Approval Sheet

The research work entitled “Evaluation of Oral Hygiene Status in young school children – A cross sectional survey” is a bonafide work of Group A of Final year BDS students 2006 batch.

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The research project entitled “Evaluation of Oral Hygiene Status in young school children – A cross sectional survey” has been approved/not approved by the committee of examination, Department of Community Dentistry, BPKIHS.
<table>
<thead>
<tr>
<th></th>
<th>Name of the principle investigator</th>
<th>Dr. Abhinav Shrestha, Dr. Apeksha Niraula, Dr. Arun Kumar Mahat, Dr. Atul Kumar Agrawal, Dr. Bidhan Shrestha, Dr. Churamani Pokhrel, Dr. Deepa Niroula, Dr. Deepti Subba, Dr. Dilli Bahadur Pun</th>
</tr>
</thead>
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<tr>
<td>2</td>
<td>Name of the Institute</td>
<td>B. P. KOIRALA INSTITUTE OF HEALTH SCIENCES, COLLEGE OF DENTAL SURGERY, Dharan, Nepal.</td>
</tr>
<tr>
<td>3</td>
<td>Course of study</td>
<td>B.D.S.</td>
</tr>
<tr>
<td>4</td>
<td>Title of topic</td>
<td>“Evaluation of Oral Hygiene Status in young school children – A cross sectional survey”</td>
</tr>
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<td>5</td>
<td>Research work submitted to</td>
<td>Department of Community Dentistry and Preventive dentistry</td>
</tr>
</tbody>
</table>
ACKNOWLEDGEMENT

It is with great respect and deep sense of gratitude; we owe our sincere indebtedness to BPKIHS authority and Department of Community Dentistry, BPKIHS for providing us an opportunity and facilities to conduct this research. We are also thankful to Dr. T. R. Manandhar Chief, College of Dental Surgery for his help and support.

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Final year, College Of Dental Surgery

Batch-2006
Abstract

A descriptive Cross-sectional study titled “Evaluation of Oral Hygiene Status in young school children – A cross sectional survey” was conducted in government school named Mahendra Madhyamik Vidyalaya, Sundarpur, Sunsari Nepal and Private Schools namely Carmel High school, Dharan-18 and Liberty Residential School, Dharan-18 respectively.

A total number of 100 students were taken as a sample and data was collected by using indices-Simplified oral hygiene index (OHI-S), and Decayed Missing Filled Tooth (DMFT) index. The data analysis was done using frequency distribution.

The results showed that the oral hygiene status was nearly same in both government and private school students.

OHI-S

<table>
<thead>
<tr>
<th>School</th>
<th>DI-S</th>
<th>CI-S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Government</td>
<td>1.445</td>
<td>0.9262</td>
</tr>
<tr>
<td>Private</td>
<td>1.459</td>
<td>0.7106</td>
</tr>
</tbody>
</table>

While, the DMFT score indicated increased Caries experience in Private schools as compared with government school students.

DMFT Index Score

<table>
<thead>
<tr>
<th>School</th>
<th>Decayed</th>
<th>Missing</th>
<th>Filled</th>
</tr>
</thead>
<tbody>
<tr>
<td>Government</td>
<td>70</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Private</td>
<td>109</td>
<td>2</td>
<td>12</td>
</tr>
</tbody>
</table>
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Background

Oral health and hygiene is an essential part of general health and quality of life as it contributes to ability to eat, speak and socialize.

Caries and inflammatory periodontal disease is the most prevalent oral diseases, caused by the activity of dental plaque. Children hold the highest dental caries burden in the developing countries. Documentation of the oral hygiene status of young children plays an important role in the development of oral health policies, strategic plans, monitoring and surveillance systems for oral health.

Lack of awareness and oral health education is thought to be more prevalent among the government school students. Hence, we intended to evaluate the oral hygiene status among the government and private school students and compare the same.

For this “Simplified Oral hygiene index(OHI-S) and Decayed Missing Filled Teeth(DMFT)Index was taken in 1 Government school and 2 private schools, named Mahendra Madhyamik Vidyalaya, Sundarpur, Carmel High School, Dharan-18, and Liberty Residential School, Dharan-18 respectively.

Aim:-

This study aimed to evaluate the oral hygiene status and caries experience in government and private school students and compare the same.

Objectives:-

1. Assessment of oral hygiene status and caries experience in government and private school students.
2. Determination of level of cleanliness (LOC) in government and private school students.
Hypothesis: -
Oral hygiene status of private school students would be better than government school students.

Review of literature

1) A Cross-sectional survey was conducted by Wajid Hassan Khan et.al., from 07-01-2008 to 28-02-2008 on the 11-15 years old school children of the government and private school students at the Ghazi Tehsil, District Haripur of North Western Frontier of Pakistan. The data were recorded on a Proforma that included child’s age, sex, school of attendance, Debris Index (DI) score, Calculus Index (CI) score, Simplified Oral Hygiene Index (OHI-S) score and the Level of Cleanliness (LOC). Eight private and fifteen government schools in Ghazi Tehsil were surveyed. The trend of OHI-S varied mildly with age of the children, where the youngest had the highest OHI-S. The mean LOC of children of the government and private schools in the Ghazi Tehsil was 2.13 and 2.12 respectively. This was not statistically significant and both were considered as ‘Fair’.

2) Sogi G.M. and Bhaskar D.J. conducted an epidemiological study to determine the relationship of oral health status with socioeconomic status in Davangre town. A total of 2007 children of 13 to 14 years age belonging to both sexes were examined. DMF caries Index and Oral Hygiene Index were used to assess caries experience and oral hygiene status. Prasad’s classification was used to know the social classification of the children. It was concluded that dental caries experience and oral hygiene status of children are strongly correlated to Socio-economic status.

3) A multi-stage random sampling oral epidemiological survey was conducted by Yee David et.al, in September 2006 in private and government, urban, rural town and rural village schools in 15 areas of Sunsari District, Eastern Nepal. A total of 600, 12-13-year-old and 600 15-year-old school children were examined by trained examiners using the simplified oral hygiene index (OHI-S). They found that the overall level of cleanliness in the school children surveyed was good. Children of urban schools had the lowest scores followed by school children from rural towns and then rural villages.
After comparison of OHI-S scores with the DMFT scores, there was an inverse relationship between oral cleanliness and dental caries. They conclude that the frequency of sugar consumption and the availability and affordability of fluoridated toothpaste may be important factors in the development of dental caries than oral cleanliness.

4) A school-based survey was conducted by Nazik Mostafa Nurelhuda et.al., using stratified random cluster sampling in Khartoum state, Sudan. The aims of the study was to assess the general oral health status of the 12-year-old school children in Khartoum state and to determine risk indicators associated with poor oral health status. The mean DMFT for 12-year-olds was found to be 0.42 with a significant caries index (SiC) of 1.4. Private school attendees had significantly higher DMFT (0.57) when compared to public school attendees (0.4). The untreated caries prevalence was 30.5%. The prevalence of caries was found to be low. The school children with the higher socioeconomic status formed the high risk group.

5) A survey was conducted by Gonçalves AI et.al., in a mobile dental unit for undergraduate training in community dentistry that belongs to University Fernando Pessoa to assess the prevalence of dental caries in schoolchildren of Maia district, a suburban city in the northwest of Portugal. It included a clinical examination by a calibrated observer and a questionnaire on the oral health habits of 289 children aged 6 to 10 years-old, 68.5% of whom were girls, and who were recruited through a sampling procedure that reflected distribution according to age class groups and the gender of the pupils concerned. Daily oral hygiene habits were reported 86.5% of the children. Unemployment has a strong impact on this community and its financial consequences limit access to oral health care. This is reflected by the levels of oral disease.

6) A Cross-sectional based study was conducted by Vinay N et.al., in association with the Dental Faculty of Montpellier (France) to compare, before and after an educational intervention, the knowledge of dental health practices and caries prevention among school children aged 4 to
14 years old in Montpellier. All the children (600) attending these five schools received a questionnaire adapted to their age group: 4 to 6 years old (G1) / 7 to 10 years old (G2) / 11 to 14 years old (G3). The same children were seen again six months later when they were asked to complete the same questionnaire. They concluded that oral health knowledge of the children at baseline was rather inaccurate, and that some notions of dental hygiene were not well understood, by each age group. The type of school, in relation to socioeconomic background, had a significant influence on these results.

7) O. Bamigboye and T. M. Akande conducted a cross-sectional descriptive study of the oral hygiene status of students in selected secondary schools in Osogbo, Nigeria. Self administered structured questionnaires were used to collect data on age, sex, educational level, knowledge on oral hygiene habits of the students. Dental examination was carried out using dental probes and mouth mirrors, based on the use of Simplified Oral Hygiene Index (OHI-S). A total of three hundred and thirty two (332) secondary school students were examined in the selected schools from the results. Majority of the respondents (86.8%) were in the 0.00-1.00 range of OHI-S connoting good oral hygiene while 1.2% had scores in the 4.01-6.00 range connoting poor oral hygiene. It concluded that the high level of oral hygiene observed in this study is due probably to the dental education that is usually given to these students by the visiting Dental Nurses in these schools.

**Methods of Investigations:-**

1. **Subjects:** Students of Mahendra Madhyamik Vidyalaya, Sundarpur (Government School)- 50 Students

   - Students of Carmel High School, Dharan-18 and Liberty Residential School, Dharan-18 (Private Schools) - 50 Students.

2. **Design:** Descriptive Cross-Sectional Study

3. **Sample Size Calculation**
Simple random sampling, study population consist of 50 Government and 50 Private School students. Among them Government School Students will be grouped as Group-“A” and Private School Students will be grouped as Group “B”.

Sample Size- N=100
N1= 50- Group A
N2= 50- Group B

Methods:
Approval for the research was obtained from the head of Department of Community Dentistry, Bisheshwor Prasad Koirala Institute of Health Sciences (BPKIHS). The aim of the study was explained to the principal of the respective schools and informed consent was obtained.
Examination of students was undertaken at Mahendra Madhyamik Vidyalaya, Sundarpur; Carmel High School, Dharan-18; Liberty Residential School, Dharan-18 respectively under supervision of Dr. Prerana Sharma and Dr. Surya Narayan Pun. Clinical examination was performed according to the World Health Organization (WHO) criteria using dental diagnostic instruments (Mouth mirror, Explorers). Simplified Oral Hygiene Index (OHI-S) and Decayed Missing Filled Teeth (DMFT) index were calculated.

1) Simplified Oral Hygiene Index (OHI-S) was developed by John. C Greene & Jack .R vermilion in 1964 to classify & assess oral hygiene status. It is reversible index. It assesses oral hygiene status. Soft and mineralized deposits will be assessed on 6 surfaces of 6 teeth: buccal (16 and 26), lingual (36 and 46), labial (11) and lingual (31).

2) Decayed Missing Filled Teeth Index (DMFT) was developed by Henry T.Klein , Carrole E. Palmer & Knutson J.W.in 1938 to determine the prevalence of coronal caries & it is irreversible index and calculate the Decayed “D”, Missing “M” and Filled “F” for each tooth.

Selection criteria:-
1. Inclusion criteria:
   - Subjects with in the age group of 11-15 years
   - Subjects going to schools
   - Subject who gives consent to wants to be involved in this study

2. Exclusion Criteria:
   - Handicapped
   - Systemic Disease
   - Patient who has undergone dental treatment in past 2-3 months

Method of scoring:

For Simplified Oral Hygiene Index (OHI-S)

Debris Index-Simplified (DI-S)

<table>
<thead>
<tr>
<th>Score</th>
<th>Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>No debris or stain present</td>
</tr>
<tr>
<td>1</td>
<td>Soft debris covering not more than one third of the tooth surface, or presence of extrinsic stains without other debris regardless of surface area covered</td>
</tr>
<tr>
<td>2</td>
<td>Soft debris covering more than one third, but not more than two thirds, of the exposed tooth surface.</td>
</tr>
<tr>
<td>3</td>
<td>Soft debris covering more than two thirds of the exposed tooth surface.</td>
</tr>
</tbody>
</table>
Calculus Index-Simplified (CI-S)

<table>
<thead>
<tr>
<th>Score</th>
<th>Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>No calculus present</td>
</tr>
<tr>
<td>1</td>
<td>Supragingival calculus covering not more than third of the exposed tooth surface</td>
</tr>
<tr>
<td>2</td>
<td>Supragingival calculus covering more than one third but not more than two third of the exposed tooth surface or the presence of individual flecks of subgingival calculus around the cervical portion of tooth of both.</td>
</tr>
<tr>
<td>3</td>
<td>Supragingival calculus covering more than two third of exposed tooth surface or a continuous heavy band of subgingival calculus around the cervical portion of the tooth or both.</td>
</tr>
</tbody>
</table>

Interpretation
The DI-S and CI-S value range from 0-3 and OHI-S = DI-S + CI-S, so its value ranges from 0-6, which can be interpreted as:
- Good  - 0.0 - 1.2
- Fair   - 1.3 - 3
- Poor   - 3.1 - 6

Principles and Rules in the recording DMFT

1. No tooth must be counted more than once. It is either decayed, missing, filled or sound.

2. Decayed, Missing and Filled teeth should be recorded separately since the components of DMF are of great interest.

3. When counting the number of decayed teeth, also include those teeth which have restorations with recurrent decay.

4. Care must be taken to list as missing only those teeth which have been lost due to decay. Also included should be those teeth which are so badly decayed that they are indicated for extraction. The following should not be counted as missing:
a) Unerupted teeth
b) Missing teeth due to accident
c) Congenitally missing teeth
d) Teeth that have been extracted for orthodontics reason

5. A tooth may have several restorations but it is counted as one tooth.

6. Deciduous teeth are not included in DMF count.

7. A tooth is considered to be erupted when the occlusal surface or incisal edge is totally exposed or can be exposed by gently reflecting the overlying gingival tissue with the mirrors or explorers.

8. A tooth is considered to be present even though the crown has been destroyed and only the roots are left.

9. The following criteria should be considered when determining the “care needed”
   a) Tooth decay
   b) Gingival tissue
   c) Malocclusion
   d) Abscess
   e) Retained tooth tip / root tips
   f) Prophylaxis needed
Data Collection Procedure:

- Permission was obtained from the chief of college of dental surgery, Head of Department, Department of community dentistry, BPKIHS.

- Researchers visited the respective government and Private schools and requested their respective principals.

- Informed consent was obtained from the selected students for examination.

- Confidentiality was maintained throughout the study by maintaining privacy while collecting the data and concealing the information given by one respondent to others.

Data analysis
Findings which were analyzed as per the objectives are presented under the following headings:

- Comparative diagrammatic representation of Simplified oral hygiene status
- Comparative diagrammatic representation of mean DMFT

**Results:-**

Fig 1: Comparison of oral hygiene status of government and private school students of age (12-15yrs).
Fig 2: Comparison of DMFT scores of government and private school students of age (12-15yrs).

Fig 3: Comparison of DMFS scores of government and private school students of age (12-15yrs).

Table showing most affected teeth:

<table>
<thead>
<tr>
<th>Tooth Notation</th>
<th>Government</th>
<th>Private</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>D</td>
<td>M</td>
</tr>
<tr>
<td>17</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Tooth most affected</td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>36,46</td>
<td>36,46</td>
<td></td>
</tr>
<tr>
<td>=14</td>
<td>=23</td>
<td></td>
</tr>
</tbody>
</table>

* Only the affected teeth are shown in the table.

**Discussion:**
The World Health Organization (1982) defined Oral Health as “the retention throughout life of a functional, aesthetic and natural dentition of not less than 20 teeth and not requiring a prosthesis”.

An individual may be considered as healthy if he/she has no caries or periodontal disease. However, a large majority of the population would be considered unhealthy as oral diseases are common and untreated.

Among the general population, children holds the highest dental caries burden in developing countries. Moreover, due to lack of oral health education and awareness among the government school students, we intended to evaluate the oral hygiene status in government and private school students and compare the same.

Hence, to evaluate the oral hygiene status, descriptive, cross-sectional study was conducted on 100 students (50 government and 50 private school, students respectively.)

Oral hygiene status as shown by Simplified Oral Hygiene Index (OHI-S) showed that government school students had poor oral hygiene than compared with private school students with scores 118.56 and 107.52 respectively.

Whereas, the caries experiences as shown by DMFT/DMFS Index indicated increased caries experience in private school students as compared to government school students with scores 123 and 71 respectively.

Conclusion:
Hence, this indicates the need for oral health education and awareness in government school students. Thus, basic oral health education must be incorporated in the academic curriculum.

References:


5. Gonçalves Al, Neves H, Frias-Bulhosa, University Fernando Pessoa, Porto, Portugal “Caries experience of schoolchildren from the Maia district, Portugal” *J. Faculty of Health Sciences*.


7. O bamigboyed and t.m.akande, oral hygiene status of students in selected secondary schools in osogbo, nigeria, *Nigerian medical practitioner* vol. 51 no 4, 2007 (71-75).