing teeth and 1 filled tooth. Thus D was also 0.13. In the deciduous dentition, there were no missing or filled teeth, hence the DMFT, as well as d, was 0.94 (sd=1.766, 95% CI=0.76-1.11).

The most common age group examined was age 5 with 87 students (22.4%) followed by ages 9 (11.3%) and 12 (10.5%). Summary in Table 1. The value of D ranged from 0-3 while the value of d ranged from 0-13. In the permanent dentition, 9.6% (n=37) of the students had carious teeth with 6.7% (n=26) with one D, 2.1% (n=8) with two carious and 0.8% (n=3) with three carious teeth. One filled tooth was recorded in the permanent dentition (Table 2).

The value of D for male students was 0.1 (sd=0.434, 95% CI=0.05-0.16) while D for females was 0.16 (sd=0.501, 95% CI=0.09-0.24). The difference between males and females was not significant (p = 0.078, Man Whitney U test). In the deciduous dentition, there were no missing or filled teeth but the value of d ranged from 0-13 where 34.1% (n=133) of the students had caries. The mean value of d for males was 1.12 (sd=1.777, 95% CI=0.88-1.36) and 0.73 for females (sd=1.740, 95% CI=0.47-0.99). The difference between males and females was significant (p=0.009, Man Whitney U test. See Table 2 for details).

Of the 42.2% (n=164) students with caries, 28.3% (n=110) were referred for restorations. Oral hygiene was good in 69.7% (n=271) of students, fair in 24.2% (n=94) and poor in 6.2% (n=24) of students. Among these 7.2% (n=28) were referred for scaling (Table 1).

Correlation analysis indicated a weak (0.312) positive correlation between D and age (rho=0.312, p=<0.001). A very weak negative correlation existed between d and age (rho= - 0.176, p=<0.001). One child, ten years of age, was diagnosed with OSF with significant limited mouth opening and a habit of areca nut chewing. Developmental disturbances of the teeth which appeared like flourosis were noted in 2 students.
DISCUSSION

The mean DMFT for school children in this study was 0.13, while mean DMFT (deciduous dentition) was 0.94. Mean DMFT scores in developing countries (Nepal 0.5, Bangladesh 2.2, India 1.8) are generally lower than those in more developed nations (USA 35, UK 2.311, Eastern Europe 3.812). A similar trend is more difficult to identify in the deciduous dentition (dmft in Nepal 3.794, India 2.5613, Canada 1.993, UK 1.8611, Malaysia 3.4614).

DMFT scores in Pakistan range from 0.3 in Khairpur District, 1.14 in Clifton Karachi, 2.087 in Saddar Town Karachi, 2.2216 in Gadap Town Karachi, 2.6917 in Cantt Lahore, 3.42 in Larkana to 3.7018 in poor locality school children in Lahore. The DMFT scores in this school were lower compared to all national and international figures.

It is likely that the students in our sample had limited access to dental care, as indicated by only one filled tooth among 389 students ranging from ages 4 to 16. In other studies, F scores range from 0.11 in Nepal to 0.65 in USA5 and 1.64 in Canada. The entire school was sampled in this study instead of the age groups recommended by WHO, as the intent was not only to document their dental status, but to increase awareness about oral health care, facilitate any treatment needed, and to follow their dental status over the next few years in school.

Male students in our sample had higher caries frequency than females in the deciduous dentition (1.12 vs. 0.73, p=0.009). Contrasting results have been seen in other studies (girls were 1.29 times more likely to have caries in Mexico, girls had significantly higher mean DMFT score in UAE, females tend to have higher scores in Canada and Nepal). This difference may be investigated with further research.

Even though caries was detected in a relatively large percentage in the deciduous dentition (34.1%, n=133), from among the students who had caries, 60.2% (n=80) were referred for fillings/restorations, because many of the carious lesions were on deciduous teeth near the time of exfoliation. See Fig 1 and 2.

The oral health status of these students will be followed up a year after this initial survey. In the follow up, the oral health status of age groups recommended by WHO will be documented only. The students with carious lesions (n=110) will also be reviewed to check whether the necessary treatment was received. The level of knowledge about oral health will be checked for the surveyed students and sessions for reinforcement of oral health awareness will be organized if necessary.

CONCLUSION

The oral health status of these students from lower socioeconomic strata was good. It appeared that these children did not have access to routine dental healthcare but caries frequency was comparable or lower than other data from lower socioeconomic studies, and from other loco-regional surveys. An oral health awareness program was initiated at the institute, and treatment needed by the students was facilitated. Follow up is required to access the effectiveness of the oral health campaign, to ensure necessary treatment has been received, and to study factors responsible for the low caries frequency.

Acknowledgements

We want to thank the Principal of School of Sciences, Madam Rabia Pakhar for giving us complete facilitation in carrying out our study. A special thanks to Dr Ali Anwaar for his contribution during the planning stage of this study. We also want to acknowledge Dr Kalsoom Ijaz, Dr Bareerah Idrees, Dr Sameen Bakhtawar and Dr Memoona Ansari for helping us out during data collection for this study.

REFERENCES


**CONTRIBUTION BY AUTHORS**

1 Amna Fakhar: Planning, data collection, data analysis and article writing
2 Samir Riaz Qazi: Planning, data collection, data analysis and article writing
3 Amal Abdul Majid: Planning, data collection and article review