

Assessment of Caries Prevalence among Children below 5 Years Old Reporting to PHC Dhanaura of Bihar

Dharmendra Kumar Singh^{1*}, Kumari Sony², Shubham Kumar³, Ritesh Vatsa³, Harshvardhan Choudhary⁴, Devleena Bhowmick⁵

¹Department of Dentistry, PHC Dhanarua, Patna, Bihar, India.

²Department of Public Health Dentistry, Buddha Institute of Dental Sciences and Hospital, Patna, Bihar, India.

³Department of Dentistry, Sri Krishna Medical College and Hospital, Muzaffarpur, Bihar, India.

⁴Department of Dentistry, PHC, Parwalpur, Bihar, India.

⁵Department of Oral Medicine and Radiology, PDM Dental College and Research Institute, Bahadurgarh, Haryana, India.

Abstract

Background: In the current scenario of developing countries, dental caries has been a long-standing challenge in the oral health issue and still on the rise. **Aims and Objectives:** The aim of the following study is to estimate the caries prevalence in the primary dentition among children below 5 years of age. **Materials and Methods:** Study population included both boys and girls below 5 years age reporting to OPD of PHC Dhanarua, Patna, Bihar. A simple random sampling method was used. A total of 168 children were examined under headlamp illumination using mouth mirror and probe according to the World Health Organization (WHO) criteria. A questionnaire was used to elicit information from the attendants regarding general health, intraoral examination, and caries experience, which was recorded using the WHO 1997 pro forma. The data were computerized and analyzed applying the Statistical Package for the Social Sciences program. **Results:** The prevalence of dental caries was 56.54%. Caries prevalence was higher in the boys than the girls and it was statistically significant ($P < 0.05$). It was also found that primary second molars were the highest carious tooth. **Conclusion:** The prevalence of dental caries was high among children below 5 years old. The present study was undertaken to obtain baseline data for planning preventive programs. Untreated caries indicates subsequent steps toward preventive and restorative care should be initiated. To reduce the caries prevalence, there is a need for continuous monitoring and health education to the children and parents and guardians.

Keywords: Age, Deciduous teeth, Dental caries, Prevalence.

INTRODUCTION

Dental caries is progressive destruction of teeth by bacteria. It is one of the most common of all diseases and a major cause of loss of teeth.^[1] It has been deep rooted and rising oral health problem among children in the world. Caries at a younger age group leads to several morbid conditions of the oral cavity and also other systems of the human body.^[2] Oral health is an integral part of general health.^[3] Various general health conditions do have oral manifestations, which in turn increase the risk of oral diseases, for example, diabetes mellitus, cardiovascular diseases, etc., The initiation of dental caries depends on oral hygiene practices, age, sex, socioeconomic profile, lifestyle, geographic location, race, food habits, and also the distribution varies within the oral cavity.

Dental caries affects 60–90% of children and the vast majority of adults.^[4] The World Health Organization (WHO) suggests five selected age groups for the basic oral health

surveys, (i.e., 5 years, 12 years, 17–18 years, 35–44 years, and 65–74 years) to assess the severity of the problem and plan intervention activities.^[5] In spite of the success achieved by focusing on the oral health, many issues still remain unsolved particularly among the under privileged in developing countries. History states that caries and periodontal diseases are a major component of the global disease burden. Therefore, keeping in mind the limitation of the literature on these issues, the present study was undertaken to obtain information on the oral health requirements of the 5-year-old children reporting to OPD of PHC Dhanarua, Patna, Bihar.

Address for correspondence: Dr. Dharmendra Kumar Singh,
Department of Dentistry, PHC Dhanaura, Patna, Bihar, India.
Email: singhdrdk2008@gmail.com

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MATERIALS AND METHODS

The study design was a cross-sectional study carried out on children below 5 years reporting to the OPD of PHC Dhanarua, Patna, Bihar. A total of 168 children were taken as a study population. Among them, 88 were boys and 80 were girls. Data collection included a clinical examination and structured questionnaire. Informed consent was obtained from the parents or guardians of the child.

The study participants included both boys and girls below 5 years with full set of deciduous teeth. Children above 5 years or with pre-existing systemic illness were excluded from the study. The clinical examination was performed by a single investigator under headlamp illumination using mouth mirror and probe according to the WHO criteria. Assistance was obtained from the parents/guardians for handling the child during examination among un-cooperative children or children below 3 years. These patients were examined using only mouth mirror and sterile cotton gauze. The data were computerized and analyzed applying the Statistical Package for the Social Sciences program version 22.

RESULTS

Out of 168 children examined under this study, 88 were boys and remaining 80 were girls. On the whole 56.54% had caries. Distribution in relation to sex shows that caries experience was higher in boys (61.36%) than in girls (52.50%). This difference was statistically significant ($P < 0.05$) (Table 1). Caries was present in 28.57% of the maxillary arches and 45.23% of the mandibular arches. Among boys, the mandibular arch had an increase in caries level (47.72%) than the maxillary arch (31.81%) and the difference was significant statistically ($P < 0.05$). Similarly among girls, the mandibular arch depicts more caries prevalence (42.50%) than the maxillary arch (25.00%) and the difference was statistically significant ($P < 0.01$) (Table 2).

Caries distribution of anterior and posterior teeth among both the sexes depicts that caries had an increased pattern in the posteriors as compared to the anteriors. When the caries prevalence of the anterior teeth was compared among the

sexes, boys showed more caries prevalence than girls with a statistically significant difference ($P < 0.01$) (Table 3).

Comparison of caries between the arches caries occurred more frequently in the posterior teeth. Comparison of caries between the arches in the anterior segment depicts that caries was more in the maxillary arch and the difference was significant statistically ($P < 0.01$). On the other hand, in the posteriors, caries was more in the mandibular arch. The difference was significant statistically ($P < 0.001$) (Table 4).

DISCUSSION

In the present study, the total number of boys is slightly higher than the total number of girls (52.38% and 47.62%, respectively). Out of which, caries was significantly more prevalent in boys than in girls. This suggests that dental caries shows some predilection for sex. Same findings were detected by Zerfowski *et al.*^[6] On the other hand, the opposite scenario was shown by Ullah *et al.*, where the age of the children included in the study was 12 years.^[7]

Inter arch comparison depicts that caries was on the rise in mandibular arch and in both the sexes, it was statistically significant. Jawadekar *et al.*, in their study, have reported same findings.^[8] Higher caries prevalence in upper arch was reported by Sathe.^[9] Dunning^[10] reported caries prevalence as a bilateral phenomenon. In our study, caries attack was 4–6 times more in the posterior teeth than anterior. Almost same findings were observed by Chawla *et al.*^[11] which can be attributed to complex morphological nature of posterior teeth.^[12]

The present study showed that the second primary molar is the tooth with highest caries experience which erupts at a later date. The findings of Pinkham were similar.^[13] This difference in individual tooth susceptibility is due to the fissure topography of molars. The pits and fissure in second primary molars are deeper and less completely coalesced.^[14] Furthermore, they are positioned posteriorly compared to other teeth, making it difficult in brushing accessibility for the young children and their parents.

In the present study, “Nursing bottle caries” was seen in maxillary primary incisors, maxillary and mandibular primary molars, but mandibular deciduous incisors were almost healthy. The lower incisors are protected by the tongue and the opening of major salivary ducts, but upper molar teeth is not protected by the opening of parotid glands.^[15] Carious attack was higher in mandibular arch than maxillary arch in the molar teeth. Similar findings were found by Sarkar and Chowdhury.^[16]

Table 1: Prevalence of dental caries among study population

Age	Sex	Examined	Caries (%)	P-value
<5 years	Boys	88	54 (61.36)	<0.05
<5 years	Girls	80	42 (52.50)	<0.05
<5 years	Total	168	95 (56.54)	<0.05

Table 2: Distribution of dental caries in relation to dental arch

Sex	Examined	Maxillary arch caries (%)	P-value	Mandibular arch caries (%)	P-value
Boys	88	28 (31.81)	<0.05	42 (47.72)	<0.01
Girls	80	20 (25.00)	<0.05	34 (42.50)	<0.01
Total	168	48 (28.57)	<0.05	76 (45.23)	<0.01

Table 3: Prevalence of dental caries in relation to type of teeth and sex

Type of tooth	Boys examined	Caries (%)	Girls examined	Caries (%)	Total examined	Caries (%)	P-value
Central incisors	352	26 (07.38)	320	23 (07.18)	672	49 (07.29)	<0.01
Lateral incisors	352	18 (05.11)	320	16 (05.00)	672	34 (05.05)	<0.01
Canine	352	12 (03.40)	320	10 (03.12)	672	22 (03.27)	<0.01
1 st Molar	352	80 (22.72)	320	67 (20.93)	672	147 (21.87)	<0.01
2 nd Molar	352	98 (28.84)	320	84 (26.25)	672	182 (27.08)	<0.01

Table 4: Prevalence of dental caries in relation to type of tooth

Type of tooth	Maxillary arch	Caries (%)	P-value	Mandibular arch	Caries (%)	P-value
Central incisors	336	38 (11.30)	<0.01	336	05 (00.14)	<0.01
Lateral incisors	336	24 (07.14)	<0.01	336	06 (00.17)	<0.01
Canine	336	12 (03.57)	<0.01	336	09 (00.26)	<0.01
1 st Molar	336	34 (10.11)	<0.01	336	87 (25.89)	<0.01
2 nd Molar	336	42 (12.50)	<0.01	336	96 (28.57)	<0.01

CONCLUSION

The present study depicts that the dental caries experience in primary dentition was 56.54%. Boys were leading in number than the girls. Mandibular molars and maxillary anterior were most affected compared with the mandibular anterior teeth which were least affected. The present study was undertaken to obtain baseline data for planning preventive programs. It is high time to create awareness and focus on the preventive measures in this location. To reduce the caries prevalence, there is a need for continuous monitoring and health education to the children and parents and guardians.

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